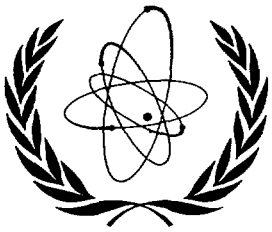

International Atomic Energy Agency

ANNUAL REPORT OF THE BOARD OF GOVERNORS TO THE GENERAL CONFERENCE

1 July 1959 - 30 June 1960

GC (IV)/114
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TABLE OF CONTENTS

LIST OF ABBREVIATIONS

ACABQ	Advisory Committee on Administrative and Budgetary Questions (of the United Nations General Assembly)
ACC	Administrative Committee on Co-ordination
Agency	International Atomic Energy Agency
CCAQ	Consultative Committee on Administrative Questions
CCPI	Consultative Committee on Public Information
CCTA	Commission for Technical Co-operation in Africa South of the Sahara
ECA	Economic Commission for Africa (of ECOSOC)
ECAFE	Economic Commission for Asia and the Far East (of ECOSOC)
ECE	Economic Commission for Europe (of ECOSOC)
ECLA	Economic Commission for Latin America (of ECOSOC)
ECOSOC	Economic and Social Council of the United Nations
ENEA	European Nuclear Energy Agency (of OEEC)
EPTA	United Nations Expanded Programme of Technical Assistance
EURATOM	European Atomic Energy Community
FAO	Food and Agriculture Organization of the United Nations
ICA	International Co-operative Alliance
ICAO	International Civil Aviation Organization
ICC	International Chamber of Commerce
ICFTU	International Confederation of Free Trade Unions
ICRP	International Commission on Radiological Protection
ICRU	International Commission on Radiological Units and Measurements
ICSU	International Council of Scientific Unions
IFCTU	International Federation of Christian Trade Unions
ILO	International Labour Organisation or Office
IMCO	Inter-Governmental Maritime Consultative Organization
ISO	International Organization for Standardization
IUIN	International Union for Inland Navigation
OAS	Organization of American States
OEEC	Organisation for European Economic Co-operation
SAC	Scientific Advisory Committee (of the Agency)
TAB	Technical Assistance Board (of the United Nations)
UNESCO	United Nations Educational, Scientific and Cultural Organization
UNIPEDE	International Union of Producers and Distributors of Electrical Energy
UNSCEAR	United Nations Scientific Committee on the Effects of Atomic Radiation
UPU	Universal Postal Union

WFUNA	World Federation of United Nations Associations
WHO	World Health Organization
WMO	World Meteorological Organization
WPC	World Power Conference

NOTE

All sums of money are expressed in United States dollars.

PREFACE

1. Article VI.J of the Agency's Statute requires the Board of Governors to prepare "an annual report to the General Conference concerning the affairs of the Agency and any projects approved by the Agency." The present report covers the work of the Agency from 1 July 1959 to 30 June 1960.

2. The Board has under consideration several projects which are not sufficiently advanced for presentation in this report. They will be covered in the annual report of the Board of Governors to the General Conference for the year 1960-61.

INTRODUCTION

General

3. In this document the Board presents its report on the third year of the Agency's work.[1] In its last report the Board informed the General Conference about those programmes of the Agency in which a substantial start had been made and indicated why certain other work, particularly in the supply of source and fissionable materials, was developing more slowly. Since that report various preparatory activities have begun to bear fruit and in most domains the past year has been the first full year of normal operation. At the same time some of the factors retarding the development of the Agency's work in regard to the supply of nuclear fuel have still to be overcome. Before giving an account of progress made, it may therefore be useful to touch upon some of the economic and technical developments which have influenced the scope and content of the Agency's work.

4. One of the main aims of the Agency is to foster the safe use of nuclear power in circumstances in which it promises to be economically competitive. There has been relatively little change in this respect during the past year. The cost of generating electricity from nuclear power plants, although steadily declining, is still substantially higher than that of conventional power except possibly in a few cases in which special factors enhance the price of conventional fuel or permit the operation of nuclear plants in such a way as to offset their higher capital costs. Technological progress has moreover also tended to bring down the cost of conventional power and there have been notable improvements in some parts of the world in the supply of conventional fuels.

5. For these and other reasons the earlier nuclear power plans of a number of countries have been revised and construction of plants is not yet proceeding at the rate foreseen some years ago. The slow growth of demand for uranium for peaceful purposes has contributed to the fact that the world's production of uranium is now beginning substantially to exceed consumption and this has encouraged a trend towards a freer market and declining prices. These factors have also retarded the emergence of the Agency's role as a major supplier of uranium.

6. In a longer perspective, however, the expectation remains that research and technical progress on many fronts will substantially reduce the cost of nuclear power and that reserves of conventional fuel will, at least in some regions, eventually be insufficient to meet the steadily increasing demand. Looking to the future certain technically advanced countries are going ahead with impressive nuclear power programmes and there has been good progress in the construction of nuclear power plants. There are, moreover, indications that nuclear power will shortly be introduced into other parts of the world.

7. In regard to reactor technology a considerable amount of experience has now been gained in operating certain types of reactors. Much work is being done to improve their performance and reduce their costs of operation by detailed technical modifications.

8. On the other hand the cost of research on and development of advanced reactor concepts which are still far from the commercial stage is so high that only very few major industrial countries can command the necessary material resources. Other leading industrial nations are therefore increasingly pooling their scientific man-power and resources in joint undertakings. The possibility of joint ventures in other parts of the world may offer the Agency useful opportunities to play a promoting and co-ordinating role.

9. While it is not likely that nuclear propelled ships will become economically competitive with conventional ships in the near future, progress has been made in the past year with the commissioning of a nuclear propelled ice-breaker and the launching of the first nuclear merchant ship. Moreover, the international problems of safety and liability raised by this new means of propulsion must have immediate attention and the Agency has started its work in this field in co-operation with IMCO.

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[1] For previous reports, see documents GC(II)/39 and GC(III)/73.

10. There has been steady progress in the past year in the other main technology with which the Agency is concerned, namely the use of radioisotopes and radiation sources. In industrialized countries tracer techniques and the use of small radiation sources have become standard practice in many branches of industry, medicine, agriculture and research. While new applications of tracers continue to be found, fundamental new developments are not expected.

11. The growing availability of large sources of radiation now promises, however, to make possible new applications of nuclear science. Thus, for instance, radiation may play an important role in the chemical industry by improving existing processes for the manufacture of synthetics, and by enabling industry to carry out chemical transformations at lower temperatures and pressures than had previously been needed.

12. A major preoccupation at this stage in all uses of atomic energy is the problem of radiation protection. Since there are still wide gaps in the knowledge of the fundamental effects of radiation, a large and co-ordinated research programme is necessary. The problems of radiation protection are also reflected in another part of the Agency's work, namely the elaboration of a series of safety regulations covering all standard applications of nuclear energy and transport of radioactive materials.

13. The effect of these broad economic and technical factors is shown by the place that the Agency's programmes give to research and development, and in particular by the importance the Agency attaches to its task of spreading scientific information on the results of research, and to assisting the less-developed countries to make use of nuclear science and technology. The effect is also shown in the stress placed on the training of experts, on measures to deal with emerging international health and safety problems and on security controls. In brief, best advantage must be taken of the Agency's world-wide membership by using it as a means of improving scientific contact between countries in the vanguard of nuclear research and as a bridge between countries at different levels of development in the application of nuclear technology. The Agency's efforts have been greatly helped by the continued willingness of the major atomic powers to place many kinds of facilities at its disposal and to take an active part in its scientific work.

Some highlights in the work of the last year

14. It is convenient to group the Agency's work into two broad categories: that done for the benefit of individual States particularly in the less-developed areas and that undertaken in the interests of the Agency's membership as a whole.

15. The following examples and figures illustrate the expansion of work in the first group:

(a) The fellowship and exchange programme launched in 1958 has continued to grow. Awards in 1958 amounted to 218, in 1959 to 377 and in 1960 already to 378 During the past year the Agency also arranged or helped a number of special training courses, the first, jointly sponsored by the Agency and FAO, was held at Cornell University in the United States of America, and subsequent courses were held in Argentina, India, Japan and the Belgian Congo. The first arrangement for a visiting lectureship was reported last year;[2] in the period under review 15 such arrangements were made. A detailed survey has also been made of the problems involved in establishing regional training centres in Africa and the Middle East.

(b) The provision of technical assistance in the form of experts' services or equipment generally takes longer to arrange than the award of a fellowship but the year has seen a notable growth in this programme. To assist Member States in planning or developing their atomic energy programmes special composite missions have been sent to 36 countries. Arrangements have been made for 24 experts to assist nuclear energy development in 13 States and for the supply of nuclear science equipment to 17 Member States.

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[2] See document GC(III)/73, paragraph 135.

(c) For the reasons explained in paragraph 5 above, the Agency's function as a source of, or broker for the supply of nuclear fuels and of major items of nuclear equipment has developed slowly. One such project - the supply of three tons of natural uranium to Japan - has however been completed, and the supply of small quantities of enriched uranium, to Austria and Finland respectively, is now being considered by the Board. In consequence the Agency can make much more detailed information available about conditions of supply of enriched fuel. The resources of natural uranium concentrates at its disposal have also been increased by an offer from Spain.

(d) The Agency is also participating in a study by the Finnish Government of the possibility of introducing nuclear power into Finland and will shortly send a small power survey mission to the Philippines.

(e) A start has been made with a novel type of assistance in the form of arrangements for the evaluation by an international group of experts of the hazards of a given nuclear installation. The first evaluation made was that of the DIORIT reactor in Switzerland and since then there have been further requests from the Swiss atomic energy authorities and several enquiries and requests from other Member States. The Agency's staff has also reviewed the draft health and safety legislation of certain Member States.

(f) The main aim of the Agency's research contracts must be to advance scientific knowledge on matters relating directly to the practical use of atomic energy but many of them are also designed to help start or develop national research programmes especially those dealing with matters of interest to the less-developed areas. In the second half of 1959, 39 research contracts to the value of $304 954 were awarded and in the first six months of 1960, 17 further contracts to the value of $126 020 were approved.

(g) The mobile isotope training laboratories donated by the Government of the United States of America are being put to good use in various countries in Latin America and the Far East.

(h) The Agency's scientific staff has also given direct support to Member States by carrying out several small tasks ranging from assisting in the installation of teletherapy units to making preliminary surveys of the use of isotope techniques in studying the hydrology of certain river basins.

Work of general interest

16. There has been a similar growth in the Agency's work of interest to the generality of its Member States. The following are some examples:

(a) During 1959 the Agency held its first two large scientific conferences, one on the Application of Large Radiation Sources in Industry and especially to Chemical Processes (Warsaw) and the other on the Disposal of Radioactive Waste (Monaco). These were the first international meetings on these subjects and they provided useful opportunities to exchange the latest scientific data, to plan future work and, in the case of the conference in Monaco, to focus international attention on problems of world-wide interest and growing magnitude. The Agency's scientific meetings are designed in part to carry forward the work of the First and Second International Conferences on the Peaceful Uses of Atomic Energy held by the United Nations in 1955 and 1958 in Geneva. The Agency has also prepared for the United Nations a detailed scientific evaluation of the second conference to help determine the need, nature and timing of a possible third conference. If the General Assembly of the United Nations decides that such a conference should be convened, the Board considers that the Agency should make a major scientific contribution to the preparation and holding of the conference.

(b) The Agency began to carry out its task of serving as the international clearing house for information on the nuclear sciences and related subjects. About 10 000 pages of scientific and technical manuscript were published in the working

languages of the Agency and 350 000 copies of the Agency's technical publications and pamphlets have been distributed; these included the Agency's first main scientific directories. Preparations have now been made to publish a periodical international journal on plasma physics and controlled thermonuclear fusion.

(c) Much of the planning of the Agency's work is done by convening selected international panels of leading experts on the subject to be discussed. In the period under review, 18 such panels[3] were called together on topics ranging from the metrology of radionuclides and physics of heavy water lattices to the transport of radioactive sources of high activity and of fissile materials.

(d) The foundations of the Agency's main functional laboratory near Vienna were laid in October 1959 and it is hoped to have the laboratory in operation early in 1961. The small laboratory in the Agency's headquarters building has been used for some time for various types of work such as the preparation and intercomparison of radioactive standards, analyses of samples and the development of nucleonic equipment and is now also being used for the training of a small number of fellows in the techniques of sample analysis.

(e) World-wide concern about the hazards of radiation has led to a broadening of the Agency's work on this subject. Work is now progressing on a comprehensive series of safety regulations covering the use of radioisotopes, the transport of radioactive substances of low and high activity, the operation of reactors and the containment and disposal of nuclear wastes by land and sea. Twenty-nine of the 41 research contracts awarded by the Agency in 1959 dealt with radiation protection problems. In a research operation of a different type, the Agency is now evaluating the results of a dosimetry experiment which took place in April 1960 at Vinča, Yugoslavia, with the close co-operation of the Yugoslav authorities and the help of the atomic energy authorities of France, the United Kingdom of Great Britain and Northern Ireland and the United States of America. The experiment is expected to provide further information about the treatment of heavy radiation exposures.

(f) In January 1960 the Board authorized the Agency's laboratory to undertake measurements and analyses, at the request of Member States, of samples of materials contaminated by radioactivity. It also decided that the Agency, in co-operation with UNSCEAR, should make a survey of procedures being followed in certain national laboratories with a view to promoting standardized procedures for collecting and analysing samples.

(g) The legal problems presented by radiation hazards have also received attention; a draft international convention dealing with civil liability for accidents of land-based installations was completed and is expected to be submitted to an international conference early in 1961; work has begun on a similar convention to deal with nuclear ships. Legal matters involved in waste disposal into the sea or international waterways are also receiving active attention.

(h) The complex problems involved in devising principles and procedures for the application of security safeguards and controls have continued to engage the attention of the Board during the past year. Some of the questions of an administrative and political character with which the Agency has to deal in this part of its work are as novel as nuclear technology itself and involve long-standing concepts of international relations and sovereignty. Progress is therefore inevitably slow and uncertain. Although divergencies of opinion persist, the Board has been able to give provisional approval to a set of principles and procedures for safeguards to be applied in connexion with the Agency's own operations, and also to projects it assists and those to which it is invited by Member States to apply safeguards. The Board is submitting these principles and procedures[4] to the General Conference for its consideration at its fourth regular session.

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[3] For a list of the Agency's panels, see Annex XI.

[4] Document GC(IV)/108/Rev.1.

17. The Board expects that the Agency's operations in the coming year will continue in the main along the lines now established, with some expansion particularly in the domain of technical assistance and scientific information and support. This expansion will however depend partly on the willingness of Member States voluntarily to make available greater resources for the Agency's programmes of direct assistance.

18. The Board wishes to draw the General Conference's attention to the help and co-operation that the Agency continues to receive from other international organizations within and without the United Nations family. Since many atomic energy applications are in essence new techniques to be used by industry, medicine, agriculture and in other established categories of economic and scientific activity, co-ordination of the work of the agencies concerned will always be of considerable significance. The full participation of the Agency in the country-programming procedures of EPTA, which began this year, was of importance as a means not only of augmenting the Agency's resources but also of improving co-ordination.

19. More broadly speaking the Agency's relations with other members of the United Nations family are developing smoothly within the framework of the agreements concluded during the past three years and good progress has been made in devising effective standard arrangements for co-operation and for co-ordination of the work of the United Nations agencies concerned with nuclear science.

20. The Board also wishes to draw attention to a development of potential importance for the Agency's work, namely the announcement by the Governments of the Union of Soviet Socialist Republics and the United States of America that they have decided to make arrangements for co-operation in the exchange of information relating to the peaceful uses of atomic energy and to explore the desirability of joint projects. In a joint memorandum the chairmen of the atomic energy commissions of the two countries stated that the Agency will be utilized as the repository of the reports and the results of these exchanges and will be asked to assist in the consideration of possible joint projects, by sponsoring meetings, symposia or studies considered necessary for such planning.

Administrative matters

21. The structure of the Secretariat has remained virtually unchanged during the past year but the number of Member States from which the staff is drawn has now increased to 40 compared with 36 when the last report was submitted. The main problem has continued to be that of finding qualified candidates particularly for the scientific and technical divisions, bearing in mind the need for consideration of equitable geographical distribution. Personnel policies and procedures and the conditions of employment in the Agency have been reviewed in the light of the Agency's special needs.

22. Contributions paid to the administrative fund to finance the regular budget for 1960 amounted to $2 071 864 at 30 June; judging by the experience of the specialized agencies this is approximately the normal rate of payment. The financing of the operational programme of the Agency continues, however, to raise serious problems because of its dependence on voluntary contributions. Uncertainty about the amount that may be pledged and the amount that will actually be paid causes difficulties in planning the programme; in the current year for instance, only $957 837 have been pledged to the General Fund although a target of 1.5 million dollars was set by the General Conference at its third regular session.

CHAPTER I. PLANNING, CO-ORDINATION AND ADMINISTRATION OF THE AGENCY'S WORK

A. The Board

23. During the period under review the composition of the Board changed with the ending on 2 October 1959 of the third regular session of the General Conference, and the third Board held its first meeting three days later. On that occasion it elected Mr. D.B. Sole (Union of South Africa) Chairman and Mr. K. Petrželka (Czechoslovakia) and Mr. I. Fahmy (United Arab Republic) Vice-Chairmen. The composition of both the second and third Board is given in Annex I, part A.

24. Whereas during the Agency's first year the Board was largely concerned with matters of a predominantly administrative character, it was called upon in the course of the Agency's second year, to deal more and more with questions directly related to operational activities. These activities have expanded further during the Agency's third year, particularly as concerns technical assistance, and the Board therefore had to resolve a number of problems of technical complexity. Furthermore, in the period under review, the Board has devoted more and more of its time to the Agency's regulatory functions under Articles III.A.5 and 6 and XII of the Statute. In undertaking these tasks the Board found it expedient to entrust the necessary preparatory work to committees. Details of the various committees set up by the Board are to be found in Annex I, part B; a total of 48 committee meetings were held, and the Board itself held 65 meetings.[5]

B. The Scientific Advisory Committee

25. The Committee held its third meeting on 30 and 31 October 1959 in New York and its fourth meeting on 25, 26 and 27 April 1960 in Vienna.

26. At these meetings the Committee considered a number of questions relating to the Agency's functions and activities, which the Director General had submitted to it. The advice given by the Committee is being taken into account in planning the Agency's activities and, in appropriate cases, has been specifically brought to the attention of the Board.

C. An application for membership of the Agency

27. The Board unanimously decided to recommend the General Conference to approve the application of Ghana for membership of the Agency.

D. External relations

28. During the period under review the Director General, accompanied in certain cases by senior officials of the Secretariat, visited Denmark, India, Japan, Norway, Pakistan, Poland and Thailand with a view to developing further the Agency's relations with the Governments concerned.

29. Close touch with the Governments of Member States has been helped as in the past by the meetings of the Board and its committees, the Scientific Advisory Committee, scientific panels and conferences and in particular by the appointment of Resident

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[5] See Annex I, part C.

Representatives to the Agency.[6] Twenty-five States are now so represented, the number having increased by six (Argentina, El Salvador, Monaco, Portugal, Sweden, Switzerland) in the period under review.

30. With the growth of the Agency's technical work the need has also become apparent for closer and more direct contact with national atomic energy authorities.

The host Government

31. The Austrian authorities have continued to give valuable assistance to the Agency in several ways and in particular by finding additional or more convenient accommodation for its offices and meetings. These latter arrangements are described in detail under the heading of administrative matters.

32. The Austrian Society for Atomic Energy Studies - Studiengesellschaft für Atomenergie - has been particularly helpful by providing land and certain utilities for the Agency's service laboratory at Seibersdorf and it is expected that there will be close co-operation with the Studiengesellschaft in Seibersdorf.

The United Nations

33. The Agency and the United Nations have continued to co-operate on a number of subjects of mutual interest, such as the evaluation of the results of the Second United Nations International Conference on the Peaceful Uses of Atomic Energy, with a view to determining the need for a third such conference. If the General Assembly takes an affirmative decision the Board considers that the Agency should make a major contribution to the scientific side of the conference; for instance in helping to determine its scope, to prepare its programme, select topics for invited papers, arrange for critical review papers and prepare certain of them and by providing part of the scientific staff.

34. Another important matter of common interest is radiation protection; some of the arrangements for co-operation in this sphere have been referred to in the Introduction. The Agency's interest in this matter was recognized again in resolution 1376 (XIV) of the General Assembly of the United Nations in which note was taken of the increasingly close co-operation between UNSCEAR and the Agency, and UNSCEAR was requested, in consultation with the Agency and with a number of specialized agencies, to seek to stimulate the flow of information on the effects of radiation exposure and to encourage studies of such effects. The resolution also invited the Agency and several specialized agencies to consider what assistance they might give in connexion with the receipt and analysis of samples and inform UNSCEAR accordingly.

35. The Agency is also undertaking a number of studies, together with the specialized agencies, on behalf of UNSCEAR, the comprehensive report of that body having itself served as a valuable guide for the Agency's research in this field.

36. The Agency and the United Nations also have a shared interest in the economics of nuclear power production and, under arrangements with the United Nations, the Agency is concentrating its studies on the cost of nuclear power and the United Nations Secretariat on the cost of power from conventional sources. Since these studies are complementary, close and frequent consultations are being held between the two bodies.

37. The Director General presented the annual report of the Agency covering the period from 1 July 1958 to 30 June 1959 to the General Assembly at its fourteenth session and it was discussed in plenary meetings on 3 November 1959. Note was taken of the report in the General Assembly's resolution 1355 (XIV). The Agency was also represented at the twenty-ninth and thirtieth sessions of ECOSOC and at several meetings of other organs of the United Nations.

38. Greater emphasis has been placed, in the last year, on relations with the regional economic commissions of the United Nations in order to familiarize Governments of

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[6] For the list of Resident Representatives, see Annex II.

countries in the less-developed areas with the Agency's programme. Thus, for the first time, the Agency was represented at the eighth session of ECLA and at the second session of ECA. Representatives of the Agency also attended the fourteenth and fifteenth sessions of ECE, the seventh session of the Sub-Committee on Electric Power of ECAFE, and the sixth session of the Committee for Co-ordination and Investigations of the Lower Mekong Basin.

39. The United Nations for its part has co-operated closely in the work of the Agency through the permanent representative (Mr. A. Dollinger, the first permanent representative of the Secretary-General, was succeeded by Mr. Zahir Ahmed on 1 May 1960) of the Secretary-General at the Agency's headquarters as well as by special representation at the third regular session of the General Conference and at various panels and committees of the Agency.

40. A number of specific requests for services have been made to the Agency by members of the United Nations family and organs of the United Nations. Thus, the Agency contributed a survey on the main trends of enquiry in research on, and development and applications of, nuclear energy for peaceful ends to the survey being undertaken by the United Nations, UNESCO and other specialized agencies on the main trends of enquiry in fields of natural sciences pursuant to General Assembly resolution 1260 (XIII). The Agency also participated in the survey of international relations and exchanges in the fields of education, science and culture which was prepared by UNESCO in co-operation with the United Nations and certain specialized agencies, in implementation of ECOSOC resolution 695 (XXVI). In response to ECOSOC resolution 743 D II (XXVII) the Agency submitted a statement giving information on its future programme to the Committee on Programme Appraisals of ECOSOC.

Programme appraisals

41. The Agency's participation in the appraisals which ECOSOC is making of the plans for the next five years of the United Nations and specialized agencies, was arranged at relatively short notice and the Director General, with the authorization of the Board, submitted a tentative outline of trends in the Agency's programme to the Committee on Programme Appraisals of ECOSOC in December 1959.[7] The consolidated report of the Committee is constructed so as to deal functionally with each main field of well-established, economic or social activity (such as exploitation of natural resources, economic development, agriculture, industry, transport, trade, health, education and labour) rather than separately with the work of each agency. This functional approach seemed the one best suited to the purposes of ECOSOC but made it difficult for the consolidated report to give full weight to trends in international atomic energy programmes, which fit only incidentally into the categories of activity. This difficulty was increased by the fact that atomic energy applications themselves are still for the most part at too early a stage to be covered adequately in a five year perspective.

Expanded Programme of Technical Assistance and Special Fund

42. In 1959, which was the first year in which the Agency participated in EPTA, the Agency received a special allocation of $181 060 of which $128 000 were allocated to fellowships and $52 850 to expert assistance and equipment. The requirement that the Agency's programme should be submitted to EPTA's usual programming procedure was waived for the initial year. Additional funds in the amount of $153 090 were subsequently made available to the Agency from the Working Capital and Reserve Fund of the Executive Chairman of TAB to permit the financing of some urgent requests for experts, and also -

[7] The Director General's outline was submitted to a special committee of the Board and reviewed in the light of the comments of that committee. It was made clear to the Committee on Programme Appraisals of ECOSOC however that the outline should not be regarded as binding or as committing the Board, the General Conference or the Member States of the Agency.

as a special measure in the Agency's first year of operation - for fellowships to provide trained local personnel with whom the Agency's experts could later work; from this sum $111 990 were set aside for fellows and $41 100 for experts.

43. In 1960, sub-totals for the Agency amounting to $600 000 were suggested for 30 countries; requests amounting to $515 610 were actually received from 24 countries; five countries informed the Agency that they would not require technical assistance in 1960 under EPTA.

44. For the two-year period 1961-62, TAB at its forty-seventh session agreed upon the Agency's sub-totals for 39 countries; if the Governments concerned accept the sub-totals recommended, the Agency's share in EPTA funds for country programmes for that two-year period will amount to $1 423 150.

45. In addition, TAB agreed that the Agency should retain $110 150 to meet requests for projects of a regional character.

46. The Agency was represented at the second and third sessions of the Governing Council of the Special Fund.

47. No project involving peaceful uses of atomic energy is at present being considered by the Special Fund. However, a number of projects already approved by the Fund are of indirect interest to the Agency in the sense that they may provide examples for subsequent Agency studies or projects or require the participation of the Agency. These include power surveys, river surveys (which may involve the use of isotope techniques in siltation or water flow studies), geological surveys of mineral resources and projects involving the establishment of technical training centres. Consultations are proceeding concerning the form and content of agreements, whereby the Fund could appoint the Agency as the executing agency for projects involving the peaceful uses of nuclear energy, with the object of avoiding any procedural delay when a project is in view.

The Administrative Committee on Co-ordination

48. The Director General attended the twenty-ninth and thirtieth sessions of ACC which were held in October 1959 and April 1960 respectively, and the Agency was represented at all meetings of the Preparatory Committee.

49. In view of its primary responsibility, the Agency was especially concerned with the devising of inter-agency arrangements made under the guidance of ACC, with a view to co-ordinating, within the United Nations family, activities related to the peaceful uses of atomic energy. ACC has invited the Agency to report periodically - on the basis of an exchange of information on programmes - on the combined activities of the United Nations family in this field. This step may well be of particular value, since it will provide the basis on which recommendations can be made whenever necessary for intensification of effort, for the initiation of new projects, or for new arrangements for co-ordination. It is believed that this procedure will help to ensure that the resources available to the United Nations organizations for this work will be used to the best advantage. Some of the many forms of co-operation now under consideration or already arranged for are exchange of advance information on conference programmes and training courses; bilateral or tri-lateral arrangements supplemented by periodical ACC reviews of the results achived; use by other members of the United Nations family of the Agency's operational facilities and scientific services; co-sponsorship of conferences, symposia and other scientific meetings; circulation by the Agency of lists of its research contract awards and placing the results at the disposal of all interested members of the United Nations family; co-ordinated action in the elaboration of health and safety codes and manuals of practice; offers by the Agency to make available its publications as a medium of information to be used by other members of the United Nations family and contributions by the Agency and other bodies to the work of UNSCEAR.

50. The Agency is also participating in most subsidiary bodies of ACC such as CCAQ and CCPI.

Advisory Committee on Administrative and Budgetary Questions

51. The administrative part of the 1960 budget was reviewed by ACABQ, whose comments have proved especially valuable in promoting uniformity of administrative practices and have been taken into account in developing the budget for 1961. ACABQ's report on the 1961 budget was considered and taken note of by the General Assembly at its fourteenth session.

The specialized agencies

52. The relationship agreements with FAO, ICAO, and WMO which were in provisional application when the last report was submitted to the General Conference, [8] came into force on 19 November, 1 October, and 12 August 1959 respectively. The Agency has therefore now concluded six agreements with specialized agencies, those with ILO, UNESCO and WHO having come into force in 1958 and early 1959. Although no formal agreement has as yet been negotiated with IMCO, the two organizations are in close touch with each other on questions of mutual interest, such as nuclear ship propulsion, radioactive waste disposal into the sea and the transport of radioactive materials.

53. Pursuant to these agreements, the Agency and the specialized agencies have been represented at numerous meetings of each other's governing bodies or conferences. Various arrangements have also been made for the joint holding of scientific meetings, training courses and other projects between the Agency on the one hand and ILO, FAO, UNESCO and WHO on the other. All these agencies, as well as ICAO, UPU and WMO have taken part in the work of the Agency's panels.

Regional inter-governmental organizations

54. A number of regional inter-governmental organizations outside the United Nations framework are closely concerned with various aspects of the peaceful uses of atomic energy and their work on subjects of interest to the Agency has continued to grow rapidly. The Board authorized the Director General to co-operate informally with these organizations and a considerable amount of information is now being exchanged on matters of mutual interest and particularly on questions related to health and safety. In a number of cases the Agency and the organizations concerned have been represented at each other's technical meetings, panels and working groups. The Agency, for example, participated in a symposium on technical methods on health physics convened by ENEA of OEEC in May 1959; it was represented at a meeting on automatic documentation held by EURATOM in February 1960 and at an inter-American symposium on the peaceful application of nuclear energy, which was held in 1959 under the auspices of OAS.

55. As in former years observers from the following organizations were invited by the Board, in pursuance of the authority given by the General Conference, [9] to attend the third regular session of the General Conference:

(i) The European Organization for Nuclear Research;

(ii) The Joint Institute for Nuclear Research;

(iii) The European Nuclear Energy Agency of OEEC;

(iv) The European Atomic Energy Community;

(v) The Commission for Technical Co-operation in Africa South of the Sahara; and

(vi) The Organization of American States.

56. Early in 1960 the Director General was approached by ENEA and by CCTA with a request to examine whether the negotiation of an agreement for co-operation between these two organizations and the Agency could be envisaged.

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[8] See document GC(III)/73, paragraph 74.

[9] See document GC(III)/RES/45.

57. The Agency is also in contact from time to time with other inter-governmental organizations whose work touches incidentally that of the Agency. Thus, for instance, in elaborating recommendations for the transport of radioactive materials, the Agency co-operates with bodies such as the European Conference of Ministers of Transport, the Customs Co-operation Council, the International Bureau of Weights and Measures and the Central Office for International Railway Transport, and in dealing with problems of waste disposal, with bodies such as the International Commission for Scientific Research into the Mediterranean Sea. Representatives of such organizations are invited to send observers to Agency panels on specialized subjects in which they are interested. They contribute their technical advice to the formulation of recommendations of those panels and to the drafts that are thereupon circulated to Governments for comment.

Non-governmental organizations

58. By 30 June 1960 consultative status had been granted to 14 non-governmental organizations (seven in May, two in September 1959, three in January, one in April and one in June 1960), three further formal applications had been received and a number of non-governmental organizations had expressed an interest in acquiring consultative status with the Agency. The Board's action in response to General Conference resolution GC(III)/RES/47 regarding the grant of consultative status to the World Federation of Trade Unions is dealt with in a separate report to the General Conference.

59. In compliance with the Rules on the Consultative Status of Non-Governmental Organizations with the Agency,[10] various standard arrangements for consultation with non-governmental organizations have been made within the Secretariat and a liaison officer for non-governmental organizations has been appointed. All such organizations having consultative status with the Agency are now being kept informed of the Agency's activities of interest to them, and with their help, knowledge is being spread about the Agency's work. In cases where the interest of the organization in the Agency's work is particularly direct, for instance, in the case of non-governmental organizations concerned with science, technology and the economics of electric power production such as ICSU, ICRU, ICRP, ISO, WPC and UNIPEDE, relations with the Agency have been close. Closer relations are also expected with non-governmental organizations representing trade unions and thus interested in the problems of radiation protection, such as ICFTU and IFCTU, commercial or co-operative economic interests, such as ICC and ICA and transportation matters, such as IUIN. WFUNA has helped to make the Agency's work familiar to the public and the United Nations Associations in various parts of the world.

60. Scientists designated by non-governmental organizations have frequently taken part in the Agency's scientific meetings, for instance, ISO and WFUNA were represented at the Conference on the Application of Large Radiation Sources in Industry (Warsaw) and ICC, ICA and ICRP at the Conference on the Disposal of Radioactive Waste (Monaco). ICRU actively co-operated in the scientific preparations for the Agency's Symposium on the Metrology of Radionuclides (Vienna).

61. In general the arrangements for consultative status are beginning to make a useful contribution to the Agency's work by enabling it to ascertain the views of group interests or draw upon the expert knowledge and help of organized groups of scientists. Thus, for instance, the Agency is following the basic recommendations of ICRP in regard to maximum permissible exposures to radiation in formulating its own health and safety regulations. Mention should also be made of the part taken by UNIPEDE in studying nuclear power costing problems at the Agency's panel on this subject. As part of this process of technical consultation members of the Agency's Secretariat have attended a number of technical conferences organized by non-governmental organizations, such as WPC and the meetings of the Technical Committee of ISO on nuclear energy. These meetings and other direct contacts have afforded an opportunity for planning co-operation and for making arrangements to avoid unnecessary duplication of work.

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[10] INFCIRC/14.

E. The administration of the Agency

Personnel matters

62. At 30 June 1960, the staff of the Agency, including candidates who have accepted offers of appointment and will report for duty shortly, was composed of 194 staff members in the Professional category and above and 271 staff members in the General Service category, as compared to 170 staff members in the Professional category and above and 254 staff members in the General Service category at 30 June 1959.

63. The number of nationalities represented among that portion of staff which is subject to geographical distribution is 40, compared to 36 at the same date last year.

64. The contractual status of the present staff is as follows:

(a) Professional category and above

Permanent and probationary appointments	46	
Fixed-term appointments	141	
Secondment from other international organizations	7	194

(b) General Service category

Permanent and probationary appointments	165	
Fixed-term appointments	106	271

65. As in previous years, the recruitment of staff for vacant posts has continued on prudent lines. The difficulty, particularly in the scientific and technical fields, of finding and obtaining the release of qualified candidates while, at the same time, respecting the requirements of equitable geographical distribution, has also led to a somewhat slower rate of recruitment than originally expected.

66. Continued efforts have nevertheless been made to find qualified staff. The Director General has, for instance, addressed a circular letter to Member States asking them to submit the names of candidates with the requisite qualifications and standing for the posts of divisional directors which may be expected to become vacant during 1960 and 1961. Though the response to this request was not as full as hoped, the names of a limited number of candidates meriting serious consideration have been obtained.

67. Close attention has been given to the conditions of service of the staff. The staff regulations and rules of the Agency, including travel rules and various personnel procedures, have been under constant scrutiny with the object of developing policies most suitable to the Agency's special needs.

68. During the period under review, the Agency has participated more actively in inter-agency consultations on general administrative and personnel policy matters.

Financial matters

(a) General

69. Contributions paid to the administrative fund to finance the 1960 regular budget amounted to $2 071 864 by 30 June 1960. Judging by the experience of the specialized agencies, this is approximately the normal rate of payment.

70. The financing of the operational programme of the Agency continues, however, to raise serious problems, because of the voluntary nature of contributions to the General Fund. The uncertainty regarding the total amount that will be pledged in any given year, and the amount that will actually be paid, has made it difficult to plan the operational programme. In the current year, for example, only $957 837 have so far been pledged to the General Fund against the target of $1.5 million fixed by the General Conference at its third regular session, and only $745 172 have been paid.

(b) Administrative receipts and expenditure in 1959

(i) Receipts in 1959

71. The total assessed contributions from Member States towards the 1959 budget amounted to $5 225 000. By 31 December 1959 the Agency had received payments in respect of contributions to the 1959 regular budget amounting to $4 722 638. Of this amount, however, the sum of $89 870 represented over-payments made by Member States as a result of the adoption of the revised scale of assessments for 1959. The amounts overpaid have been credited towards individual assessments for 1960.

72. The amount paid by 30 June 1960 was $4 864 024 or 93.09 per cent of the 1959 budget. Individual contributions to the 1958 and 1959 regular budgets still outstanding on that date are shown in Annex III.

(ii) Expenditure in 1959

73. Expenditure during the financial year 1959 amounted to $4 494 610, leaving a gross budgetary surplus of $769 748 which was made up as follows:

Budgetary savings	$730 390
Miscellaneous income	$39 358
Gross budgetary surplus for 1959	$769 748

(iii) Transfers between sections of the 1959 budget

74. No further transfers between sections of the 1959 budget, apart from those listed in the last report of the Board to the General Conference,[11] were necessary.

(c) 1960 regular budget

(i) Scale of assessments for 1960

75. During its third regular session the General Conference decided to discontinue the practice followed in previous years of adopting two scales of assessments for a particular financial year, a provisional and a final, and adopted a single scale of assessments for 1960 based on that adopted by the United Nations for the periods 1959-61, adjusted to take account of the different membership of the Agency.[12]

(ii) Receipts of contributions for 1960

76. By 30 June the following amounts had been received from Member States towards the Working Capital Fund and the 1960 regular budget:

Advances to the Working Capital Fund	$1 992 400
Contributions to the 1960 regular budget	$2 071 864

77. By 30 June 1960 Member States had thus paid 99.62 per cent of the total advances due to the Working Capital Fund and 35.46 per cent of the total contributions due to the 1960 budget. A table showing the payment of contributions to the 1960 budget and advances to the Working Capital Fund by the above date is given in Annex IV.

(iii) Transfers between sections of the 1960 budget

78. By the second quarter of 1960 it was clear that if funds could be made available from other sections of the budget it would be highly desirable to utilize such funds to further the Agency's research programme. Experience has shown that in the field of atomic energy

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[11] See document GC(III)/73, paragraph 103.

[12] See GC(III)/RES/50.

research a majority of the projects require three years to complete. Because of this, almost all of the funds available for research contracts in the 1960 budget approved by the General Conference, will be required to renew contracts which were awarded in 1958 and 1959. In order to permit the orderly growth of this programme planned for 1960, the Board approved a transfer of $102 500 to this section of the budget from other sections in which savings are expected in 1960.

79. On the basis of experience in the latter half of 1959 and the early months of 1960 it is apparent that postage and airpouch costs will greatly exceed the estimates of these expenses which are included in the section for common services in the 1960 budget. The increased costs are due not only to a greatly expanded volume of correspondence but also to the fact that in February 1960 Austrian postal rates were increased by 25 per cent. The Board therefore approved the Director General's request for an increase in the budgetary section for common services of $24 000.

80. The increases and corresponding decreases are tabulated below.

Item	Appropriation	Increase (Decrease)	Adjusted appropriation
	$	$	$
Scientific and technical services, supplies and equipment	400 000	102 500	502 500
Common services	183 000	24 000	207 000
General Conference	317 000	(50 000)	267 000
Board of Governors	534 000	(35 000)	499 000
Salaries and wages	2 343 000	(41 500)	2 301 500

(d) Operational expenditure

(i) Contributions to the General Fund in 1959

81. A total amount of $1 183 044 was pledged during 1959 to the General Fund, of which $1 121 281 had been paid by 31 December 1959.

82. By 30 June 1960 a further amount of $46 875 had been received, leaving a balance of $14 888 still to be paid. Amounts pledged and paid by individual Member States are shown in Annex V.

(ii) Operational expenditure in 1959

83. Operational expenditure during 1959 amounted to $592 637, including unliquidated obligations as at 31 December 1959 amounting to $466 285.

(iii) Contributions to the General Fund in 1960

84. The total amount pledged to the General Fund for 1960 as at 30 June 1960 was $957 857.

85. A table showing the amounts pledged and paid to the General Fund for the current year is shown in Annex VI.

Legal matters

86. As in former years, part of the legal work done during the period under review was connected with the technical and administrative operations of the Agency and is reflected in other parts of this report. Thus a number of agreements were concluded for the provision of technical assistance by the Agency either from its own budget or under EPTA,

for the use of the Agency's mobile isotope laboratories, for the carrying out of research under contract with the Agency and for the provision of funds to the Agency by Member States to aid such research, and for the holding of conferences outside the headquarters' State.

87. The Agreement on the Privileges and Immunities of the Agency, [13] which largely follows the Convention on the Privileges and Immunities of the specialized agencies, was approved by the Board on 1 July 1959, and in accordance with Section 38 of the Agreement, has been communicated to all Member States for their acceptance. Until now no instruments of acceptance have been deposited with the Director General.

88. On 1 April 1960 the Board adopted a design for the Agency's emblem and seal. [14] The Board recommended that Member States should take appropriate measures to prevent the use of this design without written authorization by the Director General and also requested the Director General to take the necessary action to secure full protection for the Agency's name, emblem and seal.

89. As required by Article XXII. B of the Statute and by the Regulations for the Registration of Agreements [15] adopted by the Board, the agreements entered into by the Agency with Member States and with organizations have been registered with the Agency, and, if required, with the United Nations. No agreements between Member States have as yet been submitted to the Agency for approval under Article XII. B of the Statute. As required by Article VI of the Regulations, the Director General has communicated to the Members and to the Secretary-General of the United Nations a list of the agreements registered with the Agency.

Other administrative matters

90. A beginning has been made with the renovation of the building adjacent to the Agency's temporary headquarters (the old Grand Hotel), which has been made available by the Austrian Government. The Government is also bearing the major share of the costs involved. The building will contain meeting facilities for the Board, accomodate small scientific conferences, provide space for the Secretariat services which are now housed in the Neue Hofburg and allow for some future expansion. The location of the Secretariat in a single building will simplify its work and should reduce expenses.

91. No site has as yet been selected for the Agency's permanent headquarters and the Austrian Government has been requested to keep several appropriate sites in Vienna available until a final decision can be made.

92. The Austrian authorities are co-operating with the Secretariat in the attempt to solve the acute problem of providing adequate housing for members of the Agency's staff. Two apartment projects, containing approximately 75 family units, will be made available in the course of 1961 and 1962 by the municipality of Vienna and negotiations are in progress with the federal authorities to find additional means of finally solving this problem by 1962 at the latest. Until 1961 the Austrian Government has kindly put a limited number of housing units at the Agency's disposal.

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[13] INFCIRC/9/Rev.1.

[14] INFCIRC/19.

[15] INFCIRC/12.

CHAPTER II. THE OPERATIONS OF THE AGENCY

A. General

93. Although this chapter is intended to cover operations actually undertaken during the period under review, brief allusions have inevitably been made to some activities planned for the succeeding period. The detailed proposals for these activities are contained in the Programme and Budget for 1961.[16]

94. Some of the operations of the Agency are described in this chapter within the context of more than one activity. Thus, for example, the use of radioisotopes, mentioned under the heading of scientific conferences, are alluded to again in the sub-chapter on isotopes and research. An attempt has been made to keep such duplication to the minimum.

B. Technical assistance activities

Background

95. During the period under review, requests to the Agency for technical assistance have become more numerous and more varied. By participating in the machinery of the United Nations family for the provision of technical assistance, the Agency has been able to ensure a more rational use of available resources and to benefit from the experience gained by other participating organizations and by TAB itself. The headquarters staff of TAB and the resident representatives of TAB in the field have also given valuable assistance to the Agency not only in connexion with technical assistance financed under EPTA, but also with regard to the Agency's regular technical assistance programme. In addition, the United Nations and the specialized agencies concerned are consulted whenever requests are received by the Agency for assistance in matters within their competence.

96. At the request of the General Conference, [17] the Board of Governors established, for presentation to it at its fourth regular session, guiding principles and general operating rules to govern the provision of technical assistance by the Agency. In establishing these rules, the Board has given due consideration to the factors stressed in the resolution and, mindful of the special character of the Agency's operations and the views of Governments requesting technical assistance, has also taken into account the need for a high degree of harmonization with the practices of the United Nations, EPTA and of other international organizations.

Resources available [18]

97. The resources at the disposal of the Agency for carrying out its technical assistance programmes are of three kinds, namely:

(a) Voluntary financial contributions to the General Fund;

(b) Donations in kind, including the provision of the services of experts, the granting of fellowships and scholarships at national institutions of Member States and the supply of equipment; and

(c) Funds made available to the Agency as a result of its participation in EPTA.

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[16] Document GC(IV)/116.

[17] See GC(III)/RES/46.

[18] See document GC(III)/73, paragraphs 117 - 119.

(a) Voluntary financial contributions

98. The target figure for the Agency's General Fund for the financial year 1960 was the same as for 1959, i.e. 1.5 million dollars.

99. The total amount pledged to the General Fund for 1959 was $1 183 044 of which $1 168 156 had been paid by 30 June 1960. A detailed statement of pledges and payments to the General Fund for 1959 is shown in Annex V.

100. By 30 June 1960 the total amount pledged to the General Fund for 1960 was $957 837; of this sum $745 172 had been paid. A statement on pledges and payments to the General Fund for 1960 is shown in Annex VI.

(b) Donations in kind

101. During the period under review the Agency had been offered 194 - 205 fellowships and scholarships at institutions in Member States; a list of offers of Type II fellowships and scholarships is given in Annex VII.

102. Seventeen States have made experts available to the Agency; a list of these offers is given in Annex VIII.

103. Equipment had been donated to the Agency by four Member States during the period under review. A list of the equipment is given in Annex IX. It includes the offer by the United States of America of equipment up to a value of $200 000.

(c) EPTA funds

104. In 1960, sub-totals for the Agency had been suggested in the case of 30 States, amounting to a total of $600 000; requests were actually received from 23 countries to a total of $515 610; five countries informed the Agency that they would not be requiring technical assistance in 1960 under EPTA.

105. The action taken by the Board with regard to the funds allotted to the Agency for administrative and operational services costs in 1960 is dealt with in a separate document.

Fields of assistance

106. The Agency is rendering assistance in connexion with the following activities: ore prospecting; mining and processing; fabrication and processing of nuclear fuels; nuclear research laboratories and research centres; nuclear research, scientific studies and laboratory services; nuclear reactors; uses of radioisotopes; safety of nuclear installations, including waste disposal; health and protection against radiation; safeguards; library and documentation services, and atomic energy legislation. Beginning in 1960 the Agency is also giving technical assistance in the measurement of radioactive contamination.

Kinds of assistance

107. The Agency's technical assistance activities, like those of other members of the United Nations family, consist primarily of:

(a) The provision of the services of expert advisers;

(b) Fellowships, exchange and training; and

(c) The provision of limited quantities of technical equipment.

In addition, the Agency places research contracts in Member States. Apart from the intrinsic value of the results, this encourages and assists research in national and regional institutions. The Agency also sends staff members, in an advisory capacity, on short visits to Member States and provides the facilities for scientists and administrators from Member States to visit the Agency's headquarters.

C. Technical assistance other than exchange and training

Preliminary surveys

108. When the Agency began its operations in 1958, many of its Member States were at an early stage in the development of their programmes for the peaceful uses of atomic energy and in some instances planning had not yet begun. Close contacts had not been established between the Agency and the authorities in charge of atomic energy activities in Member States. Since provision of technical assistance on a large scale often involves a considerable amount of preparatory work both by the requesting State and by the Agency, preliminary advice on many subjects was needed in several Member States. Accordingly, one of the Agency's first actions was to despatch preliminary assistance missions and to make preparatory surveys.

109. Under the Agency's programme for 1959, four preliminary assistance missions, organized in consultation with the United Nations and the interested specialized agencies, were despatched to Member States at their request. They studied the needs of the countries concerned with regard to the organization of atomic energy activities; education and training; reactor programmes; radiochemistry; applications of radioisotopes in agriculture and medicine; health physics; power and energy and prospecting, mining and processing of nuclear raw materials. The missions visited the following 16 countries: Afghanistan, Brazil, Burma, Ceylon, China, Indonesia, Iran, Iraq, Japan, the Republic of Korea, the Philippines, Thailand, Turkey, Venezuela, Viet-Nam and Yugoslavia.

110. In 1960 a preliminary assistance mission visited the Federation of Mali, Greece, Ivory Coast, Morocco, Sudan and Tunisia. A further preliminary assistance mission is scheduled to visit Latin America later this year.

111. The missions were composed of scientists from the Agency's staff supported by scientists seconded, free of charge, by Member States. Each mission had about eight members. The objectives of the missions were:

(a) To give information about the Agency's programme and activities;

(b) To establish close relations with national authorities concerned with atomic energy;

(c) To collect technical information on nuclear activities and plans;

(d) To advise on the development of programmes for the peaceful applications of atomic energy; and

(e) To give guidance about requests for technical assistance from the Agency.

112. Most of the requests for experts, equipment and research contracts received from Member States have taken final shape after consultation with the preliminary assistance missions. Useful direct contacts with applicants for fellowships were also established. A most valuable result of the missions has been the close contacts which have been established with the governmental organizations, universities and research establishments responsible for the development and applications of atomic energy.

113. Smaller missions, composed of two or three members, have been sent to Member States in connexion with specific technical assistance requests. Argentina, Greece, Finland, Iceland, Morocco, Pakistan, Tunisia and the United Arab Republic were visited by such missions, which were equally successful in achieving their more limited objectives. Useful consultations about the Agency's work and the assistance it can give were also held with the Governments of the Belgian Congo, Israel, the Federation of Rhodesia and Nyasaland and the Union of South Africa by missions sent for other specific purposes.

Expert advice and assistance on specific projects

114. Under the Agency's operational programme the Board, in 1959, approved requests for technical assistance involving the services of 32 field experts for a total period of 357 man-months. Six of these experts have now completed their assignment, while most

of the remaining 26 experts are still in the field. Under the Agency's operational programme for 1960, the Board has approved requests involving the services of 24 experts for 202 man-months. In addition, the Agency is implementing during 1960 a field programme under EPTA involving the services of 26 experts for a total of 180 man-months.

Training and exchange

115. A description of the technical assistance activities that the Agency undertakes with respect to the exchange and training of scientists and experts is given in Section D below.

Equipment and supplies

116. Since it is rarely possible to carry out research or development in the nuclear field without a considerable amount of specialized equipment, requests for the services of experts are often accompanied by requests for equipment. The Board has recognized that equipment plays a more important role in the field of atomic energy than in most other fields of technical assistance and that a less-developed country embarking on an atomic energy programme will be confronted with the need to make a substantial investment in foreign currency. The Board has therefore decided that the general practice for the provision of equipment and supplies followed under EPTA should be followed in a flexible manner with regard to projects under the Agency's programme.

117. Under the Agency's operational programme the Board approved in 1959 requests from eight Member States for scientific and technical supplies and equipment, totalling an estimated value of $125 000. Under the 1960 programme, requests have been received for equipment and supplies worth about $500 000. It is doubtful, however, whether the Agency's resources, even when taking into account the offer by the United States of America of equipment up to a value of $200 000, will be sufficient to meet more than a part of these requests.

Assistance for research

118. A description of the Agency's technical assistance activities undertaken with respect to research is given in paragraphs 184 to 192 below.

Advice given by members of the Agency's headquarters' staff

119. A high proportion of the Agency's staff consists of qualified scientists in the various branches of atomic energy. These staff members have been called upon to give advice on a multitude of specific problems, either by correspondence or during short visits to Member States undertaken for that purpose. Advice has, for instance, been given on various applications of radioisotopes, on the design and construction of laboratories and on problems connected with health, safety and waste disposal. Advice has also been given by the Agency's legal experts on legislative, regulatory and administrative problems connected with atomic energy and on questions of insurance and third party liability.

D. Exchange and training of scientists and experts

Background

120. As in the previous year, the Agency's activities, designed to lessen the shortage of scientific and technical personnel, particularly in less-developed areas, can be divided into the following five main categories:

(a) The fellowship programme;

(b) The exchange programme for professors and experts and arrangements for the services of consultants;

(c) The survey of available facilities in Member States;

(d) The study of the need for the establishment of regional training centres; and

(e) The initiation of special training courses and seminars on problems connected with education in nuclear energy.

Available resources

121. The resources that are available for the implementation of the exchange and training programmes are those indicated in paragraphs 101 and 102 above, under the resources available for the Agency's technical assistance activities in general. The fellowships proffered by certain Member States for training at their national institutions are classified as Type II. In 1959 a sum of $680 000 was available for the training and exchange programmes. This amount was obligated as follows:

Item	Amount in dollars
146 Type I fellowships	370 000
142 Type II fellowships	13 000
37 fellowships in 1958 financed through EPTA funds	79 000
57 fellowships in 1959 financed through EPTA funds	161 000
1 research grant	13 000
8 exchange scientists	26 000
2 training courses	18 000

122. As in previous programmes, the type and scope of the training offered, as well as the extent of financial support, varies widely from relatively short courses to complete five-year university training.

123. The General Conference approved an amount of 1.1 million dollars in the 1960 Budget for the exchange and training programmes. The Board consequently approved expenditure for the first half of the year of $862 700 which will be obligated as follows:

Item	Amount in dollars
Type I fellowships	540 000
Type II fellowships	12 000
EPTA fellowships	210 700
Research grants	24 000
Exchange scientists	64 000
Training courses	12 000

124. The statistical summary of the 1959 fellowship selections and placements is as follows:

Item	Number of candidates	Number of nominating countries	Number of host countries
Nominations received	576	45	
Selected for placement	377	43	28
Accepted by host countries	296	41	27
Still studying	160	27	18
Study completed	14	11	7

125. During the period under review a number of fellows under the 1958 programme continued or completed their studies. Details are as follows:

Item	Number of candidates	Number of nominating countries	Number of host countries
Still studying	97	24	14
Study completed	53	17	11

The 1959 fellowship programme

126. In December 1958, the 1959 fellowship programme was initiated and Member States were requested to submit nominations. A total of 577 nominations was received.

The 1960 fellowship programme

127. Application forms and documentation concerning this year's fellowship programme and the training opportunities available in Member States were circulated to all Member States late in 1959. The last date for the receipt of applications was set as 15 February, 1960, it being understood that this applied primarily to placement in academic institutions. Applications received after that date would be considered as long as funds and openings for training were available.

128. The total number of applications received by 30 June 1960 for the 1960 programme amounted to 626 from 42 Governments, including six nominating for the first time. The fact that better qualified candidates presented themselves and the improved procedures for their selection will result in a more effective programme than in 1958 and 1959.

129. The applications received were processed by the Selection Panel of the Division of Exchange and Training. Placement of the candidates is in some cases retarded by the inevitably complex procedure involved, which includes correspondence between the Agency, the candidate, the nominating Government and authorities in the prospective host country. This last stage of the procedure is therefore under study in an endeavour to reduce these delays as much as possible.

The exchange programme

130. This programme, which provides for the exchange of visiting professors, scientists, engineers and other specialists to give courses or lectures, or to teach the techniques required for undertaking specific types of research, is meeting with an increasing response. The experts and consultants who have been sent to Member States on the latters' request have been able to give useful advice on the training of technical and scientific personnel.

131. Since the request by Greece for a lecturer in radiochemistry [2] several more requests have been received and 17 professors have been sent on visits to Member States on their invitation for periods varying from several weeks to one year. The countries concerned are: Argentina (4), Austria (2), Belgian Congo (1), Chile (1), China (2), Japan (2), United Arab Republic (1), Venezuela (1) and Yugoslavia (3). A number of additional requests are under consideration and are expected to be met in the near future.

Training centres and courses

132. As a result of the request of the Board to the Director General, a survey mission was despatched to the Belgian Congo, Greece, Israel, the Federation of Rhodesia and Nyasaland, Tunisia, Turkey, the Union of South Africa and the United Arab Republic, to make a further study of the problems involved in establishing one or more radioisotope training centres in the area of Africa and the Middle East. At its meetings in June 1960 the Board considered the report of the mission and decided to endorse the request of the Government of the United Arab Republic for the establishment in Cairo of a Middle Eastern regional radioisotope training centre for the Arab countries subject to the provisions that the Director

General arrange a series of training courses in Cairo and report to the Board on a draft project agreement in the light of the results of these courses. The Board decided to defer until September requests from Belgium (on behalf of the Congo), Greece and Turkey for the establishment of such centres and an offer by Israel to act as host for such a centre if the Board so wished.

133. Pursuant to proposals made by the General Conference at its second regular session on the utilization by the Agency of the services and experiences of existing research centres and of other sources of information, and on the training of specialists in the use of radioisotopes, [19] the Agency has continued to give assistance to Member States in organizing training courses, refresher courses and seminars, particularly those that were organized on an international or regional basis. Where the topics discussed have had a bearing on the work of one or other of the specialized agencies, arrangements have frequently been made for joint sponsorship. The organization of such specialized training courses requires elaborate preparation and co-operation with other bodies such as universities and scientific organizations. The first course of this kind was held from 20 July to 10 September 1959 under the joint sponsorship of the Agency and FAO and in co-operation with the Government of the United States of America and Cornell University. It was the first internationally organized training course on radioisotope techniques to be designed specifically for the needs of research workers in agriculture, forestry, fisheries and nutrition. From 9 November to 18 December 1959 an international training course on the application of radioisotopes to medicine and agriculture, for Latin American countries, was held in Buenos Aires on the invitation of the Government of Argentina. In co-sponsorship with UNESCO a similar course was held in New Delhi, India, from 20 January to 16 February 1960 on the application of radioisotopes in agricultural research. Another course is being planned for November in Trombay, India, and will be concerned with reactors.

134. A visiting professor has been sent to Leopoldville, Belgian Congo, in connexion with a course on the application of radioisotopes in medicine which CCTA organized there with the help of WHO in May/June 1960.

135. In view of the success of the training courses on the application of radioisotopes in agricultural research, it is proposed to organize a similar course in Europe; it is expected to take place in Wageningen, Netherlands, in the spring of 1961.

136. On the invitation of the Greek Government the Agency is preparing to organize a series of lectures on the application of carbon-dating methods to archaeological research. These lectures are designed to explain the principles involved, the possibilities and limitations, the search for errors, the importance of good sampling and the actual methods.

137. Upon the request of the Government of Israel a training course on radiobiology and the application of radioisotopes in medicine will be organized in that country in 1961.

138. A Seminar on Atomic Energy and its Educational Problems was held at Saclay, France, on the invitation of the French authorities in July 1959. It is planned to organize a similar meeting on the same subject, but of regional character, in 1960 in San Carlos de Bariloche, Argentina, where the problem of scientific and technical education in connexion with atomic programmes will be discussed.

Research and special grants

139. The assistance given by the Agency under the exchange programme also takes the form of research and special grants to scientists. Research grants are intended mainly for scientists with considerable research experience who are working in their own countries on promising lines of research which cannot be fully developed without outside help because of lack of equipment, laboratory facilities, etc. In 1959, one such grant was made to an Indian scientist who wished to continue his research work at an institute in the United States of America. By 30 June 1960, three more applications had been received and are now being processed.

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[19] See GC(II)/RES/29.

140. Special grants are mainly intended for university graduates who, after completing the studies for their doctor's degree in a subject related to atomic energy, wish to expand their scientific or technical background by attending special courses abroad or carrying on theoretical or experimental research.

E. Exchange of information and conferences

Background

141. The Agency's efforts to promote the exchange of information on the peaceful uses of nuclear energy and itself to distribute information on this subject have in the main taken the form of the organization of scientific meetings, the publication of books, brochures, journals and pamphlets, the circulation of various kinds of information material and the extension of library services.

Scientific meetings

142. The Agency's scientific meetings cover a wide range of subjects which are selected from proposals made by scientists both on the Agency's staff and outside it. Furthermore, before the conference programme is finalized, it is submitted to SAC.

143. Experts from the Agency's Member States are invited to submit papers at these meetings and ample time is provided for discussion.

144. The following scientific meetings were held in the latter part of 1959:

(a) A Conference on the Application of large Radiation Sources in Industry and especially to Chemical Processes;

(b) A Symposium on the Metrology of Radionuclides; and

(c) A Conference on the Disposal of Radioactive Waste (co-sponsored by UNESCO).

145. In the period under review the Agency's programme for the organization of scientific meetings has expanded considerably. Thus in 1960, in addition to the two major conferences that will be held in September, twelve symposia and seminars have been planned, of which, at the end of the reporting period, three will have taken place. [20] In accordance with the recommendation made by the General Conference at its second regular session, that scientific meetings of the Agency should be organized as far as possible in different parts of the world, [21] the Agency's plans provide for the holding of a Conference on the Use of Radioisotopes in the Physical Sciences and Industry in Denmark, several symposia in Czechoslovakia, the Federal Republic of Germany, India, Italy and Thailand, and a seminar in Brazil. It is encouraging that so many Member States are willing to accept the administrative and financial responsibilities of being host to an Agency meeting; this enables scientists from certain areas to participate in these meetings who might not otherwise have been able to do so. The holding of scientific meetings outside Austria also contributes materially to the publicity received by the Agency's activities. The meetings held by the Agency after June 1959 are described elsewhere in this report in connexion with the subjects covered by them.

146. At two-monthly intervals the Secretariat publishes lists of conferences, meetings and training courses organized by the Agency as well as by other organizations and national institutions. Three thousand copies of each edition of this list are distributed to Member States and, on request, to scientific organizations and individual scientists.

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[20] A list of the Agency's conferences, symposia and seminars during the period under review is given in Annex X.

[21] See GC(II)/RES/28.

Scientific and technical publications

147. The Agency's publications can be divided into the following main categories: proceedings of conferences, symposia, seminars and panels; directories of equipment compiled from information received from Member States; manuals of a regulatory character; serial and periodical publications, and a scientific journal on fusion. [22]

148. Whereas in 1959 approximately 4 000 pages of manuscript, totalling 11 books and 35 brochures were published, and another 4 000 pages were edited and prepared for printing, it is estimated that in 1960 up to 6 000 pages of manuscript will be devoted to conference proceedings alone. In addition, approximately 6 700 manuscript pages will be published as further volumes of the Directory of Nuclear Reactors, and the International Directory of Radioisotopes, further issues of the Safety, Legal, Review, and Bibliographical Series, reports of preliminary assistance missions, conference lists, world lists, publications catalogues and various other miscellaneous brochures and leaflets. In addition, the Journal on Plasma Physics and Thermonuclear Fusion will be produced as a quarterly.

149. The interest of the scientific public in the Agency's publications has grown rapidly, and the reaction to these publications was in general favourable. The sales of books compare very well with those of the specialized agencies.

150. Continuous attention is paid to the desirability of translating the Agency's publications into as many of the Agency's working languages as is feasible within the limitations set by the available funds and manpower. In addition, a considerable number of translations into languages other than the Agency's working languages have been made.

151. The increase in the Agency's publications has offered an additional opportunity for the library to exchange material with individual scientists, with libraries in Member States, particularly those of atomic energy institutions, and with international organizations.

152. In accordance with resolution GC(III)/RES/53 adopted by the General Conference at its third regular session, a Publications Revolving Fund was established and revenues from sales have been credited to it since 1 January 1960.

Scientific documentation

153. The Agency is being increasingly called upon to provide information on various subjects in the nuclear energy field. At the request of scientists both in Member States and in the scientific divisions of the Secretariat, 16 bibliographies and lists of references were prepared. In addition, five bibliographies have been or will be published during 1960 as individual issues in the bibliographical series, covering the following subjects: the application of high-energy radiations in therapy; nuclear reactors; materials, instruments, methods and procedures used in nuclear science and technology; moderators, and nuclear propulsion. An attempt is being made to co-ordinate the preparation of bibliographies between the Agency and Member States.

154. The List of References on Nuclear Energy has been appearing twice monthly since September 1959. The first four issues appeared as the Review Series during the period under review. For this series the co-operation of prominent scientists from Austria, Belgium, Canada, Czechoslovakia, France, the Federal Republic of Germany, the Netherlands, Switzerland, the Union of South Africa, the United Kingdom of Great Britain and Northern Ireland, the Union of Soviet Socialist Republics and the United States of America has been obtained and 35 agreements relating to the preparation of reviews during 1960-61 have been signed. Discussions have started with international and national organizations in an attempt to establish a uniform system for the scientific classification of information in the field of atomic energy, and work on the systematization of the scientific material received by the Agency has continued.

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[22] A list of the Agency's publications, which will be available by 30 June 1960, is given in Annex XII.

155. In addition to providing the technical data required in the day-to-day work of the Secretariat, the documentation services also supply briefing material on countries to be visited by Agency missions or individual staff members.

Library services

156. The library now has approximately 10 000 books on its records and more than 520 periodicals. During 1959 alone, it received, free of charge from 41 Member States, over 10 000 technical publications, 23 000 research reports, and 140 periodicals.

157. The library has also received scientific, technical and other publications, numbering over 10 000 from the United Nations, the specialized agencies and other international organizations, including the complete proceedings of the First and Second United Nations International Conferences on the Peaceful Uses of Atomic Energy which were held in Geneva in 1955 and 1958.

158. Among the internationally available reference services of the library there is now a reference service on laws, rules and regulations adopted by Member States for the development and control of nuclear energy.

159. Facilities for the micro-reproduction of scientific publications and for the production of readable enlargements from micro-cards have been installed at the Agency's headquarters.

160. Close relations are maintained between the Agency's library and other science libraries in Vienna. The latter have continued to lend their publications even at short notice, thus effectively enlarging the resources of the Agency's library. An agreement for contractual services between the Agency and the library of the Institute of Physics of the University of Vienna is still in force. Arrangements have also been made with the United States Book Exchange to accept and redistribute duplicate publications available in the Agency's library. In return the library has obtained several worthwhile publications in this manner through the Exchange.

161. In 1959 a panel was convened in Vienna to consider the Agency's work in the field of scientific and technical information. It was attended by information officers of the atomic energy authorities of Canada, France, the United Kingdom, the United States of America and the Soviet Union and made valuable recommendations on the organization of effective information services and the dissemination of information.

162. Plans are well advanced for holding two regional library workshops in 1960. One of these will take place in Brazil in the summer of 1960 and the other in South-East Asia in November/December 1960. The object of these workshops is to provide training courses in the development of special libraries for the handling of reports and other information on the peaceful uses of atomic energy.

F. Health and safety and waste disposal

Implementation of the programme

(a) Establishment of safety standards and regulations

163. Standards of safety for Agency operations have been prepared in draft form and these will provide a basis for discussion by a panel of experts to be convened in the second half of 1960. The panel will meet again in 1961 and it is expected that the safety standards will then be produced in final form.

164. The Agency's health and safety measures, reference to which is made in Articles III and XII of the Statute, have been adopted by the Board of Governors. It was decided by the Board that they would be reviewed prior to January 1962.

165. Comments from users of the Agency manual on the Safe Handling of Radioisotopes have been received and the manual will be revised in the light of these comments and of additional recommendations issued by ICRP. Health physics and medical addenda to the manual, prepared under contract to the Agency, have been published.

166. In order to establish satisfactory and uniform standards for the safe transport of radioactive materials, two panels were set up. The first panel, which met in April 1959 and in February 1960, dealt with the transport of limited quantities of radioactive isotopes and radioactive ores and residues of low specific activity; the second panel, which met in July 1959 and in February 1960, dealt with the transport of radioactive sources of high activity and fissile materials. Between the first and second sessions of these panels, draft regulations were circulated by the Agency to Member States and organizations concerned for comment. The work of these panels has now been completed.

(b) Evaluation, harmonization and co-ordination of national and international work

167. Several Member States and international organizations submitted to the Agency, for comment, draft regulations and codes dealing with health and safety topics.

168. Consultations were held with specialized agencies on the collection of information on health and safety problems. Representatives of the Agency attended many meetings of specialized agencies and technical inter-governmental bodies at which problems of health and safety were discussed.

(c) Evaluation of Agency-sponsored projects and activities

169. Proposals for operations to be undertaken or supported by the Agency - such as a request from the Government of Finland for the supply of fissionable material - were examined to ensure that they conformed with the Agency's requirements from the point of view of health and safety.

170. The Agency has provided radiation-hazard control for all operations in its present laboratory.

(d) Health and safety services to Member States

171. The Agency has continued to receive numerous requests for technical assistance in connexion with the health and safety aspects of operations. In some cases members of the Agency's staff visited the State in question to evaluate hazards and to offer advice on measures to be taken. In other cases the Agency assisted in providing experts in the appropriate field for a limited period of time to help in establishing health and safety programmes. An example of the latter type of assistance is the request from Greece for advice on health and safety measures in the establishment of a reactor centre.

172. Work has continued on the survey of the instruments and techniques for radiation protection measurements developed in the technically advanced countries and on the technical services available in those countries for carrying out the health and safety regulations. This survey will help the Secretariat to provide advice to Member States upon their request.

173. Preliminary steps were taken to investigate the most effective means of providing international aid in the event of radiation accidents and it is expected that a plan of operations on a limited scale will be ready in 1961.

(e) Health and safety studies

174. Studies on the effects of radiation on man have continued. As part of these studies a dosimetry experiment was carried out at the Boris Kidric Institute, in Yugoslavia in April 1960. The experiment was designed to determine accurately the neutron and gamma ray doses associated with the operation of the zero power reactor there. With the results of these measurements, it will be possible to evaluate more precisely the doses received by the persons involved in the brief uncontrolled run of that reactor in 1958. The experiment involved the operation of the reactor at a power level of five watts for several

hours to up to five kilowatts for a brief period. This required certain modifications of the installation and the addition of a complex control system for the reactor.

175. The experiment was greatly helped by the co-operation of the Yugoslav authorities who provided facilities, staff and services. The reactor was operated by experts from the French Atomic Energy Commission which also provided control system equipment. A team of experts, most of whom came from the Oak Ridge National Laboratory, under the direction of Dr. K. Z. Morgan, made the dosimetry measurements and evaluated the results. The team, which included a scientist from the Health Physics group at Harwell, also provided the instrumentation used in the experiment. The heavy water needed for operation of the reactor was lent free of charge by the United Kingdom Atomic Energy Authority. A complete technical report on the experiment is being prepared.

176. Preparations were also made for a symposium on the diagnosis and treatment of acute radiation disease to be held in 1960. This symposium is to be co-sponsored by WHO.

177. The Secretariat has made studies and given advice in connexion with the work of a panel convened to study the problems of third party liability for possible damage from operations involving nuclear energy.

(f) Waste disposal studies

178. The Agency has undertaken studies and has prepared recommendations on the establishment and the execution of health and safety measures for the monitoring of wastes and the limitation of contamination of the environment.

179. Certain of these recommendations were the fruit of the work of the panel on waste disposal into the sea which was completed in 1959. A report on the conclusions reached by the panel will be issued in 1960; one of the main recommendations is that the Agency should set up and maintain an international register of disposals of radioactive wastes into the sea.

180. A large scientific conference on the disposal of radioactive wastes into the sea and into geological structures was held in Monaco in November 1959 with the co-sponsorship of UNESCO and the collaboration of FAO. The participants in this conference recommended that the Agency should continue its work on waste disposal, including the collection and examination of information on disposal methods developed by the advanced countries, with a view to adapting the techniques to the needs of the less-advanced areas.

181. Studies have been made in connexion with the release of radioactive waste materials in fresh water and a panel of experts will meet in 1960 to evaluate the problems met by such operations and to recommend standards of safety for them.

G. Isotopes and research

Background

182. The second year of the Agency's operations in this domain saw a very substantial increase in the number of requests from institutions in Member States for support for their research on health physics, radioactive waste disposal, radiation protection, radiobiology, safeguards and isotope applications in medicine and agriculture. The Agency tried to meet these requests as far as the limited funds available would permit, and its staff supplemented this work by carrying out studies at the Agency's headquarters to collate, evaluate and provide supporting information, by visiting research institutions, by calling panels of contractors with a view to improving co-ordination of research and by organizing conferences and symposia to facilitate the exchange of information.

183. The other main feature of the Agency's research and isotope activities has been the increase of the work in the Agency's own laboratory facilities. A voluntary contribution by the Government of the United States of America of $600 000 provided the funds for the construction of a laboratory which will be completed in early 1961. However, laboratory work has already been started in rooms adapted for this purpose in the basement of the headquarters building.

184. The Agency's technical assistance and fellowship activities relating to applications of radioisotopes were supplemented by various studies, the preparation of international directories, the despatch of special isotope missions, the promotion of exchange of information and the provision of specialized training through the use of the Agency's two mobile radioisotope training units.

185. Because of recruitment difficulties the staff available was insufficient to devote equally close attention to all the problems which were recognized as important in the programmes for 1959 and 1960. In particular great difficulties have been experienced in implementing fully the plans for research and for studies on the safe disposal and utilization of radioactive wastes.

Research contracts

186. The research contract programme has developed quite rapidly and during the second half of 1959 funds were insufficient to finance a considerable number of research projects which deserved support on their scientific merits and their compatibility with the Agency's own programme.

187. In addition projects involving research require two or more years of work and nearly 80 per cent of the funds available in 1960 for research support had to be set aside for the renewal of contracts placed in previous years, leaving very little money for the award of new contracts and thus sharply curtailing the normal growth of the programme. Accordingly the Board, at its meeting in June, approved a transfer of $102 500 to this section of the budget from other sections, in which savings were expected in 1960.

188. The main part of the research contract programme was financed from the regular budget; in addition, in the budget for 1961, from Operating Fund II, $90 000 are set aside for research assistance in medicine and agriculture.

189. During the period under review a total of 57 contracts [23] have been placed with institutions in 24 Member States. Annex XIII contains a list (excluding the Vinča experiment) of the titles of the individual research contracts and the names of the institutions engaged in the work.

190. The following table gives a breakdown by subject of the research contracts newly awarded or renewed during the period under review:

Subject matter of research	Contract numbers	Number of contracts placed	Agency contribution in dollars
Disposal of radioactive waste	12, 16, 19, 20, 22, 23, 33, 37, 57, 58, 59, $1R_2$, $9R_1$	13	96 620
Health physics and radiation protection (including Vinča dosimetry project)	14, 18, 32, 34, 38, 44, 48, 50, 53, Vinča, $3R_1$	11	116 859
Radiobiology	10, 11, 13, 15, 17, 28, 29, 30, 31, 35, 36, 39, 40, 42, 43, 45, 46, 51, 52, $2R_2$	20	148 275
Safeguards	41, 47, 49	3	31 000

[23] This figure includes five renewals.

Subject matter of research	Contract numbers	Number of contracts placed	Agency contribution in dollars
Small and medium power reactors	60	1	9 410
Research assistance in medicine and agriculture	21, 24, 25, 26, 27, 54, 55, 56, $8R_1$	9	56 310
Total (1 July 1959 - 30 June 1960)		57	458 474

191. The following table shows a breakdown by countries in which the research contracts are being carried out:

Country	Number of contracts	Agency contribution in dollars
Argentina	1	6 000
Australia	1	6 200
Austria	6	19 274
Belgium	1	12 000
Czechoslovakia	1	15 000
Finland	1	9 150
France	5	43 500
Germany, Federal Republic of	3	25 270
Greece	1	7 200
Iraq	1	4 800
Israel	2	20 110
Italy	4	39 500
Japan	7	29 200
Netherlands	2	23 000
New Zealand	1	4 170
Norway	3	44 000
Philippines	1	10 200
Poland	3	12 040
Sweden	2	37 315
Switzerland	2	16 000
Thailand	1	5 000
United Arab Republic	1	8 970
United Kingdom of Great Britain and Northern Ireland	2	15 000
Yugoslavia	3	15 335
International bodies	1	2 740
Vinča Project	1	27 500
	57	458 474

192. Arrangements have been made to implement the offer of the Government of the United States of America to help finance research on the peaceful uses of atomic energy carried out under the auspices of the Agency by institutions to individuals in Member States, pursuant to contracts with the Agency. In this way, by June 1960, arrangements had been made for the financing of twelve research projects, which could not otherwise have been supported.

193. It will be seen from Annex XIII that the Agency has concentrated its efforts on supporting research on a limited number of subjects in which it has a major interest and where the results can frequently be expected to have an immediate bearing on the Agency's own activities. This is particularly true of health physics, radiation protection, radiobiology, waste disposal and safeguards. The Agency also supports research on the practical applications of radioisotopes to problems of particular importance to less-developed countries, such as radioisotope investigations of parasitic diseases in tropical countries and of soil-plant relationships in fertilization studies.

194. In order to promote co-ordination and to ensure that the best use is made of its support, the Agency has begun to organize panels of the principal scientific investigators carrying out research under the Agency's contracts. The first such panel took place in March 1960 and, in the light of the United Nations General Assembly resolution 1376 (XIV), the field of radiobiology was selected and 26 scientists working in this field were brought together, to exchange information on the latest progress in each other's research, help avoid undesirable duplication of effort and advise the Agency on its further work in this domain.

Visits to research institutions and attendance at conferences

195. The placing of research contracts is usually preceded by detailed consultations which frequently have to take place at the institutions to be entrusted with the work. To this end the majority of the institutions working under contract with the Agency have been visited by specialists from the staff; in particular, all contracts so far awarded under the research assistance programme in less-developed countries followed negotiations on the spot by members of preliminary assistance or special isotope missions. Visits have also been paid to other institutions where research work pertinent to the Agency's own activities is being carried out.

196. In carrying out the Agency's function of collecting scientific information, and in order to keep the Agency's scientific staff abreast of the latest developments in the atomic energy field, members of the staff have attended a number of conferences, including the Ninth International Congress of Radiology, the Ninth Annual International Conference on High Energy Physics, the Third Isotope Conference of the Japan Atomic Industrial Forum, a meeting of UNSCEAR, and the Sixth Annual Meeting of the Society of Nuclear Medicine. In some cases staff members presented scientific papers, took part in the work of special committees or acted as chairmen of individual sessions.

Studies

197. In accordance with resolution 1260 (XIII) of the United Nations General Assembly, a Survey on the Main Trends in Research on, and Development and Applications of, Nuclear Energy for Peaceful Ends has been compiled as a part of a general survey in the field of the natural sciences prepared by UNESCO, other specialized agencies and the Agency. In connexion with resolution 1344 (XIII) of the General Assembly an evaluation has been made of the Second United Nations International Conference on the Peaceful Uses of Atomic Energy in relation to the need for and the optimum nature and timing of similar conferences.

198. A study has been undertaken of the hazards arising from strontium-90 contamination of the biosphere. On the recommendation of SAC the results of this study will be considered by a panel of experts during the latter half of 1960. In this connexion, the Agency supported a meeting of experts which took place in April 1960 in Oxford, England, which considered the question of the radiation effects of strontium-90 in bone and prepared a report which the Agency will submit to UNSCEAR at its autumn session in Geneva.

199. Another study begun in the early part of 1959 dealt with the use of large radiation sources, such as radiocobalt and radiocaesium units, betatrons and linear accelerators, in radiotherapy. The results of this study were submitted to a panel of experts, jointly convened by the Agency and WHO, in Vienna in August 1959. Pursuant to the recommendations of this panel, the Agency has published an International Directory of Radioisotope Teletherapy Equipment, other supplementary information and the recommendations themselves, which were also published in some of the leading radiological journals of the world. As recommended by the panel, the study was subsequently continued and expanded to include consideration of the dosimetry problems involved in the use of these machines. A further panel will be held in the latter half of 1960 to consider some aspects of this work.

200. During the period under review, the Agency's staff has also begun a number of other studies, the results of which will probably become available in 1961. These include a study of the economics of the import, distribution and eventual production of radioisotopes in less-developed countries; studies, undertaken in co-operation with FAO, of the application of radioisotopes in the investigation of the suitability of certain fertilizers in tropical and sub-tropical conditions and of the use of radiation for the improvement of plant species, and a study of the potentialities of radioisotope tracer techniques in hydrology such as the determination of ground water reservoirs and the properties of water-bearing strata in relation to river basin development. A considerable amount of bibliographic work is being done to supplement these studies.

201. In December 1959 the results of a market survey of the requirements for the isotope calcium-47 to be used in radiobiological studies of the metabolism of certain fission products and for clinical research of metabolic bone disease and malignant bone tumours were submitted to a panel of experts on the methods of producing this isotope. The Agency has supported research on finding cheaper methods of producing Ca-47. This isotope is now available at one fifth of its former price and with a higher specific activity, and further improvements in the supply situation can be expected. A number of institutions in Member States are being helped to develop practical applications of this isotope.

202. The first edition of a comprehensive International Directory of Radioisotopes has been published in two volumes. The first volume contains complete tables of isotope preparations, including unprocessed and processed isotopes and solid radiation sources for special applications, and gives the most important physical data, information on the sources of supply, procedures for obtaining isotopes as well as prices. The second volume contains similar information on chemical compounds labelled with carbon-14, tritium, iodine-131, phosphorus-43 and sulphur-35. Similarly, the International Directory on Radioisotope Teletherapy Equipment gives all the necessary physical and technical data of radiocobalt and radiocaesium units, the sources of supply and the current market prices as well as information on the availability of isotope sources to be embodied in these units.

Conferences and symposia

203. In September 1959 the Agency convened a conference in Warsaw, Poland, on the Application of Large Radiation Sources in Industry and especially to Chemical Processes. The results of the rapid progress made in this field in recent years were reflected in 65 scientific papers presented before an audience of about 200 scientists from 26 countries.

204. A Symposium on the Metrology of Radionuclides was organized by the Agency in October 1959 in Vienna. Thirty-seven papers were presented on subjects of interest to the 102 participants from 32 countries and international organizations who attended the meeting; they were also of importance to the Agency's own laboratory programme in this field.

205. Another symposium dealt with Selected Topics in Radiation Dosimetry. It was held in Vienna in June 1960 and was attended by 174 participants from 33 countries and international organizations; 70 scientific papers were presented.

206. In July 1959 the Agency, together with FAO, assisted the Massachusetts Institute of Technology at Cambridge, Massachusetts, USA, in organizing an International Conference on the Preservation of Foods by Ionizing Radiations, by providing lecturers and fellowships.

Technical advice

207. The Agency's specialist in radiotherapy with large radiation sources was sent out to assist the authorities concerned in China, the Philippines and Yugoslavia in the selection of suitable equipment, the adaptation of buildings to ensure proper radiation protection and carried out calibration of the radiation output and dosimetry measurement on newly installed units. A small mission visited Iceland to advise the authorities on the selection of suitable equipment for a new radiochemistry and medical isotopes laboratory for which some technical assistance was requested from the Agency.

208. The Agency has begun work on a project of assisting hospitals and medical research institutions in Member States in the standardization and calibration of thyroid radioiodine-uptake measurements. The project involves the despatch of an expert, accompanied by some calibration equipment, for an average period of two weeks to Member States requesting such service. It is expected that the first series of visits will be carried out during the latter half of 1960. Advice on various applications of radioisotopes, for example in hydrology, was provided to Member States by experts temporarily recruited for that purpose. Thus experts visited the Federation of Rhodesia and Nyasaland and the area of the Mekong River Basin to study the possibilities of using radioisotopes in the investigation of water reservoirs, the tracing of silt movement and the estimation of flow volumes.

H. Reactor programme

Background

209. The reactor programme has been planned and carried out so as to take into account the relevant provisions of the Statute and the views expressed by Member States at previous sessions of the General Conference as well as the recommendations of SAC. The main subjects of work are power reactor applications, reactor engineering, reactor physics, reactor safety, technical assistance and information; these are dealt with separately below.

210. In the initial work under this heading emphasis was placed on the collection of technical data on various reactors in operation or under construction in Member States. These were brought together in a Directory of Nuclear Reactors. Information on reactor technology has also been spread and exchanged by the holding of scientific meetings and the publication of their proceedings. As a part of the Agency's programme of assistance to less-developed countries technical studies have been made on different power reactor systems. Work on reactor safety has expanded markedly as a result of the requests and enquiries received from many Member States.

Implementation of the programme

(a) Power reactor applications

211. As part of the implementation of resolutions GC(II)/RES/27 and GC(III)/RES/57 dealing with assistance to less-developed countries in nuclear power, preparations are being made to convene in September 1960 a Conference on Small and Medium Power Reactors. At this conference the technical and economic aspects of these reactors and their suitability for use in less-developed countries will be discussed.

212. The Agency is collaborating with Finland on a joint study for determining the prospects of nuclear power in that country in the next ten years. [24]

(b) Reactor engineering

213. The Agency is taking steps to make effective use of the offer made by the Government of the United States of America that the Agency should participate in the design, construction and operation of a 20 MW pressurized water reactor to be built in that country.

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[24] For a more detailed description see paragraph 245 below.

(c) Reactor physics

214. In view of the importance of reactor physics for reactor design, it has been decided that the Agency should hold at least one meeting each year on selected topics in this field, for the purpose of fostering international co-operation and exchanging information on this subject. In September 1959 a panel was convened to discuss heavy water lattices. Another panel was held in April 1960 on codes for reactor computations. In 1959 a proposal was received from the Norwegian Institute of Atomic Energy to participate in a joint project for the use of a zero power reactor now under construction. Before its consideration by the Board the scientific, financial and legal aspects of this proposal are being studied.

(d) Reactor safety

215. The Agency has given much attention to the subject of reactor safety and several requests and enquiries for hazards evaluation have been received from Member States. A series of such evaluations was organized for Switzerland. The first, a safety evaluation and an expert review of the 12.5 MW research reactor, DIORIT, was completed in October 1959. The expert's report to the Government was used by it as a basis for granting the operating permit. The Agency is at present co-operating with three organizations in Switzerland on safety evaluations for further power reactor designs. The Agency is also arranging for expert reviews for these reactors in connexion with the grant of construction permits for them.

216. A manual for safe operation of critical assemblies and research reactors is being prepared by the Agency staff and is expected to be ready for publication in 1960. A panel of experts was convened in February 1960 to review the draft which is to be finalized after a second meeting of the panel in July 1960. It is hoped that this publication will serve as a first step towards the establishment of generally accepted basic standards in this field.

217. The subject of nuclear ship propulsion is assuming increasing importance. The Agency, in response to the requests from several Member States and on the recommendations of SAC, is making preparations to hold a Symposium on Nuclear Ship Propulsion with Special Reference to Safety, late in 1960.

218. The problem of the siting and containment of nuclear reactors is also engaging attention and plans are under way for organizing a panel on this topic in the course of 1960.

(e) Advice to Member States

219. The various Agency missions have frequently been requested to give advice to the Member States visited on their reactor programmes, on the safety, operation and utilization of research reactors and on many problems involved in the installation of nuclear power.

(f) Information

220. The Agency has prepared a Directory of Nuclear Reactors, which covers the essential features of the design, cost and operating characteristics of power, research, experimental and test reactors. Volumes I and II of this directory were published in 1959 and the third volume will appear in the course of 1960. The first volume in this series contains descriptions of 36 power reactors; volumes II and III together contain data on approximately 180 research, test and experimental reactors. The directory will be kept up-to-date and supplemented as required.

I. Technical supplies

Background

221. There are three main aspects to this work:

(a) The supply of source, fissionable and special materials;

(b) The supply of technical equipment and instruments; and

(c) The provision of information and advice on these matters.

222. The Agency has at its disposal substantial quantities of source and fissionable material made available to it by Member States.[25] In addition, during the year under review, Spain offered to make available during the period 1960-61 a total of 140 tons of uranium in the form of sodium uranate and uranium trioxide. The prices quoted for these materials are $19.8 per kilogramme of uranium in uranate and $24.8 per kilogramme of uranium in trioxide.

Implementation of the programme

(a) Fissionable, source and special materials

223. The arrangements for the supply by the Agency of three tons of uranium metal to Japan were completed and delivery was made on 25 November 1959.[26]

224. During the period under review the Board dealt with a request by Finland for assistance in procuring a Triga Mark II reactor, enriched fuel for it and assistance in fabricating the fuel elements. Negotiations are being conducted for an agreement whereby the United States of America, through the intermediary of the Agency, would supply this reactor and the enriched uranium. It is expected that that country will also undertake responsibility for fabricating the fuel elements.

225. Finland has also requested the supply by the Agency of uranium enriched to ten per cent for use in a critical assembly. The Board has in principle approved this request and the Soviet Union has announced its willingness to supply the material and manufacture the fuel elements. Preparations for the fulfilment of the request are in progress.

226. An enquiry was received from the Austrian Government concerning the supply of uranium enriched to 90 per cent for the second charge for its five MW research reactor. The Governments of the United States of America and of the United Kingdom have indicated their readiness to supply this uranium on specified terms and these offers have been referred to the Austrian Government.

227. The Agency has also received and is now studying a request from the Australian Government for assistance in determining a source of supply from Member States for a small quantity of beryllium of high nuclear quality.

(b) Equipment and facilities

228. Procedures have been elaborated for the selection and procurement of the technical equipment and instruments required for the Agency's technical assistance projects and for research contracts sponsored by it. Equipment has been procured for technical assistance projects for Austria, Brazil, Burma, Greece, Indonesia, Iraq, Pakistan, the Philippines, Thailand, Tunisia, Turkey, the United Arab Republic and Yugoslavia.

229. In all such cases a preliminary selection is made of the equipment that would satisfy the requirements of the recipient State from among that which is available in various Member States according to the information they have supplied to the Agency at its request. The manufacturers so selected are requested to submit tenders. The equipment quoted at the lowest price is then selected subject to considerations of quality, the compatibility of the equipment with that already present in the recipient State and problems of maintenance and the procurement of spare parts by that State.

230. Equipment has also been procured in connexion with research contracts awarded to institutions in Austria, Finland, Italy, Japan, Norway, the Philippines, Poland, the United Kingdom and Yugoslavia. Unless the equipment required in connexion with the research contract is so highly specialized that it is manufactured by only one supplier, the procedure followed here is the same as that for procuring equipment for technical assistance projects.

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[25] See document GC(III)/73, paragraphs 212 and 213.

[26] Ibid., paragraphs 215 and 216.

231. Scientific instruments and apparatus for use in the Agency's provisional functional laboratory have also been procured; they will be supplemented to the extent necessary for the permanent laboratory at Seibersdorf.

(c) Provision of information

232. In May 1960 a symposium was held in Vienna on Fuel Element Fabrication, with Special Emphasis on Cladding Materials. This subject is of particular importance because of its influence on the economics of nuclear fuel and nuclear power.

233. As part of the services provided by the Agency, handbooks on typical sets of equipment for use in radioisotope laboratories and on nuclear instrumentation and standardization of equipment have been prepared, and are available on request.

234. In order to facilitate the selection of equipment, a compilation has been made of information on meteorological conditions and electrical grid characteristics of the main cities throughout the world. This information is available to Member States upon request.

235. During the third regular session of the General Conference, a photographic exhibit was organized illustrating developments in the peaceful uses of atomic energy. Member States provided prints and ready-made panels for this display. The exhibition was open to schools and to the general public and was visited by several thousand people during the conference; it was later shown at the Austrian Government Publishing Office.

J. Economic studies

Background

236. Under the terms of its Statute and of the report of the Preparatory Commission [27] the Agency bears general responsibility for studying the economic aspects of nuclear energy.

237. It will be recalled that an important aspect of this work was emphasized by resolutions GC(II)/RES/27 and GC(III)/RES/57 of the General Conference, which called for:

(a) A survey (on request) of the needs of countries in the matter of nuclear power-generation plants suitable for their specific circumstances; and

(b) A continuing study of the development of the technology and economics of small and medium sized nuclear power reactors suitable to contribute to economic development.

Moreover, one of the functions of the Agency is to supply technical assistance to or enter into co-operative arrangements with any Member State wishing to use the specialized experience of the Agency and/or to contribute to the Agency's programme of furthering the development of nuclear power.

238. The Agency has undertaken the implementation of the programme for 1960, adopted by the General Conference at its third regular session, in the light of these considerations.

Implementation of the programme

239. The work of the Agency with respect to economic studies is designed to achieve the following objectives:

(a) To make available to all Member States the latest technical and cost data for different types of power reactors, the experience gained in operating them and the prospects of their future development;

(b) To devise methods and procedures to assist Member States in assessing the economic merits of nuclear power; and

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[27] GC.1/1.

(c) To give assistance to Member States which have already considered the possibility of using nuclear power to meet their future power needs and request the Agency's co-operation in carrying out additional studies on some of the specific problems involved.

240. In pursuit of the first objective, questionnaires have been sent and visits paid to Member States with experience in reactor building to compile information on technical features and costs of reactors designed and available, with particular regard to those most suitable for use in less developed countries.[28]

241. A general report on the present status of nuclear power costs will be submitted to the General Conference at its fourth regular session.

242. The achievement of the second objective as set forth in sub-paragraph 239 (b) above, involves three types of studies of increasing scope and complexity:

(a) Reviews of the present methods of presentation and breakdown of the costs of nuclear power plants and of the determination of unit generating costs;

(b) Investigation of possible methods of cost comparison between nuclear and conventional power stations operating within an interconnected system; and

(c) Studies of the economic problems involved in comparing total costs of nuclear and conventional power development programmes for a given country.

243. Although each of these three approaches is important it has been found advisable to follow the first initially. Thus, a panel of experts on nuclear power costing was convened from 14 to 18 March 1960 to which observers of international and non-governmental organizations were also invited. The panel decided, as a first step, to prepare a document reviewing the methods of nuclear power costing, with particular emphasis on questions relevant to less developed areas. The document will be revised at another session which the panel will hold in the latter part of 1960.

244. The work mentioned in sub-paragraph 239 (c) above can only be undertaken on request and in the case of larger projects after a careful study to ascertain the way in which the Agency's help can be most effective and what matters might be dealt with by other international organizations.

245. Following discussions with the Secretariat the Government of Finland invited the Agency to participate in studies which it intended to undertake to determine the extent to which nuclear power would be needed in the next decade and the steps which would have to be taken in going ahead with a nuclear power project if it were shown to be needed. These joint studies are now in their first stage.

246. A special power survey mission which was expected to visit Argentina was deferred pending the completion by the International Bank for Reconstruction and Development of a survey of that country's conventional energy and power resources. The decision on the despatch of the mission will depend on the conclusions of the survey.

247. The Brazilian Government is at present planning to build a nuclear power plant at Mambucaba and has requested the services, for 1960, of two Agency experts to provide technical assistance in connexion with this project.

248. Following a request from the Government of the Philippines, preliminary studies are planned for the latter part of 1960 of the potential role and significance of nuclear power in the Philippines. It is planned that a reactor expert from the Agency and a power economist will visit the Philippines for this purpose in the second half of this year.

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[28] See paragraph 211 above concerning the Conference on Small and Medium Power Reactors to be held in Vienna in September 1960, and paragraph 213 above concerning the invitation of the United States Government for the Agency to participate in work on a 20 MW reactor.

K. Technical facilities

Headquarters laboratory

249. During the period under consideration the work in the Agency's laboratory in the headquarters building has expanded considerably. Equipment for absolute radioactivity measurements has been set up; it includes two 4-pi beta proportional counting systems. New 4-pi counters, for the purpose of standardizing radionuclides, have been developed and the electronics of the counting systems have been improved. Valuable donations of equipment have been received from the Governments of France, Netherlands and Yugoslavia.

250. The first international intercomparison of P-32 standards has been carried out on samples prepared in the laboratory; the following institutions participated in this project: the Atomic Energy of Canada Limited, Chalk River; the Commissariat à l'Energie Atomique, Saclay, France; the Fondation Curie, Paris; the National Bureau of Standards, Washington, D.C., USA and the Physikalisch-Technische Bundesanstalt, Braunschweig, Federal Republic of Germany. The results have been very satisfactory, the maximum difference between results reported by these institutions being below one per cent and the Agency's values being well within this range.

251. The Agency is, therefore, now in a position to deliver to Member States, upon their request, P-32 standards with the required accuracy. Preparations are well under way for the extension of this service to the isotopes Au-198, I-131, Co-60 and Sr-90/Y-90.

252. Apparatus has been set up and methods have been developed to carry out determinations of Sr-89, Sr-90 and Cs-137 in the environment. The acquisition of a low-background anticoincidence unit with two sample counters and the construction of a third anticoincidence counter in the electronic laboratory have resulted in greater accuracy and speed of determinations. Measurements of Sr-90 have been standardized with standards supplied by the Commissariat à l'Energie Atomique, Saclay, and the Health and Safety Laboratory of the United States Atomic Energy Commission, New York. A large number of samples of fresh and dried milk from Austria, the Federal Republic of Germany, Poland and Switzerland and air samples from Austria and Pakistan have been analysed for radioactive contamination. Analyses have also been made of inter-comparison samples of milk ash and vegetation ash supplied by UNSCEAR. Preparations are being made to enable the laboratory to include in its routine programme Sr-90 determinations in human and animal bone.

253. It is planned to expand the programme for measurement of environmental contamination along the lines recommended by a panel on methods for the collection and analysis of samples for the determinations of trace amounts of radioactive substance in the biosphere which was convened in September 1959. These recommendations, which were generally endorsed by SAC and by the Board, provide, inter alia, that the Agency's laboratory should accept a limited number of scientists and technicians from Member States for training in this field. It is expected that the first trainee, a radiochemist from the Philippines, will start work in the laboratory in the latter half of 1960 on an Agency fellowship.

254. Steps have been taken to implement recommendations of a panel which was convened to give advice on the Agency's role in a programme of world-wide determination of tritium concentrations in natural water. WMO has agreed to assist in the collection of samples. Arrangements are being made with various national laboratories to perform analytical measurements and the Agency's laboratory has started the preparation of tritium standards and the construction of a tritium counter.

256. The increasing amount of work of this laboratory made it necessary to add three more rooms to it in 1960; the addition will also permit better segregation between standardization work and very low-level activity operations.

Seibersdorf laboratory

256. A voluntary contribution by the Government of the United States of America has enabled the Agency to begin construction of a laboratory on a site adjacent to the Austrian reactor centre in Seibersdorf. The construction was started during the third regular session of the General Conference in September 1959, and construction of the outer structure was

completed in March 1960. Owing to a number of unforeseen difficulties, it has been impossible to keep to the timetable, and it is now expected that this laboratory will not come into operation before 1961. The original estimates for construction costs have also proved too low. The revised budget had to take into account, inter alia, a substantial increase in the costs of materials and labour in Austria. It foresees an expenditure of $520 000 for the building and for conventional furniture and fittings; the acquisition of the major part of the required scientific and technical equipment will have to be financed from the 1961 budget.

Mobile radioisotope training units

257. Of the two mobile radioisotope training units donated by the Government of the United States of America, the first, after being modified in the light of experience gained in its operation in Greece and Yugoslavia in the early part of 1959, was used in October 1959 in a radioisotope training course at the University of Innsbruck, Austria and in November 1959 in Essen, Germany, for training in the industrial uses of radioisotopes. In February 1960 the unit was dispatched to the Republic of Korea where it was used for basic training in radioisotope applications in Seoul, Suwon, Kwangju, Taegu and Pusan. From there it left for China where it will be used during the second half of 1960.

258. The second unit was taken over by the Agency's representative from the United States Government at the end of 1959. Between January and April 1960 it was used for training courses organized by the Mexican Atomic Energy Commission and the Universidad Nacional de Mexico in Monterrey, San Luis de Potosi, Guanajuato, Guadalajara, Mexico City, Puebla and Veracruz. It subsequently left for Argentina to be used in courses in Cordoba, Tucumán, Mendoza, Bahia Blanca and Rosario.

L. Civil liability and State responsibility for nuclear hazards

259. In 1959 a panel of experts selected by the Director General met to advise him on action that might be desirable in the field of civil liability and State responsibility for non-military nuclear hazards. A second panel of experts was selected by the Director General in 1960 to consider problems of liability for nuclear-powered ships. This second panel consists of 23 experts recommended by Member States, representing several legal systems, and is under the chairmanship of Mr. Albert Lilar, President of the International Maritime Committee and Deputy Prime Minister of Belgium.

Implementation of the programme

260. The Panel on Civil Liability and State Responsibility for Nuclear Hazards met in Vienna three times in the course of 1959, and, after an additional exchange of views by correspondence, submitted a report to the Director General in February 1960; annexed to this report is a Draft Convention on Minimum International Standards regarding Civil Liability for Nuclear Damage, as well as an article-by-article comment thereon. The panel considered that action was necessary in the field of liability for nuclear damage attributable to fixed nuclear installations and to carriage of nuclear materials. Its proposals reflect a large measure of agreement among experts from different countries and different legal systems on essential provisions of a future convention in this field.

261. As authorized by the Board, the Director General has circulated the documents of the panel to all Member States with the request that their comments be submitted to the Agency by 31 August 1960. On the basis of such comments appropriate steps may be taken by the Agency to open for signature an international convention on liability for nuclear damage, excluding damage caused by nuclear powered ships.

262. The Panel on Liability for Nuclear Propelled Ships met in Vienna in March 1960. The panel considered various topics on which international action seemed desirable, and was briefed on technical questions by the scientific staff of the Agency. Agreement was reached on a number of essential points.

263. This panel is planning to meet again in July or August, after the IMCO conference on the revision of the Convention on the Safety of Life at Sea. At the suggestion of the panel, a small committee of scientists convened in June to consider various technical problems underlying the legal issues still to be solved by the panel of legal experts. It is expected that recommendations concerning international action needed in the field of liability for nuclear powered ships will be formulated by the panel, and that the Director General may be able to report on them to the Board later in 1960.

M. Safeguards

264. Work on the principles and procedures for the application of Agency safeguards has been taken a good deal further during the period under review. These principles and procedures were provisionally approved by the Board at its meetings in April 1960 and are being submitted to the General Conference at its fourth regular session. [4]

265. The Secretariat has prepared a draft of a manual of the internal procedures for the accounting, storehousing, measurement and stocktaking of source and special fissionable material, to be followed by the Agency in its own operations, and to be made available to Member States to assist them in setting up their own safeguards procedures. The draft of the manual has been sent to all Member States for their comments.

266. A member of the Secretariat has visited Japan to advise the Government on the setting up of its own system for the accounting, stocktaking, measurement and storehousing of source and special fissionable materials.

267. Similarly the Secretariat at the request of the Austrian Government is helping to plan the internal safeguards system for the reactor centre of the Austrian Studiengesellschaft für Atomenergie.

268. The Agency has placed further research contracts for the development of techniques for the non-destructive analysis of irradiated fuel elements. Such techniques will considerably reduce the cost of applying effective safeguards.

N. Public information

269. In the past year the number of press releases published has increased considerably. The use made of them, particularly by the technical and scientific press, has also grown greatly.

270. The major scientific conferences organized by the Agency have been well received by all media - press, radio and television.

271. The quarterly Bulletin, now in its second year, has been well received. The circulation is approximately 9 000 copies in the four working languages of the Agency; the Bulletin is entirely produced within the Secretariat.

272. A second edition of the popular leaflet on the functions and activities of the Agency has been published; approximately 30 000 copies have been requested and some 20 000 of the first edition were distributed. It has been published in the four working languages and also in Danish, Dutch, German, Indonesian and Serbo-Croat.

273. The film on peaceful uses of atomic energy, produced as a joint undertaking by the Visual Information Board of the United Nations, will be completed this autumn. The Agency and the United Nations have taken the major part in this project, but assistance has also been given by FAO, UNESCO and WHO.

274. Preparation of a manuscript of a guide to teachers in secondary schools on the theory and practice of nuclear energy for peaceful purposes is nearing completion and the guide will be circulated to Member States in late 1960 or early 1961. Consultations have been held with UNESCO on the making of filmstrips to accompany the guide.

275. Several atomic energy bulletins in Member States have made use of public information material distributed by the Agency and have thus contributed materially to making the

activities of the Agency better known. Such co-operation on the part of national authorities has proved particularly valuable in spreading information about the Agency over a wider area and helping it to effect the world-wide dissemination of information.

276. The appointment of a public information officer to the office of the Representative of the Director General at United Nations Headquarters in New York is also helping to achieve a wider spread of information about the Agency since representatives of information media from all over the world can be reached there.

ANNEX I

THE BOARD OF GOVERNORS: 1959-60

A. List of Members and their Governors

Member (Up to 2 October 1959)	Member (from 3 October 1959)	Governor (30 June 1960)
ARGENTINA[a]		
AUSTRALIA[b]	AUSTRALIA[e]	Mr. A.D. McKnight
BELGIUM[c]		
BRAZIL[b]	BRAZIL[e]	Mr. R. Archer
	BULGARIA[g]	Professor G. Nadjakov
CANADA[b]	CANADA[e]	Mr. M.H. Wershof
	CEYLON[g]	Mr. S.P. Wickramasinha
	CZECHOSLOVAKIA[f]	Dr. K. Petrželka (Vice-Chairman)
DENMARK[c]		
FRANCE[b]	FRANCE[e]	Dr. B. Goldschmidt
INDIA[b]	INDIA[e]	Mr. A.S. Lall
INDONESIA[d]	INDONESIA[d]	Mr. B.M. Diah
JAPAN[b]	JAPAN[e]	Dr. H. Furuuchi
KOREA, REPUBLIC OF[a]		
	MEXICO[g]	Dr. C. Graef-Fernandez
NETHERLANDS[d]	NETHERLANDS[d]	Mr. H.F. Eschauzier
	NORWAY[f]	Dr. G. Randers
PAKISTAN[a]		
PERU[d]	PERU[d]	General J. Sarmiento
	PHILIPPINES[g]	Dr. R. Regala
POLAND[c]		
	PORTUGAL[f]	Mr. A. Pinto de Lemos
ROMANIA[a]		
	SPAIN[g]	Professor A. Duran-Miranda
TURKEY[a]		
UNION OF SOUTH AFRICA[b]	UNION OF SOUTH AFRICA[e]	Mr. D.B. Sole (Chairman)
UNION OF SOVIET SOCIALIST REPUBLICS[b]	UNION OF SOVIET SOCIALIST REPUBLICS[e]	Professor V.S. Emelyanov
UNITED ARAB REPUBLIC[d]	UNITED ARAB REPUBLIC[d]	Mr. I. Fahmy (Vice-Chairman)

Member (Up to 2 October 1959)	Member (from 3 October 1959)	Governor (30 June 1960)
UNITED KINGDOM OF GREAT BRITAIN AND NORTHERN IRELAND[b/]	UNITED KINGDOM OF GREAT BRITAIN AND NORTHERN IRELAND[e/]	Mr. M.I. Michaels
UNITED STATES OF AMERICA[b/]	UNITED STATES OF AMERICA[e/]	Mr. P.F. Foster
VENEZUELA[d/]	VENEZUELA[d/]	Dr. M. Roche

a/ Elected by the General Conference at its first regular session under Article VI. A. 3 and B of the Statute.

b/ Designated by the Board on 4 July 1958 under Article VI. A. 1 of the Statute.

c/ Designated by the Board on 4 July 1958 under Article VI. A. 2 of the Statute.

d/ Elected by the General Conference at its second regular session under Article VI. A. 3 and B of the Statute.

e/ Designated by the Board on 26 June 1959 under Article VI. A. 1 of the Statute.

f/ Designated by the Board on 26 June 1959 under Article VI. A. 2 of the Statute.

g/ Elected by the General Conference at its third regular session under Article VI. A. 3 and B of the Statute.

B. Composition of the Board's Committees

1. The Committees are listed in the order in which they were established.

2. Each Committee is presided over by the Chairman or, in his absence or disability, by one of the Vice-Chairmen of the Board, with the exception of the Special Working Group of Expert Representatives on Safeguards which was presided over by Dr. G. Randers.

COMMITTEE TO ADVISE THE DIRECTOR GENERAL ON PERMANENT HEADQUARTERS

Established on 20 March 1958

Composition up to 2 October 1959:

Argentina	Japan
Canada	Netherlands
India	Romania

Latest composition:

Brazil	India
Bulgaria	Netherlands
Canada	Spain

COMMITTEE ON AGREEMENTS FOR THE SUPPLY OF FISSIONABLE, SOURCE AND OTHER MATERIALS

Established on 3 July 1958

Composition up to 2 October 1959:

Canada
India
Japan
Poland
Union of South Africa
Union of Soviet Socialist Republics
United Arab Republic
United Kingdom of Great Britain and Northern Ireland
United States of America

Latest composition:

Brazil
Canada
Czechoslovakia
India
Japan
Union of Soviet Socialist Republics
United Arab Republic
United Kingdom of Great Britain and Northern Ireland
United States of America

COMMITTEE ON NON-GOVERNMENTAL ORGANIZATIONS

Established on 15 January 1959

Composition up to 2 October 1959:

Australia
France
India
Japan
Peru
Union of Soviet Socialist Republics
United Arab Republic
United States of America

Latest composition:

Australia
Czechoslovakia
France
India
Japan
Peru
Union of Soviet Socialist Republics
United States of America

TECHNICAL ASSISTANCE COMMITTEE

Established on 19 January 1959

Composition up to 2 October 1959:

Argentina
Belgium
Brazil
Canada
Denmark
France
India
Indonesia
Japan
Korea, Republic of
Netherlands
Poland
Union of Soviet Socialist Republics
United Arab Republic
United Kingdom of Great Britain and Northern Ireland
United States of America
Venezuela

Latest composition:

Australia
Brazil
Canada
Czechoslovakia
France
India
Indonesia
Japan
Mexico
Netherlands
Norway
Philippines
Spain
Union of Soviet Socialist Republics
United Arab Republic
United Kingdom of Great Britain and Northern Ireland
United States of America
Venezuela

ADMINISTRATIVE AND BUDGETARY COMMITTEE

Established on 19 January 1959

Composition up to 2 October 1959:

Argentina
Belgium
Canada
Denmark
France
India
Japan
Poland
Union of South Africa
Union of Soviet Socialist Republics
United Arab Republic
United Kingdom of Great Britain and Northern Ireland
United States of America

Latest composition:

Brazil
Canada
Czechoslovakia
France
India
Japan
Union of Soviet Socialist Republics
United Arab Republic
United Kingdom of Great Britain and Northern Ireland
United States of America

AD HOC COMMITTEE ON APPRAISALS

Established on 5 October 1959

Composition:

Brazil	Netherlands
Canada	Union of Soviet Socialist Republics
France	United Kingdom of Great Britain and Northern Ireland
India	United States of America

SPECIAL WORKING GROUP OF EXPERT REPRESENTATIVES ON SAFEGUARDS

Established on 20 January 1960

Latest composition:

Brazil	Norway
Czechoslovakia	Union of Soviet Socialist Republics
France	United Kingdom of Great Britain and Northern Ireland
India	United States of America

AD HOC COMMITTEE ON THE AGENCY'S INSPECTORS

Established on 7 April 1960

Composition:

Brazil	Netherlands
Bulgaria	Union of Soviet Socialist Republics
Czechoslovakia	United Arab Republic
France	United Kingdom of Great Britain and Northern Ireland
India	United States of America
Japan	

C. Meetings of the Board

	Date	Number of meetings held
1959		
	1 and 2 July	3
	14-26 September	11
	5 October	2

Date	Number of meetings held
1960	
12-22 January	16
29 March - 7 April	16
14-24 June	17
Total 1959 - 60	65

ANNEX II

RESIDENT REPRESENTATIVES OF MEMBER STATES

State	Resident Representative
ARGENTINA	Mr. A.B. Estévez
BELGIUM	Professor J. Errera
BULGARIA[a/]	Mr. I.P. Daskalov
CZECHOSLOVAKIA[a/]	Dr. K. Petrzelka
DENMARK	Mr. S. Kristensen
EL SALVADOR	Dr. J.C. Chávez
GREECE	Mr. T.Griva Gardikioti
HOLY SEE	Mgr. O. de Liva
INDONESIA[a/]	Mr. R.R. Djajakoesoema
IRAN	Dr. A.A. Azizi
ISRAEL	Mr. Y. Sahar
ITALY	Mr. G. Guidotti
MONACO	Mr. H.P. Masmejean
POLAND	Dr. L. Leszczynski
PORTUGAL[a/]	Mr. E. Bugalho
ROMANIA	Mr. C. Nicuta
SPAIN[a/]	Mr. J.S. de Erice y O'Shea
SWEDEN	Mr. S. Allard
SWITZERLAND	Mr. B. de Fischer
TURKEY	Mr. S. Yemiscibasi
UNION OF SOUTH AFRICA[a/]	Mr. D.B. Sole
UNION OF SOVIET SOCIALIST REPUBLICS[a/]	Mr. L.M. Zamyatin
UNITED ARAB REPUBLIC[a/]	Mr. I. Fahmy
UNITED STATES OF AMERICA[a/]	Mr. P.F. Foster
YUGOSLAVIA	Mr. S. Nakicenovic

Permanent Representative of the Secretary-General of the United Nations to the IAEA

Mr. Zahir Ahmed

a/ This State is also a Member of the Board of Governors during the year 1959-60.

ANNEX III

OUTSTANDING CONTRIBUTIONS TO THE 1958 AND 1959 REGULAR BUDGETS

(Expressed in United States dollars)

	1958	1959	Total
AFGHANISTAN	-	2 412	2 412
ARGENTINA	-	52 818	52 818
BELGIUM	-	1 445	1 445
BULGARIA	-	1 044	1 044
CHINA	85 929	242 963	328 892
CUBA	10 222	12 018	22 240
DOMINICAN REPUBLIC	-	2 612	2 612
ETHIOPIA	4 089	2 612	6 701
GREECE	-	2 167	2 167
GUATEMALA	-	2 212	2 212
HAITI	-	2 090	2 090
HONDURAS	1 636	2 090	3 726
HUNGARY	6 165	20 378	26 543
NICARAGUA	-	2 090	2 090
PARAGUAY	1 636	2 090	3 726
PERU	-	4 425	4 425
PHILIPPINES	-	1 445	1 445
TUNISIA	433	2 612	3 045
UNITED ARAB REPUBLIC	-	1 453	1 453
	110 110	360 976	471 086

ANNEX IV

CONTRIBUTIONS TO THE 1960 REGULAR BUDGET AND ADVANCES TO THE WORKING CAPITAL FUND

(Expressed in United States dollars)

	ASSESSED		PAID		OUTSTANDING	
	Regular Budget	Working Capital Fund	Regular Budget	Working Capital Fund	Regular Budget	Working Capital Fund
AFGHANISTAN	2 921	1 000	-	1 000	2 921	-
ALBANIA	2 337	800	-	800	2 337	-
ARGENTINA	60 183	20 600	-	20 600	60 183	-
AUSTRALIA	96 994	33 200	44 162	33 200	52 832	-
AUSTRIA	23 372	8 000	10 000	8 000	13 372	-
BELGIUM	70 700	24 200	-	24 200	70 700	-
BRAZIL	55 509	19 000	55 509	19 000	-	-
BULGARIA	8 765	3 000	-	2 600	8 765	400
BURMA	4 090	1 400	4 090	1 400	-	-
BYELORUSSIAN SOVIET SOCIALIST REPUBLIC	25 709	8 800	6 428	8 800	19 281	-
CAMBODIA	2 337	800	-	800	2 337	-
CANADA	168 863	57 800	168 863	57 800	-	-
CEYLON	5 259	1 800	5 259	1 800	-	-
CHINA	271 700	93 000	-	93 000	271 700	-
CUBA	13 439	4 600	-	-	13 439	4 600
CZECHOSLOVAKIA	47 328	16 200	47 328	16 200	-	-
DENMARK	32 721	11 200	32 721	11 200	-	-
DOMINICAN REPUBLIC	2 921	1 000	-	1 000	2 921	-
ECUADOR	2 921	1 000	2 921	1 000	-	-
EL SALVADOR	2 921	1 000	723	1 000	2 198	-
ETHIOPIA	2 921	1 000	-	-	2 921	1 000
FINLAND	19 282	6 600	19 282	6 600	-	-
FRANCE	347 074	118 800	216 692	118 800	130 382	-
GERMANY, FEDERAL REPUBLIC OF	289 229	99 000	144 615	99 000	144 614	-

	ASSESSED		PAID		OUTSTANDING	
	Regular Budget	Working Capital Fund	Regular Budget	Working Capital Fund	Regular Budget	Working Capital Fund
GREECE	12 270	4 200	-	4 200	12 270	-
GUATEMALA	2 921	1 000	-	1 000	2 921	-
HAITI	2 337	800	-	800	2 337	-
HOLY SEE	2 337	800	2 337	800	-	-
HONDURAS	2 337	800	-	-	2 337	800
HUNGARY	22 788	7 800	-	7 800	22 788	-
ICELAND	2 337	800	2 337	800	-	-
INDIA	133 220	45 600	133 220	45 600	-	-
INDONESIA	25 709	8 800	25 709	8 800	-	-
IRAN	11 102	3 800	11 102	3 800	-	-
IRAQ	4 674	1 600	4 674	1 600	-	-
ISRAEL	7 596	2 600	1 445	2 600	6 151	-
ITALY	122 119	41 800	61 060	41 800	61 059	-
JAPAN	118 613	40 600	118 613	40 600	-	-
KOREA, REPUBLIC OF	11 102	3 800	11 102	3 800	-	-
LUXEMBOURG	2 921	1 000	200	1 000	2 721	-
MEXICO	38 564	13 200	38 564	13 200	-	-
MONACO	2 337	800	2 337	800	-	-
MOROCCO	7 596	2 600	7 596	2 600	-	-
NETHERLANDS	54 924	18 800	54 924	18 800	-	-
NEW ZEALAND	22 788	7 800	722	7 800	22 066	-
NICARAGUA	2 337	800	-	800	2 337	-
NORWAY	26 294	9 000	722	9 000	25 572	-
PAKISTAN	21 619	7 400	21 619	7 400	-	-
PARAGUAY	2 337	800	-	-	2 337	800
PERU	5 843	2 000	-	2 000	5 843	-
PHILIPPINES	23 372	8 000	-	8 000	23 372	-
POLAND	74 206	25 400	57 727	25 400	16 479	-
PORTUGAL	11 102	3 800	2 890	3 800	8 212	-
ROMANIA	18 698	6 400	10 837	6 400	7 861	-
SPAIN	50 250	17 200	14 450	17 200	35 800	-

	ASSESSED		PAID		OUTSTANDING	
	Regular Budget	Working Capital Fund	Regular Budget	Working Capital Fund	Regular Budget	Working Capital Fund
SUDAN	2 921	1 000	2 921	1 000	-	-
SWEDEN	75 375	25 800	5 780	25 800	69 595	-
SWITZERLAND	52 587	18 000	52 587	18 000	-	-
THAILAND	8 765	3 000	-	3 000	8 765	-
TUNISIA	2 921	1 000	-	1 000	2 921	-
TURKEY	32 137	11 000	32 137	11 000	-	-
UKRAINIAN SOVIET SOCIALIST REPUBLIC	97 578	33 400	-	33 400	97 578	-
UNION OF SOUTH AFRICA	30 384	10 400	30 384	10 400	-	-
UNION OF SOVIET SOCIALIST REPUBLICS	738 555	252 800	369 278	252 800	369 277	-
UNITED ARAB REPUBLIC	17 529	6 000	-	6 000	17 529	-
UNITED KINGDOM OF GREAT BRITAIN AND NORTHERN IRELAND	421 865	144 400	214 623	144 400	207 242	-
UNITED STATES OF AMERICA	1 899 559	650 200	-	650 200	1 899 559	-
VENEZUELA	26 878	9 200	-	9 200	26 878	-
VIET NAM	11 102	3 800	11 102	3 800	-	-
YUGOSLAVIA	18 698	6 400	10 272	6 400	8 426	-
	5 843 000	2 000 000	2 071 864	1 992 400	3 771 136	7 600

ANNEX V

VOLUNTARY CONTRIBUTIONS TO THE GENERAL FUND FOR 1959

Member State	Contributions pledged		Equivalent in US dollars (TAB rates)	Payments received
ARGENTINA	£Stg.	2 000	5 600	5 600
AUSTRALIA	US$	10 000	10 000	10 000
AUSTRIA	US$	2 000	2 000	2 000
BELGIUM	US$	10 000	10 000	10 000
BRAZIL	US$	15 000	15 000	15 000
BURMA	US$	1 000	1 000	1 000
CANADA	US$	50 000	50 000	50 000
CEYLON	Rupees	5 000	1 050	1 050
CHINA	US$	6 000	6 000	6 000
CZECHOSLOVAKIA	Kr.	100 000	13 888	-
DENMARK	US$	9 150	9 150	9 150
FINLAND	US$	5 000	5 000	5 000
FRANCE	FFrs.	14 700 000	30 000	30 000
GERMANY, FEDERAL REPUBLIC OF	US$	20 000	20 000	20 000
GREECE	Drachmas	-	2 500	2 500
GUATEMALA	US$	1 000	1 000	-
HOLY SEE	US$	2 000	2 000	2 000
INDONESIA	US$	2 000	2 000	2 000
ISRAEL	Isr.£	2 000	1 111	1 111
ITALY	US$	19 400	19 400	19 400
JAPAN	US$	20 000	20 000	20 000
MEXICO	Pesos	25 000	2 000	2 000
MONACO	US$	1 000	1 000	1 000
NETHERLANDS	US$	10 000	10 000	10 000
NORWAY	Kr.	50 000	7 000	7 000
PAKISTAN	Rupees	20 000 + $4 000	8 000	8 000
PHILIPPINES	US$	2 000	2 000	2 000
POLAND	Zlotys	100 000	25 000	25 000
PORTUGAL	US$	3 500	3 500	3 500
SWEDEN	US$	15 000	15 000	15 000
SWITZERLAND	SFrs.	50 000	11 628	11 628
THAILAND	US$	2 000	2 000	2 000

Member State	Contributions pledged		Equivalent in US dollars (TAB rates)	Payments received
TURKEY	T.£	30 000	3 333	3 333
UNION OF SOUTH AFRICA	US$	10 000	10 000	10 000
UNION OF SOVIET SOCIALIST REPUBLICS	Roubles	500 000	125 000	125 000
UNITED ARAB REPUBLIC	Eg.£	3 000	7 321	7 321
UNITED KINGDOM OF GREAT BRITAIN AND NORTHERN IRELAND	£Stg.	44 642. 17. 2	125 000	125 000
UNITED STATES OF AMERICA	US$	500 000[a/]	500 000[a/]	500 000[a/]
VENEZUELA	US$	2 000	2 000	2 000
VIET NAM	FFrs.	1 000 000	2 041	2 041
YUGOSLAVIA	US$	3 000	3 000	3 000
			1 091 522	1 076 634
UNITED STATES OF AMERICA (Matching contribution)			91 522	91 522
			1 183 044	1 168 156

a/ In addition US $600 000 for the Agency's functional laboratory.

ANNEX VI

VOLUNTARY CONTRIBUTIONS TO THE GENERAL FUND FOR 1960

Member State	Contributions pledged	Equivalent in US dollars (TAB rates)	Payments received
AUSTRALIA	US$ 12 500	12 500	12 500
AUSTRIA	US$ 5 000	5 000	1 450
BRAZIL	US$ 15 000	15 000	15 000
BULGARIA	Leva 5 000	735	-
CANADA	US$ 50 000	50 000	-
CEYLON	Equiv. of US$ 1 250 in Rupees	1 250	1 250
CHINA	US$ 5 000	5 000	-
CZECHOSLOVAKIA	Kr. 100 000	13 888	-
DENMARK	US$ 8 400	8 400	8 400
FINLAND	US$ 5 000	5 000	-
FRANCE	FFrs. 147 000	30 000	-
GERMANY, FEDERAL REPUBLIC OF	US$ 40 000	40 000	20 000
HOLY SEE	US$ 2 000	2 000	2 000
INDIA	Equiv. of US$ 20 000 in Rupees	20 000	-
ISRAEL	Isr.£ 2 000	1 111	-
JAPAN	US$ 22 000	22 000	22 000
KOREA, REPUBLIC OF	US$ 2 000	2 000	2 000
MEXICO	Pesos 62 500	5 000	5 000
MONACO	US$ 2 000	2 000	2 000
NETHERLANDS	US$ 12 500	12 500	12 500
NORWAY	Kr. 50 000	7 000	-
PAKISTAN	US$ 2 000 plus Equiv. of US$ 2 000 in Rupees	4 000	-
PHILIPPINES	US$ 2 000	2 000	-
PORTUGAL	US$ 3 500	3 500	-
SWEDEN	US$ 15 000	15 000	-
SWITZERLAND	SFrs. 50 000	11 628	11 628
TURKEY	T.£ 40 000	4 444	4 444
UNION OF SOUTH AFRICA	US$ 10 000	10 000	-
UNITED ARAB REPUBLIC	Eg.£ 4 500	10 981	-

Member State	Contributions pledged	Equivalent in US dollars (TAB rates)	Payments received
UNITED KINGDOM OF GREAT BRITAIN AND NORTHERN IRELAND	Equiv. of US$ 125 000 in £Stg.	125 000	125 000
UNITED STATES OF AMERICA	US$ 500 000	500 000	500 000
VENEZUELA	US$ 6 900	6 900	-
YUGOSLAVIA	Equiv. of US$ 4 000 in Dinars	4 000	-
		957 837	745 172

ANNEX VII

OFFERS OF TYPE II FELLOWSHIPS

Member State	1958 programme (to 30 June 1958)	1959 programme (1 July 1958 - 30 June 1959)	1960 programme (1 July 1959 - 30 June 1960)
1. Argentina	-	10	5
2. Belgium	-	7	7
3. Brazil	-	-	30
4. Czechoslovakia	-	16[a]	16[a]
5. Denmark	-	4 - 5	4 - 5
6. France	12	12	12
7. Hungary	-	4	-
8. India[e]	5	5	5
9. Israel	-	2	-
10. Italy	10	10	10
11. Japan	7 - 10	20	20 - 30
12. Pakistan	-	5	-
13. Poland	5	-	-
14. Romania	7 - 9[b]	-	-
15. Spain	5	-	-
16. Switzerland	3	3	-
17. Union of Soviet Socialist Republics	45[c]	-	-
18. United Arab Republic	6[d]	-	-
19. United States of America	120[d]	-	80
20. Yugoslavia	5	5	5

a/ Including 8 for long term (5-6 years) training.

b/ Including 5 for long term (5-6 years) training.

c/ Including 25 for long term (5-6 years) training; this offer covers the 1958, 1959 and 1960 programmes and remains valid until it is exhausted.

d/ This offer covers the 1958 and 1959 programmes.

e/ The Government of India has offered 5 fellowships on a continuing basis.

ANNEX VIII

OFFERS OF EXPERTS

State	Number of experts offered	Expense to the Agency
ARGENTINA	not specified	none
AUSTRALIA	not specified	not specified
BELGIUM	not specified	not specified
CANADA	not specified	not specified
CZECHOSLOVAKIA	10	none
DENMARK	not specified	not specified
FRANCE	5-10	Agency or recipient countries to pay
INDIA	not specified	not specified
ISRAEL	not specified	not specified
ITALY	not specified	not specified
JAPAN	2	none
SWITZERLAND	not specified	not specified
UNION OF SOUTH AFRICA	not specified	not specified
UNION OF SOVIET SOCIALIST REPUBLICS	20-30	none
UNITED KINGDOM OF GREAT BRITAIN AND NORTHERN IRELAND	not specified	not specified
UNITED STATES OF AMERICA	20-30	none
YUGOSLAVIA	20	not specified

ANNEX IX

EQUIPMENT DONATED DURING THE PERIOD UNDER REVIEW

Country	Description	Remarks
FRANCE	4 Pi GM counting system	For the Agency's laboratories
	Low background counting system	
	Set of 26 different standard electronic circuits	
	Set of 10 mechanical accessories	
	Coincidence unit	
	Flow counter	
	Oscilloscope	
NETHERLANDS	Single-channel gamma spectrometer consisting of: Scintillation detector type PW 4111 Universal lead castle: 1 Probe changer, type PW 4122 2 Top/ground plates, type PW 4123 3 Rings (lead), type PW 4124 Preamplifier, type PW 4071 Anode supply, type PW 4029 Linear amplifier, type PW 4072 Single channel pulse-height analyzer, type PW 4082 Automatic scanner, type PW 4083 HV supply, type PW 4083 Universal scaler, type PW 4032 Count ratemeter, type PW 4042 Automatic recorder, type PR 2210 A/21 Rack for mounting the apparatus mentioned above	For the Agency's laboratories
UNITED STATES OF AMERICA	Equipment up to a value of $200 000	For technical assistance projects
YUGOSLAVIA	Single-channel gamma spectrometer consisting of: Scintillation detection unit SC-1A HV supply UN3-C Linear amplifier P-100 Single channel pulse-height amplifier AA-2 Slow sawtooth generator Linear ratemeter RM-2 Recorder Decimal scaler SR-1	For the Agency's laboratories

ANNEX X

THE AGENCY'S CONFERENCES, SYMPOSIA AND SEMINARS DURING THE PERIOD UNDER REVIEW

Title	Dates	Place
Seminar on Atomic Energy and its Educational Problems	6 - 10 July 1959	Saclay, France
International Conference on Preservation of Foods by Ionizing Radiations (initiated by the Massachusetts Institute of Technology and co-sponsored by the Agency)	27 - 30 July 1959	Cambridge, Mass., USA
Conference on the Application of Large Radiation Sources in Industry, and especially to Chemical Processes	8 - 12 September 1959	Warsaw, Poland
Symposium on the Metrology of Radionuclides	14 - 16 October 1959	Vienna, Austria
Conference on the Disposal of Radioactive Waste	16 - 21 November 1959	Monaco
Seminar on Codes for Reactor Computations	25 - 29 April 1960	Vienna, Austria
Symposium on Fuel Element Fabrication, with Special Emphasis on Cladding Materials	10 - 13 May 1960	Vienna, Austria
Symposium on Selected Topics in Radiation Dosimetry	7 - 11 June 1960	Vienna, Austria

ANNEX XI

THE AGENCY'S PANELS DURING THE PERIOD UNDER REVIEW

Title	Dates
Advisory Committee on Scientific and Technical Information	13-17 July 1959
Panel on the Transportation of Large Radioactive Sources and Fissile Materials	13-20 July 1959
Study Group on the Use of Radioisotope Teletherapy Units and Supervoltage Radiation in Radiotherapy	3-5 August 1959
Panel on Civil Liability and State Responsibility for Nuclear Hazards	20 August - 1 September 1959
Meeting of Experts on Physics of Heavy Water Lattices	31 August - 4 September 1959
Panel on Collection and Analysis of Radioactive Substances in the Biosphere	7-12 September 1959
Scientific Advisory Committee	30-31 October 1959
Panel on Radioactive Waste Disposal into the Sea	13-15 November 1959 22-23 November 1959
Panel on Tritium Assaying	9-10 December 1959
Consultants' meeting on Calcium 47	14-16 December 1959
Panel on Transportation of Radioisotopes and of Radioactive Ores and Residues of Low Specific Activity	1-5 February 1960
Panel on the Transportation of Large Radioactive Sources and Fissile Materials	8-13 February 1960
Panel on the Preparation of the Manual of Safe Operation of Critical Assemblies and Research Reactors	22-26 February 1960
Panel on Co-ordination of Research Contracts on Selected Topics in Radiobiology	2-4 March 1960
Panel on Liability for Nuclear Propelled Ships	7-17 March 1960
Panel on Nuclear Power Costing	14-18 March 1960
Scientific Advisory Committee	25-27 April 1960
Panel on Liability for Nuclear Propelled Ships: meeting of scientific advisers to the panel	20-25 June 1960

ANNEX XII

THE AGENCY'S PUBLICATIONS

1. Proceedings of Conferences, Symposia, Seminars and Panels

Nuclear Electronics, first two volumes

Medical Radioisotope Scanning

Large Radiation Sources in Industry

Physics of Heavy Water Lattices

Education and Nuclear Energy[a/]

Disposal of Radioactive Wastes (Sea), first volume

Use of Radioisotope Teletherapy Units and Supervoltage Radiation in Radiotherapy[b/]

2. Directories

International Directory of Radioisotopes, first two volumes

Directory of Nuclear Reactors, first two volumes

Radioisotope Teletherapy Equipment - International Directory

3. Manuals

Safe Handling of Radioisotopes (Safety Series No. 1)[a/]

4. Series and Periodical Publications

World List of Institutions concerned with Atomic Energy:
Argentina, Austria, Burma, China, Denmark, Finland, France, Greece, Israel, Italy, Republic of Korea, Luxembourg, Norway, Peru, Philippines, Romania, Sweden, Thailand, Union of South Africa

Atomic Energy: Conferences, Meetings and Training Courses

List of References on Nuclear Energy, two volumes

Multilateral Agreements (Legal Series No. 1)

Surveying and Evaluating Radioactive Deposits (Review Series No. 1)

Tritium: dosage, préparation de molécules marquées et applications biologiques (Review Series No. 2)

Equipment eléctronique pour l'industrie nucléaire française (Review Series No. 3)

Recent Research on Controlled Thermonuclear Fusion (Review Series No. 4)

Application of High Energy Radiations in Therapy (Bibliographical Series No. 1)

Review of Research on Non-destructive Analysis of Reactor Fuel Elements (Technical Reports Series No. 1)

5. Miscellaneous

Nuclear Science Fellowships[a/]

Nuclear Science Fellowships, first revised edition[a/]

Technical Assistance[a/]

Assistance through Exchange of Nuclear Scientists[a/]

Preliminary Assistance Mission Reports on Afghanistan, Argentina, Burma, Brazil, Ceylon, China, Indonesia, Iran, Iraq, Japan, Republic of Korea, Philippines, Thailand, Turkey, Venezuela, Viet-Nam and Yugoslavia

Publications Catalogue[a/]

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a/ Available in English, French, Russian and Spanish.

b/ Available in Russian; other language editions to follow.

ANNEX XIII

RESEARCH CONTRACTS AWARDED OR COMMITTED
BETWEEN 1 JULY 1959 AND 30 JUNE 1960

Contract number	Country	Institution	Title of Contract	Amount of Agency contribution in US $	Subject group
			A. NEW CONTRACTS		
10[a]	United Kingdom of Great Britain and Northern Ireland	Chester Beatty Research Institute, London	Determination of the reasons for the great variations in radiosensitivity of different micro-organisms and the examination of the possibility of sensitizing micro-organisms to ionizing radiations	6 000	Radiobiology
11[a]	Sweden	Institute for Medical Genetics, Uppsala University	Genetical investigations on the effect of ionizing radiation on human cells grown in vitro	13 965	Radiobiology
12	International bodies	Working Group on Oceanic Radioactivity (Special Committee on Oceanic Research)	(a) The co-ordination of observations and measurements of radioactivity in oceanic waters (b) The collaboration in measurements and analysis of C-14, H-3, U, Th, Ra, fission and fissile and induced radioactivity in the oceanic environments (c) The methods of measurement of radioactivity associated with oceanic sediments, plankton, nekton, algae, etc. (d) The execution of oceanic tracer experiments, both natural and artificial	2 740	Disposal of radioactive waste
13	Japan	Institute of Applied Microbiology, Tokyo University	Effects of incorporated radioisotopes upon the stability of genetic materials	4 000	Radiobiology
14	Austria	Institute of Plant Physiology, Vienna University	Effects of radiation on plant cells and its modification with protective substances	4 024	Health physics and radiation protection
15	Belgium	Institute of General Pathology, Microbiology and Biochemistry, Liège University	Study of chemically-induced metabolic modifications of cells susceptible to modify the sensitivity of micro-organisms to ionizing radiation	12 000	Radiobiology

Contract number	Country	Institution	Title of Contract	Amount of Agency contribution in US $	Subject group
16	France	Central Agricultural Research Station, Ministry of Agriculture, Versailles	Investigation of the interrelationship of root absorption and leaf absorption of radioisotopes in herbaceous plants	5 100	Disposal of radioactive waste
17	France	Virus Department, Institut Pasteur, Paris	Action of ionizing radiations on pathogenic human and animal viruses; effects on virulence and antigenic vaccinogen activity	8 000	Radiobiology
18	Netherlands	Physiological Laboratory, Groningen University	Investigation of intracellular chemical radiation protection substances, using as indicator immediate low-level X-ray reactions	8 000	Health physics and radiation protection
19	Japan	National Meteorological Institute, Tokyo	Studies of contamination in local marine resources	4 000	Disposal of radioactive waste
20	Japan	Faculty of Agriculture, Tokyo University	Studies of uptake of radioisotopes by edible marine products	4 000	Disposal of radioactive waste
21	Japan	Institute of Plant Nutrition and Fertilizer, Tokyo	Studies on the use of radioactive isotopes for fertilizer evaluation	2 800	Research assistance, agriculture
22	Italy	Laboratory of Oceanography of the National Committee for Nuclear Research, Lerici	The study of uptake, accumulation and loss of radioactive material by marine bacteria	14 700	Disposal of radioactive waste
23	Japan	Institute of Plant Nutrition and Fertilizer, Tokyo	The uptake of radioactive wastes by lowland rice from contaminated soils, due to irrigation water, and its decontamination	2 800	Disposal of radioactive waste
24	Thailand	University of Medical Sciences, Bangkok	Radioisotope study of Haemoglobin E.-Thalassaemia	5 000	Research assistance, medicine
25	Philippines	Radioisotope Laboratory and Thyroid Clinic, University of the Philippines, Manila	Radioisotopic investigation of the cause of endemic goitre in various places in the Philippines	10 200	Research assistance, medicine
26	Iraq	Radioisotopes Department, Republic Hospital, Baghdad	(a) Red-cell life-span in patients with congenital or acquired haemolytic anaemia, using radiochromium and preoperative spleen scanning (b) The ethiology of tropical iron-deficiency anaemia, using radioiron in patients with parasitic infections and in cases of loss of iron through sweat or desquamation	4 800	Research assistance, medicine

Contract number	Country	Institution	Title of Contract	Amount of Agency contribution in US $	Subject group
27	Japan	Kihara Institute for Biological Research, Yokohama	Application of radiation-induced mutations to plant breeding	5 240	Research assistance, agriculture
28	Japan	Department of Morphological Genetics, National Institute of Genetics, Misima	Comparison between mutation rates induced by acute and chronic gamma radiation	6 360	Radiobiology
29	France	Agricultural Research Station, Ministry of Agriculture, Versailles	Study of radiosensitivity and isolation of radio-resistant strains of lactic bacillus	10 200	Radiobiology
30	France	Central Dairy Research Station, Jouy-en-Josas	Study of the mechanism of activation and inactivation of bacterial spores with ionizing radiations	10 200	Radiobiology
31	Finland	Department of Botany, Turku University	Mutation rate at specific autosomal loci in different species of Drosophila	9 150	Radiobiology
32	France	Atomic Energy Commission, Paris	Determination of the enrichment factors of calcium isotopes on ion exchange resins; investigation of the various systems of electrolytic separation	10 000	Health physics and radiation protection
33	Argentina	National Atomic Energy Commission, Health Physics Division, Buenos Aires	Behaviour of fission products in soil	6 000	Disposal of radioactive waste
34	Czechoslovakia	Institute of Biology, Czechoslovak Academy of Sciences, Department of Experimental Biology and Genetics, Prague	Investigation of a method of two-step grafting of haematopoietic and germinal tissues to counteract incipient radiation sterility resulting from accidental exposure to ionizing radiation	15 000	Health physics and radiation protection
35	United Kingdom	Oxford University, Department of Biochemistry	A study of the primary biochemical lesions produced by ionizing radiation in mammalian tissues	9 000	radiobiology
36	Italy	Institute of Compared Zoology and Anatomy, Padova University	A quantitative evaluation of cell survival as a function of radiation dose	5 000	Radiobiology

Contract number	Country	Institution	Title of Contract	Amount of Agency contribution in US $	Subject group
37	Norway	Norwegian Institute for Water Research, Oslo	The influence of radioactive wastes on biological conditions in a river	20 000	Disposal of radioactive waste
38	Switzerland	Radium Institute, Geneva	Measurements of radium and radio-strontium accumulation in humans and study of its biological effects	10 500	Health physics and radiation protection
39	Switzerland	Physiological Institute, Geneva University	Changes in the spontaneous activities and in artificially stimulated electrophysiological responses of the nervous system of unanaesthetized animals exposed to various doses of localized radiations	5 500	Radiobiology
40	New Zealand	Dominion X-ray and Radium Laboratory, Department of Health, Christchurch	Investigation of the practicability of using human teeth as an indicator of the Sr-90 burden in the population	4 170	Radiobiology
41	Poland	Reactor Exploitation Department, Institute of Nuclear Research, Warsaw	Non-destructive analysis of irradiated fuel elements using a flux integrating monitor	5 200	Safeguard methods
42	Poland	Radiobiology Department, Institute of Nuclear Research, Laboratory of Clinical Biochemistry, Institute of Haematology, Warsaw	Mechanism of proteolysis of I-131-labelled fibrinogen	3 420	Radiobiology
43	Poland	The Laboratory of Radiation Chemistry, Institute of Nuclear Research, Warsaw	Investigation of primary and intermediate products of gamma radiation on aqueous solution by absorption spectroscopy method applied during the irradiation	3 420	Radiobiology
44	Yugoslavia	Department of Biochemistry, Biological Laboratory, Institute of Nuclear Sciences, "Boris Kidric", Vinča	(a) Recovery effects of highly polymerized (native) nucleic acid injected into lethally irradiated animals (b) The study of chemical and physio-chemical changes of nucleic acids isolated from irradiated organisms	7 000	Health physics and radiation protection

Contract number	Country	Institution	Title of Contract	Amount of Agency contribution in US $	Subject group
45	Norway	Norsk Hydro's Institute for Cancer Research, The Norwegian Radium Hospital, Oslo	An investigation of the radio sensitivity of the spermatogonia of Drosophila melanogaster	8 000	Radiobiology
46	Germany, Federal Republic of	Institute of Physiological Chemistry, Johannes Gutenberg University, Mainz	Comparison between modifications induced by ionizing radiations when nucleic acids are respectively irradiated, within intact or lyophilized cells, within isolated cell nuclei or in the pure state	7 800	Radiobiology
47	Norway	Atomic Energy Institute, Kjeller, Lillestrøm	Non-destructive analysis of irradiated fuel elements by gamma ray scanning	16 000	Safeguards methods
48	Yugoslavia	Pathophysiological Dept., Biological Laboratories, Institute of Nuclear Sciences, "Boris Kidric", Vinča	Radioiron study of physiological properties and role of hematopoetin (anaemic factor) in the hematopoetic regeneration of irradiated animals	5 635	Health physics and radiation protection
49	Germany, Federal Republic of	Institute of Physics, Giessen University	Non-destructive measurement of burn-up of fuel elements using a monitoring method based on changes of physical properties of solids under irradiation	9 800	Safeguards methods
50	Sweden	Radioisotope Laboratory, Malmö Allmänna Sjukhus	Radioisotope study of calcium metabolism in man	23 350	Health physics and radiation protection
51	Netherlands	Laboratory for Applied Enzymology and Radiobiology, Leyden State University	Investigation of the effects of ionizing radiation on the genetic material of bacteriophages with emphasis on the production, fractionation and purification of irradiated DNA	15 000	Radiobiology
52	Italy	Institute of General Physiology, particularly of Domestic Animals, and of Biochemistry, Perugia University	Biological effects of variation of radioactivity of K in the perfused isolated heart	5 000	Radiobiology

Contract number	Country	Institution	Title of Contract	Amount of Agency contribution in US $	Subject group
53	Austria	Institute for Applied Microbiology, Agricultural University, Vienna	Selection of sulfhydryl compounds for radiation protection using a new microbiological method	2 300	Health physics and radiation protection
54	Israel	Tel Hashomer Government Hospital, Radium and Isotopes Institute, Tel Hashomer	Use of radioisotope scanning in liver pathology	10 700	Research assistance, medicine
55	Yugoslavia	Department of Plant Breeding and Genetics, Faculty of Agriculture and Forestry, Zagreb	Production of useful mutations in agricultural plants through radiation	2 700	Research assistance, agriculture
56	Germany, Federal Republic of	Institute for Agricultural Chemistry and Soil Science, Göttingen University	Mode of action of raw phosphate fertilizers and their limits of application	7 670	Research assistance, agriculture
57	Australia	Commonwealth Scientific and Industrial Research Organzation, Canberra, Division of Plant Industry	An investigation of the factors which influence the movement of strontium-90 from soils to plants	6 200	Waste disposal
58	United Arab Republic	United Arab Republic Atomic Energy Establishment and Institute of Oceanography, Cairo University	An experimental study of Sr-90 contained in certain marine animals following possible release of radioactive waste in sea water	8 970	Waste disposal
59	Italy	Limnology Division, Centro di Studi Nucleari di Ispra	Studies on the biological concentration of fission products in molluscs from water, with special reference to an index of radioactivity in water	14 800	Waste disposal
60	Israel	Technion-Israel Institute of Technology, Department of Nuclear Science, Haifa	Study of the stability of reactor systems by means of an analogue simulator	9 410	Small and medium power reactors

Contract number	Country	Institution	Title of Contract	Amount of Agency contribution in US $	Subject group
			B. RENEWALS		
$1R_2$	Austria	First Chemical Institute, Department of Radiochemistry, Vienna University	Factors controlling the distribution of fission products in the biosphere using a scintillation spectrometer	5 100	Disposal of radioactive waste
$2R_2$	Austria	Pharmacological Institute, Vienna University	Investigation of electrophysiological responses of biological systems, in particular of new cells, to irradiation with small doses of X-ray and other types of ionizing radiation	2 090	Radiobiology
$3R_1$	Austria	Physiological Institute, Vienna University	Investigation of the mode of the protective action of certain sulfhydril compounds against radiation effects on the synthesis of deoxyribonucleic acid, using tritium-labelled thymidine	3 550	Health physics and radiation protection
$9R_1$	Austria	Atomic Institute, Vienna	Possibility of using wood as an inexpensive raw material for the preparation of ion exchange substances to be employed in waste treatment apparatus	2 210	Disposal of radioactive waste
$8R_1$	Greece	Department of Clinical Therapeutics, Athens University	(a) Scanning of the liver following administration of radioiodine-labelled Rose Bengal in patients having echinococcus cysts (b) Studies of iron metabolism with radioiron and of red cell life span with radiochromium in patients suffering from either thalassaemia or sickle cell anaemia	7 200	Research assistance, medicine

a/ Contracts 10 and 11 were also mentioned in Annex XI to the Board's report to the General Conference for 1958-59 (GC(III)/73), but entered into force during the period under review in the present report.