

THE AGENCY'S PROGRAMME FOR 1985 AND 1986 AND BUDGET FOR 1985

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INTERNATIONAL ATOMIC ENERGY AGENCY

THE AGENCY'S PROGRAMME FOR 1985-86 AND BUDGET FOR 1985

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LIST OF ABBREVIATIONS

AG	Advisory Group
Agency	International Atomic Energy Agency
AL	The Agency's Laboratory (at Seibersdorf)
BIPM	Bureau international des poids et mesures
BSS	Basic Safety Standards for Radiation Protection
CANDU	Canada deuterium-uranium [reactor]
CAS	Committee on Assurances of Supply
CCAQ	Consultative Committee on Administrative Questions
CEC	Commission of the European Communities
CIAMDA	Computer Index of Atomic and Molecular Data
CIDA	Canadian International Development Agency
CINDA	Computer Index of Neutron Data
CIR	Computerized inspection report
CM	Consultants' Meeting
CMEA	Council for Mutual Economic Assistance
CRP	Co-ordinated research programme
C/S	Containment and surveillance
DANIDA	Danish International Development Agency
Division of Development	Division of Development and Technical Support
Division of Food and Agriculture	Joint FAO/IAEA Division of Isotope and Radiation Applications of Atomic Energy in Food and Agricultural Development
Division of Standardization	Division of Standardization, Training and Administrative Support
ECE	Economic Commission for Europe (of the United Nations)
EEDB	Energy and economic data bank
ENPP	Energy and nuclear power planning
ESA	European Space Agency
ESEP	Electrical system expansion planning
ESNA	European Society for Nuclear Methods in Agriculture
EURATOM	European Atomic Energy Community
FAO	Food and Agriculture Organization of the United Nations
FBR	Fast breeder reactor
Food and Agriculture	Joint FOA/IAEA Division of Isotope and Radiation Applications of Atomic Energy in Food and Agricultural Development
GCR	Gas-cooled reactor
GESAMP	United Nations Joint Group of Experts on the Scientific Aspects of Marine Pollution
GS	General Service category (staff)
GSF	Gesellschaft für Strahlen- und Umweltforschung (Federal Republic of Germany)
HLW	High-level waste
HTGR } HTR }	High-temperature gas-cooled reactor

HWR	Heavy-water reactor
IAEA	International Atomic Energy Agency
IARC	International Agency for Research on Cancer
IATA	International Air Transport Association
IBRD (World Bank)	International Bank for Reconstruction and Development
ICAO	International Civil Aviation Organization
ICIPE	International Centre for Insect Physiology and Ecology (Nairobi)
ICRM	International Committee for Radionuclide Metrology
ICRP	International Commission on Radiological Protection
ICRU	International Commission on Radiation Units and Measurements
ICSC	International Civil Service Commission
ICTP	International Centre for Theoretical Physics (at Trieste)
IEA	International Energy Agency
IEC	International Electrotechnical Commission
IEMVT	Institut d'élevage et de médecine vétérinaire tropicale
IFFIT	International Facility for Food Irradiation Technology
IFRC	International Fusion Research Control
IIASA	International Institute for Applied Systems Analysis
ILO	International Labour Organisation
ILRAD	International Laboratory for Research on Animal Disease
IMO	International Maritime Organization
INDC	International Nuclear Data Committee
INFCE	International Nuclear Fuel Cycle Evaluation
INIS	International Nuclear Information System
INTOR	International Tokamak Reactor
INTURGEO	International Uranium Geology Information System
IPS	International Plutonium Storage
IRPA	International Radiation Protection Association
IRRI	International Rice Research Institute
IRS	Incident Reporting System
ISFM	International Spent Fuel Management
ISIS	IAEA Safeguards Information System
ISO	International Organization for Standardization
ISO/REMCO	Reference Materials Commission of the ISO
IUPAC	International Union of Pure and Applied Chemistry
IUPAP	International Union of Pure and Applied Physics
IWG	International working group
JECFI	Joint FAO/IAEA/WHO Expert Committee on the Wholesomeness of Irradiated Foods
Joint FAO/IAEA Division	See Division of Food and Agriculture
LEU	Low enriched uranium fuel
LIL	Low- and intermediate-level
LMFBR	Liquid metal fast breeder reactor

LWR	Light-water reactor
MAED	Model for Analysis of Energy Demand
M&O	Maintenance and Operatives Service category (staff)
m/m	Man-month
Monaco Laboratory	International Laboratory of Marine Radioactivity (at Monaco)
NDA	Non-destructive assay
NDT	Non-destructive testing
NEA	Nuclear Energy Agency (of OECD)
NEANDC	Nuclear Energy Agency Nuclear Data Committee
NFCIS	Nuclear Fuel Cycle Information System
NPP	Nuclear power plant
NPT	Treaty on the Non-Proliferation of Nuclear Weapons (reproduced in document INFCIRC/140)
NUSS programme	Agency's programme on nuclear safety standards for nuclear power plants
NWAL	Network of Analytical Laboratories
OAS	Organization of American States
OAU	Organization of African Unity
ODA	Overseas Development Administration (United Kingdom)
OECD	Organization for Economic Co-operation and Development
OIML	International Organization of Legal Metrology
OPEC	Organization of the Petroleum Exporting Countries
OSART	Operational Safety Review Team
P	Professional category (staff)
PNE	Nuclear explosions for peaceful purposes
PRA	Probabilistic risk analysis
PRIS	Power Reactor Information System
QA	Quality assurance
QC	Quality control
RCA	Regional Co-operative Agreement for Research, Development and Training Related to Nuclear Science and Technology
RDS	Reference Data Series
RIA	Radioimmunoassay
SAC	Scientific Advisory Committee
SAGSI	Standing Advisory Group on Safeguards Implementation
SAGSTRAM	Standing Advisory Group on the Safe Transport of Radioactive Materials
SAL	Safeguards Analytical Laboratory
SAREC	Swedish Agency for Research Co-operation with Developing Countries
SIDA	Swedish International Development Authority
SIR	Safeguards Implementation Report
SIT	Sterile-insect technique
SMPRs	Small and medium power reactors
SP	Specialists' Meeting
SSAC	State system of accounting and control

SSDL	Secondary Standard Dosimetry Laboratory
TC	Technical Committee
TC resources	Technical co-operation resources
TECDOC	Document in Technical Documents Series
Tlatelolco Treaty	Treaty for the Prohibition of Nuclear Weapons in Latin America
TRCUD	Technical Review Committee on Underground Disposal
Trieste Centre	International Centre for Theoretical Physics (at Trieste)
TRS	Technical Reports Series
UNCNRET	United Nations Centre for Natural Resources, Energy and Transport
UNDP	United Nations Development Programme
UNDRO	Office of the United Nations Disaster Relief Co-ordinator
UN-DTCD	United Nations Department of Technical Co-operation for Development
UNEP	United Nations Environment Programme
UNESCO	United Nations Educational, Scientific and Cultural Organization
UNICEF	United Nations Children's Fund
UNIDO	United Nations Industrial Development Organization
UNIPED	International Union of Producers and Distributors of Electrical Energy
UNRWA	United Nations Relief and Works Agency for Palestine Refugees in the Near East
UNSCEAR	United Nations Scientific Committee on the Effects of Atomic Radiation
UPU	Universal Postal Union
US-AID	United States Agency for International Development
USDA	United States Department of Agriculture
USDOE (USDE)	United States Department of Energy
VIC	Vienna International Centre
WASP	Wien Automatic System Planning Package
WEC	World Energy Conference
WHO	World Health Organization
WMO	World Meteorological Organization
World Bank (IBRD)	International Bank for Reconstruction and Development

NOTE

All sums of money are expressed in United States dollars.

INTRODUCTION

General

1. In accordance with Article XIV.A of the Statute, the Board of Governors hereby submits to the General Conference the budget estimates for 1985, the preliminary estimates for 1986 and the Agency's programme of work for the two-year period 1985-86. The Board requests the General Conference to adopt the draft resolutions set forth in Annex III.

2. The estimates for 1986 are based on conditions and trends as known now and are presented as preliminary estimates only. Final budget estimates for 1986 will be presented to the General Conference at its twenty-ninth regular session, with supporting programme explanations if significant changes have occurred. Adjustments to the preliminary figures may be necessary as a result of changes in programme emphasis or of factors outside the control of the Agency.

Format

3. The Agency's budget for 1985 and programme for 1985-86 is presented in a new format. The presentation of previous documents - first used in 1972 for the 1973 budget and 1973-78 programme and constantly expanded to give more detailed information - had become too voluminous to be used easily by either of the two main groups of readers, namely programme managers and the Agency's governing bodies. For programme managers, the information contained in the document was dispersed too widely to be an effective tool for day-to-day management purposes. Governing bodies, on the other hand, felt that it was difficult to gain a clear picture of the main trends and proportions in the Agency's programme and budget from such a detailed presentation.

4. In an attempt to meet these criticisms, the budget and programme document has now been divided into two parts. Part I is directed at the governing bodies. It contains a narrative description of the programme for 1985-86 which is intended to define the aims of sub-programmes, the means of achieving those aims and the impact which actions are designed to have in Member States. Summaries of resources by programme area, budget tables and the draft resolutions are also included in this part.

5. The most significant change is that the new programmes are not confined to the limits of the Agency's organizational structure. Programmes may be interdisciplinary, requiring input from several Divisions. It is hoped that this approach of real programme budgeting will make it easier to focus on what budgetary allocations are meant to achieve rather than on the Division or Department through which the objectives are to be accomplished.

6. Whereas Part I presents the programme content according to subject matter, Part II provides programme information according to the organizational structure of the Agency. Part II is destined for programme managers and contains a list in tabular form of actions to be taken by Divisions to fulfil the planned programme. It is designed to assist managers in planning and following up the implementation of their programmes. Financial tables and manpower tables, grouped by appropriation section, are also provided.

7. An attempt has been made to improve the budgetary information presented by showing the total resources that are foreseen for implementation in each programme area and programme. Clearly, technical co-operation resources and other extrabudgetary resources represent rough estimates only. They are based on past experience or expectations and do not prejudice in any way the priorities to be set by Member States. With these reservations taken into account, it is nonetheless considered important for the governing bodies to be aware of the order of magnitude of each programme. Technical co-operation resources include the Technical Co-operation Fund and funds from UNDP and other extrabudgetary sources which are foreseen for actual implementation in 1985 (see Table 1 and the following summary tables by programme area).

Technical programme trends

8. The programme "Nuclear Power Planning and Implementation in Developing Countries" will continue to provide developing Member States with comprehensive assistance both through direct advisory services and through support to the technical co-operation programme. This will include assistance with forecasting energy and electricity demand, planning electrical power systems and evaluating the potential energy supply role of nuclear power. Attention will also be given to the assessment of manpower and infrastructure requirements and development and the examination of reactor concepts suitable for developing countries. More emphasis will be placed on providing direct assistance to individual Member States on request, either as a complete package or on specific aspects only. Training will be an important component of the programme, the aim being to ensure the active participation of local staff in the studies and programmes.

9. For nuclear power to be economically competitive, good plant performance is essential. The average load factor achieved to date, however, has been only 64%, with some large deviations both above and below that figure. The "Nuclear Power Plant Performance" programme will contribute to the efforts being made in Member States to improve nuclear power plant reliability and technical and economic performance through performance analysis based on the Power Reactor Information System (PRIS) and the establishment of quality assurance and control programmes. Emphasis will be placed on exchanging information and providing advice on technical and economic aspects of improved reliability of nuclear power plants.

10. The "Nuclear Fuel Cycle" programme will continue to cover developments in all steps of the nuclear fuel cycle and nuclear materials technology. An up-to-date assessment of world uranium and thorium resources and supply and related technology will be maintained and used to provide information and advice to Member States. Data will continue to be collected on the status, capacity, processes, economics and operation of existing and planned fuel cycle facilities throughout the world in order to provide Member States with information on the availability of fuel cycle services. In the area of fuel technology, efforts will be directed towards the improvement of the reliability of fuel elements and to the promotion of quality control of fuel fabrication. Spent fuel management activities will be expanded to evaluate spent fuel arisings and the storage capacity requirements of Member States as well as periodically to compile data on technical and economic aspects of spent fuel storage, transportation and reprocessing. Technical support will be provided to the Committee on Assurances of Supply (CAS) as and when required and to any other projects for international co-operation in this field. Increased attention will be paid to steps in the nuclear fuel cycle other than uranium geology and exploration.

11. Work under the "Radioactive Waste Management" programme will continue to be accorded high priority because of the importance of this subject for nuclear power development as a whole. The principal areas of activity will be the preparation of international codes, guides and recommendations, the treatment of alpha-bearing wastes, the management of gaseous wastes and wastes from unplanned events, studies on particular aspects of the decommissioning of nuclear facilities and the development of international guidelines and technical criteria for underground disposal. The environmental fate and transport of released radionuclides of global and regional significance will receive increased attention. A review of the Agency's definition and recommendations under the London Dumping Convention will be completed in 1985.

12. The International Laboratory of Marine Radioactivity in Monaco will continue to conduct its intercalibration programme and to perform studies on the impact of radionuclides released into the marine environment, including the deep sea. Through co-ordinated research programmes in which a number of national institutions participate, the Laboratory will continue to promote national research efforts on the radiological assessment of marine waste disposal. Furthermore, to the extent that financial support from other

international organizations such as UNEP, FAO and the Inter-Governmental Oceanographic Commission allows, the Laboratory will provide back-up for various international research and monitoring projects relating to non-radioactive marine pollution in regional seas. This will include developing methods, organizing intercalibrations and providing training. Negotiations are currently in progress between the Agency and the Government of Monaco on a long-term seat agreement for the Laboratory which will replace the present tripartite agreement.

13. The "Advanced Systems and Applications" programme will foster the worldwide exchange of information on such topics as fast breeders and advanced convertors, fusion research and technology and nuclear heat applications. These are currently being developed in at least 15 Member States. Closer international co-operation on specific aspects that require further investigation will be encouraged. Greater emphasis will be placed on providing information to all Member States on the status and future prospects of advanced systems. As regards research and development in the nuclear fusion area, the International Tokamak Reactor (INTOR) project and the monthly journal Nuclear Fusion will continue to play an essential role.

14. The "Food and Agriculture" programme will continue to emphasize the application of nuclear and associated technology in solving problems concerning the productivity of crops and livestock and their protection against pests and diseases, the protection of the agricultural environment and the protection of food against spoilage. Two principal mechanisms will be employed in implementing the programme: first, selected co-ordinated research programmes in specific areas where nuclear techniques can achieve the greatest impact; and secondly, technical co-operation projects through which training, expert advice and essential equipment will be provided. The main trend will be towards promoting nuclear applications in the broad field of agricultural biotechnology with specific inputs being provided by the Agency's Laboratory. Attention will focus on the following activities: biological control of insect pests, especially fruit flies, blood-sucking insects and Lepidopterous crop insects; the use of radiation in combination with tissue culture techniques for plant improvement; the evaluation and improvement of biological nitrogen fixation by legumes; the use of artificial systems for assessing nutrient utilization by ruminant livestock; the development of animal vaccines; the use of immunoassay techniques to assess animal reproduction and detect contagious diseases; and studies of the biological degradation of fibres and agrochemicals. Furthermore, increased attention will be given to the economic aspects of irradiation for food preservation.

15. The main emphasis in the "Human Health" programme will continue to be on assisting developing countries to acquire and apply nuclear medical techniques. In nuclear medicine, the wider and more efficient use of radioimmunoassay and in vivo procedures will be promoted, with assistance being given in the establishment and maintenance of quality control programmes for these techniques. Radiation therapy activities will concentrate on the promotion, mainly through the vehicle of technical co-operation projects, of simple brachytherapy techniques which are suitable for cancer treatment in developing countries. In the radiation biology area, increased attention will be given to the promotion of the radiation sterilization of medical products in developing country conditions and to the development of radiation-attenuated vaccines. In line with the growing attention being paid by Member States to the health aspects of nutrition and to the protection of the environment, the Agency will increase its efforts to promote the use of nuclear techniques to study the role of elements of biomedical and bioenvironmental importance. This will include the monitoring of toxic heavy metals in foodstuffs and the investigation of the bio-availability of nutrients. Secondary Standard Dosimetry Laboratories (SSDLs) in Member States will continue to be supported through the IAEA/WHO SSDL network. Dose intercomparison services will be provided as in the past, and an international dose assurance service for radiation processing facilities will be established. Close collaboration will be maintained with WHO and other international organizations.

16. The "Physical Sciences and Technology" programme will continue to focus on promoting the practical uses of radiation and nuclear technology. Efforts will continue to be made to overcome the long-standing problem of the under-utilization of research reactors and to assist Member States in converting their research reactors to low enriched uranium fuels. In chemistry, increased emphasis will be placed on reviewing the state-of-the-art in the application of labelled compounds and radiopharmaceuticals and in materials chemistry for fusion technology. Activities relating to the thermodynamics of nuclear materials will be considerably reduced. With regard to the industrial application of nuclear methods and techniques, non-destructive testing and industrial radiation processing and technology will continue to be promoted. More emphasis will be given to nuclear techniques for mineral exploration and processing, to tracer techniques in industry, and to nuclear techniques for environmental protection. In hydrology, emphasis will be placed on applications to problems in groundwater hydrology occurring in the assessment and development of water resources and the evaluation of potential geothermal resources. Priority will also be given to providing information and training on interpretative methods. Developing countries are expected to participate more strongly in the Agency's nuclear data activities. Increased emphasis will be given to reviewing the data needs in specific areas such as radiation damage, radiation therapy, nuclear safety analysis, nuclear materials safeguards and fusion. The review and improvement of existing data files and the co-ordination of the collection and evaluation of atomic collision data required for the design of magnetic confinement fusion devices will also be stressed. In the new sub-programme "Instrumentation", more attention will be given to training, in particular on the design and construction of special purpose electronic instruments and their integration into computer-aided systems.

17. The Agency's Laboratory will retain its dual function of supporting the Agency's programme on the application of nuclear techniques to practical problems of interest to Member States and of carrying out analyses of nuclear fuel cycle samples collected by the Agency's safeguards inspectors. In the former function, greater emphasis will be placed on providing field advice and on "service work" in support of research programmes in Member States. With regard to the second function, the emphasis will be placed more on new methods of non-destructive assay and on improved quality control of new procedures and less on direct chemical analyses.

18. The International Centre for Theoretical Physics will continue to foster, through research and training for research, the advancement of physics and, to a lesser extent, work in applicable mathematics. The work will be oriented towards the needs of developing countries and will seek to encourage scientists from such countries to continue and expand their research work. Following the recommendations of the Ad Hoc Review Committee which examined the Centre's activities in 1983, the programme of work in the next five years will concentrate on fundamental physics, physics and high technology, physics of the environment, physics of the living state and mathematics. Special attention will be paid to topics of particular relevance to developing countries. It is planned to increase gradually the scientific staff of the Centre. Depending on the availability of resources and especially the continuing support of the Italian Government, consideration will be given to establishing demonstration laboratories for use in connection with training activities in selected subject areas. In addition, the present programme of fellowships in Italian academic institutes and laboratories may be extended to similar institutes and laboratories in other countries.

19. The "Radiation Protection" programme will continue to establish basic criteria and standards and to promote a universal common understanding of these criteria. Efforts will be made to encourage their practical implementation in situations where exposure can be controlled (both in occupational protection and in the protection of the general public and the environment) as well as in hypothetical abnormal situations (e.g. in planning and preparedness for radiation emergencies). The programme will also continue to cover the radiation safety of the transport of radioactive materials, an area in which the Agency's authority is recognized worldwide. The issuance of

the Basic Safety Standards for Radiation Protection (BSS) marked the introduction of a new radiation protection philosophy in the form of a dose limitation system. As a result, the emphasis in radiation protection is now shifting towards providing guidelines to explain the practical application of the highly complex system outlined in the BSS. This represents a vital step towards the goal of keeping exposures to ionizing radiation "as low as reasonably achievable, economic and social factors being taken into account". Basic guides and specific recommendations will be prepared for occupational radiation protection, including mining and milling operations. Guides and recommendations will also be drawn up on the protection of the public and the environment, transport radiation safety, emergency planning and preparedness, the handling of exposed individuals and a number of other subjects. The Agency will also continue to identify needs and resources for mutual emergency assistance. These efforts will take the form of written policy guidelines, training and fellowships, seminars, symposia, and safety missions to Member States.

20. In the "Safety of Nuclear Installations" programme, the development phase of the standards and guidelines of the Nuclear Safety Standards (NUSS) programme will virtually be complete by 1985 and the principal activity will be the promotion of their implementation. As the emphasis in many Member States moves from siting and design problems to operational safety, the emphasis of the programme will also shift. Assistance will be provided to requesting Member States through an Operational Safety Review Team (OSART), a group of specialists who visit a plant for a period of three weeks to analyse various aspects of plant operation and assist national authorities in determining whether the level of safety is adequate. Through its Incident Reporting System (IRS), the Agency will collect and evaluate data on significant abnormal incidents which occur throughout the world. This information will be disseminated to Member States in order to help prevent similar accidents elsewhere.

21. Under the "Risk Assessment" programme, attention will focus on making risk assessment techniques available on request to Member States with evolving nuclear programmes, compiling the experience gained from studies already performed in Member States, assisting Member States in carrying out case studies, and providing training to staff from developing countries on the application of risk assessment methods.

22. During the past few years, some headway has been made under the "Safeguards Implementation" programme in closing the gap between the inspection effort required by safeguards agreements and that actually implemented. This trend will not continue during the period 1985-86. Although there will be an increase in the manpower available for inspection in 1985 because of the large number of new inspectors recruited in 1984 who will become fully available for inspection work only in 1985, there will be a corresponding increase in the inspection effort required. This is the result mainly of expected changes in operating conditions at existing facilities rather than the relatively small increase in new facilities coming under safeguards. The growth in the budget of this programme is due mainly to the higher staff costs incurred because the salary costs of the new inspectors were included in the 1984 budget for only a part of the year whereas they must be included in full in 1985, and to the rise in the cost of inspection travel in line with the increase in the level of inspection to be carried out.

23. In the "Safeguards Development and Support" programme, the trend will be towards consolidation of the innovations and improvements introduced in the last biennium, the aim of which was to achieve greater managerial efficiency and more rational use of staff. In addition, many new or improved types of safeguards equipment came into operational use. A standardized format for the reporting of inspection results using computerized methods was developed, creating maximum flexibility and feedback. Better personnel management methods led to significant improvements in recruitment. Further developments are expected in the field of safeguards equipment, particularly in the area of optical surveillance and the investigation of new forms of non-optical surveillance. Improvements will also be effected in the

management area, where an expanded management information system will be developed and management practices regularly updated.

24. After fourteen years of growth and development, the International Nuclear Information System (INIS) has reached the status of a mature, well-established system. Future changes will be made largely to take advantage of new developments in communications and information-handling technology such as improved network facilities, microcomputers, new methods of computer-driven typesetting and new machine-storage systems. As a result of joining INIS, some developing countries have been able to improve their own infrastructure in the technical information service area. This trend is expected to continue as the INIS Secretariat places increasing emphasis on training and other assistance to Member States.

25. In response to a request from the Preparatory Committee for the Third NPT Review Conference, the Director General will submit to the Conference, which is to be held in September 1985, documentation on the Agency's activities under Articles III, IV and V of NPT. Also, the Agency will co-operate closely with the Secretariat of the United Nations Conference for the Promotion of International Co-operation in the Peaceful Uses of Nuclear Energy in the preparations for this Conference which is to be held in 1986. Documentation covering all areas of the Agency's work relevant to the Conference will be drawn up.

Trends in the contribution of the technical Divisions to the technical assistance and co-operation programme

26. It is important to bear in mind when considering the Agency's technical programme for 1985-86 and the manning table and budget for the same period that the programme described in Part I and given in tabular form in Part II covers only part of the work to be performed by the technical Divisions and hence only part of their budget. The other part of their programme of work for 1985-86 consists of technical support to the technical assistance and co-operation programme. Details of this programme for 1985 will be considered by the Technical Assistance and Co-operation Committee in December 1984 and by the Board of Governors in February 1985 after requests from Member States for technical assistance have been collected, reviewed by the Secretariat and discussed with representatives of the requesting Member States.

27. Over the years, it has become the established practice within the Secretariat that the appropriate units of the Department of Technical Co-operation assume responsibility for the programming, planning, administration, monitoring and evaluation of technical assistance activities. These units are also responsible for the procurement of the goods and services needed to implement approved technical co-operation projects, for the forward planning of technical co-operation resources and for liaison with other United Nations organizations in the technical co-operation area.

28. The technical Divisions, particularly in the Departments of Research and Isotopes and Nuclear Energy and Safety, provide substantial technical support with regard to the assessment of project requests and to project execution and evaluation. These activities are performed by technical officers who are assigned to each project. The Agency therefore not only arranges for the funding, programming and administration of technical co-operation projects but also provides the technical skills necessary to implement these projects from the pool of expertise that exists within the technical Divisions.

29. In order to demonstrate the scope of the support provided by the technical Divisions, figures based on the actual work carried out in 1983 are given in the table below. A comparison of the number of technical co-operation projects and the number of professional staff in the Divisions indicates that on average one professional staff member was responsible for

four projects. In addition to providing support to 646 technical co-operation projects, the Secretariat provided a total of 84 man-months of expert services in 191 missions to Member States in 1983. Some 300 project requests were appraised technically and 725 requests for Agency fellowships were evaluated.

TECHNICAL CO-OPERATION PROJECTS RECEIVING SUPPORT FROM
TECHNICAL DIVISIONS IN 1983

Department/ Division	Number of projects supported	Volume of TC programme planned for implementation in 1983 (in 1000 \$)	Number of technical officers involved
DEPARTMENT OF NUCLEAR ENERGY AND SAFETY			
Division of Nuclear Fuel Cycle	55	2 155	10
Division of Nuclear Power	23	821	9
Division of Nuclear Safety	90	3 836	17
Sub-Total	168	6 812	36
DEPARTMENT OF RESEARCH AND ISOTOPES			
Joint FAO/IAEA Division	132	11 352	16
Division of Life Sciences	97	3 912	9
Division of Research and Laboratories	219	10 641	16
Agency Laboratory	24	1 196	8
Sub-Total	472	27 101	49
Other Units	6	90	7
GRAND TOTAL	646	34 003	92

30. The targets set for contributions to the Technical Assistance and Co-operation Fund rose by 18% in 1984 and are expected to increase by 16% in 1985 and 15% in 1986. Accordingly, it is expected that the Agency's technical co-operation programme, which is designed to respond to the evolving needs of Member States in the use of nuclear energy, will experience further significant growth in 1985/86, thereby increasing the workload of the Department of Technical Co-operation. Implementation of guidelines laid down by the Board as part of the 1983 Technical Co-operation Policy Review commenced in 1984 and will continue in 1985 and 1986, with particular attention being given to multi-year and intercountry assistance, to the integration of training needs into project design and to the dynamic programming of available resources. Efforts will continue to be made to acquire additional sources of financing for projects that cannot be supported from the Technical Assistance and Co-operation Fund.

31. The expected growth in the volume of technical assistance and co-operation to be provided in 1985 and 1986 will also result in increased demand for support from the technical Divisions. In accordance with established policy, it is intended to satisfy this growing demand fully. It therefore follows that there will be substantial growth in this part of the technical Divisions' programme of work in 1985 and 1986.

Exchange Rate

32. In order to facilitate comparison with the 1984 budget document, the estimates for 1985 are based on the same exchange rate as the programme tables in document GC(XXVII)/686, the Agency's Budget for 1984, namely 16.60 Austrian schillings to the United States dollar. The effects of various exchange rates on the 1985 estimates both at the total Regular Budget level and at the assessment level are illustrated below:

Exchange Rate	1984		1985	
	Total Regular Budget	Assessment	Total Regular Budget	Assessment
AS 15.70	105 159 000	96 810 000	111 458 000	102 629 000
AS 16.60	100 769 000	92 581 000	106 805 000	98 144 000
AS 17.50 ^{a/}	96 830 000	88 786 000	102 630 000	94 120 000
AS 18.40	93 277 000	85 363 000	98 864 000	90 490 000

The Regular Budget for 1985

33. The total of the Regular Budget estimates for 1985 as shown in Table 33, The Regular Budget by Appropriation Section, is \$ 106 805 000 at an exchange rate of 16.60 schillings to the dollar. The Regular Budget by Department is shown in Table 34, and by Item of Expenditure in Table 35.

34. The 1985 estimates are based on zero real growth on a comparable basis. The programme increase of \$ 201 000 (0.2%) is due to the provision of Chinese translation, interpretation and printing for the General Conference. No funds are foreseen for Chinese language services for the Board of Governors. No funds are included for the International Plutonium Storage Study in the 1985 estimates pending a decision by the Board. Programme increases foreseen for Technical Assistance and Co-operation, Research and Isotopes and Safeguards are offset by programme decreases in respect of Executive Management and Administration and of General Services.

35. Price increases for the items of expenditure making up the Agency's Regular Budget are expected to amount to 5.8%. For salaries and wages for established posts, an increase of 5.5% is foreseen which, in addition to local inflation, takes into account an out-of-area cost component for professionals and makes allowance for some additional within-grade increments and promotions. For consultants, overtime and temporary assistance, an increase of 5% is assumed.

36. As a result of increases in common staff costs which have already taken effect (increases in pension fund contributions, dependency allowance and education grant for Professionals, health insurance premiums, fares and so on), it is assumed that common staff costs will amount to at least 34% of salaries for established posts as compared with 33% in the 1984 budget. This increase, which represents a rise of 8.7% over 1984, is confirmed by actual requirements in 1983.

37. Apart from common staff costs, the highest increases are foreseen for meetings and travel. In accordance with the practice of semi-full budgeting, increases actually experienced during the past year are taken into account. Price increases of 6% for meetings and 7% for travel are based on subsistence allowance rate increases of 0-24% and increases in air fares ranging from 5 to 12% for the main destinations.

^{a/} Actually approved for 1984 in document GC(XXVII)/686/Mod.1.

38. A rise of 5.5% is foreseen for VIC operating costs, this being the figure which is envisaged by UNIDO (the organization responsible for the maintenance and operation of the VIC) and which is included in the UN budget. A price increase of 5% is foreseen for scientific equipment, and one of 4% for scientific supplies, common equipment and common supplies.

39. The price increase percentages indicated in the cost summaries of the individual Divisions are those described above. They apply in total and in the average. Owing to the necessity for rounding, however, actual percentages may vary from these target percentages.

40. It is proposed that the Regular Budget estimates for 1985 of \$ 106 805 000 (resulting from the utilization of a rate of 16.60 schillings to the dollar for their presentation) be funded, after deduction of estimated income of \$ 8 661 000, by an assessment on Member States of \$ 98 144 000 (see Table 3, The Regular Budget, Summary of Income). The assessment for 1985 is an increase of \$ 5 563 000 over the assessment for 1984 and results from a 0.2% programme increase (attributable solely to the addition of Chinese language services for the General Conference) and a 5.8% price increase.

41. These estimates are based on an exchange rate of 16.60 schillings to the dollar. The effects of various other exchange rates on the 1985 estimates for the assessment on Member States are illustrated in paragraph 32 above (see also Table 2).

Manning Table

42. It is proposed to reclassify the posts of the heads of the laboratories in Seibersdorf and Monaco to the D-1 level in 1985 in order to comply with the standards established by the International Civil Service Commission and to take into account the growing scope of activities. A third upgrading to the D-1 level is foreseen for the post of the RCA Co-ordinator, and this too is in accordance with ICSC standards.

43. Following the annual survey of manpower requirements, a number of posts are being redeployed within the Secretariat in order to make use of available manning table posts. A total of nine additional posts will be required in 1985. Detailed information is provided in Tables 37-42(b) and the explanations attached thereto.

Extrabudgetary resources

44. As in previous budget documents, information is provided on the total extrabudgetary resources expected to be available to the Agency for carrying out its programme in 1985. Funds from other UN organizations are, however, shown separately (see Table 1, Total Resources for Implementation in 1985).

45. The dollar amounts for extrabudgetary resources are tentative and represent the best estimates that can be made at present. Some amounts represent requests made by the Agency and some are reasonable expectations based on past experience; several are still subject to confirmation.

Target for voluntary contributions to the Technical Assistance and Co-operation Fund

46. The provision of technical assistance by the Agency to its developing Member States is financed from the Technical Assistance and Co-operation Fund, which receives its income mainly in the form of voluntary contributions for which a target is set each year. The Board agreed to recommend that the target for 1985 be established at \$26 million. Taking into account miscellaneous income, it is expected that the Fund will amount in total to \$27 million.

Working Capital Fund

47. It is proposed that for 1985 the Agency's Working Capital Fund remain at the same level as for 1984, namely \$ 2 million. This proposal is reflected in draft resolution C set forth in Annex III. In order to preclude the need to increase the level of the Working Capital Fund, Member States are urged to make every effort to pay their contributions promptly.

Report on the budget to the General Assembly of the United Nations

48. In accordance with Article XVI of the Agency's relationship agreement with the United Nations^{a/}, the budget will be reviewed by the Advisory Committee on Administrative and Budgetary Questions (ACABQ), which will report on the administrative aspects thereof to the General Assembly of the United Nations.

^{a/} INFCIRC/11, Part I.

TOTAL RESOURCES FOR IMPLEMENTATION IN 1985

Table 1

Programme Area/Programme	Regular Budget estimates	Funds from other UN organisations ^{a/}	TC resources ^{b/}	Other extra- budgetary resources	TOTAL
1. NUCLEAR POWER AND THE FUEL CYCLE					
1.1. Nuclear Power Planning and Implementation in Developing Countries	1 543 000	-	830 000	-	2 373 000
1.2. Nuclear Power Plant Performance	1 161 000	-	450 000	-	1 611 000
1.3. Nuclear Fuel Cycle	1 568 000	-	2 170 000	-	3 738 000
1.4. Radioactive Waste Management	3 044 000	390 000	450 000	118 000	4 002 000
1.5. Advanced Systems and Applications	1 672 000	-	-	-	1 672 000
Sub-Total	8 988 000	390 000	3 900 000	118 000	13 396 000
2. NUCLEAR APPLICATIONS					
2.1. Food and Agriculture	3 174 000	1 268 000	8 900 000	445 000	13 787 000
2.2. Human Health	2 480 000	20 000	4 700 000	120 000	7 320 000
2.3. Physical Sciences and Technology	4 078 000	-	11 500 000	490 000	16 068 000
2.4. The Laboratory ^{c/}	4 533 000	-	-	-	4 533 000
2.5. International Centre for Theoretical Physics	1 189 000	440 000	-	3 504 000	5 133 000
Sub-Total	15 454 000	1 728 000	25 100 000	4 559 000	46 841 000
3. NUCLEAR SAFETY AND RADIATION PROTECTION					
3.1. Radiation Protection	2 288 000	-	2 100 000	65 000	4 453 000
3.2. Safety of Nuclear Installations	2 559 000	-	1 900 000	97 000	4 556 000
3.3. Risk Assessment	555 000	-	-	-	555 000
Sub-Total	5 402 000	-	4 000 000	162 000	9 564 000
4. SAFEGUARDS					
4.1. Safeguards Implementation	21 906 000	-	-	-	21 906 000
4.2. Safeguards Development and Support	14 449 000	-	-	3 350 000	17 799 000
Sub-Total	36 355 000	-	-	3 350 000	39 705 000
S. DIRECTION AND SUPPORT AREA					
S.1. Executive Management and Secretariat of the Policy-making Organs	5 955 000	-	-	-	5 955 000
S.2. Administration	7 814 000	-	-	-	7 814 000
S.3. Technical Co-operation Servicing and Co-ordination	5 169 000	-	-	-	5 169 000
S.4. General Services	11 410 000	-	-	-	11 410 000
S.5. Specialized Service Activities	5 416 000	-	-	-	5 416 000
S.6. Shared Support Services ^{d/}	991 000	-	-	-	991 000
Sub-Total	36 755 000	-	-	-	36 755 000
Total Agency programmes	102 954 000	2 118 000	33 000 000	8 189 000	146 261 000
Services provided to others	3 851 000	-	-	-	3 851 000
TOTAL	106 805 000	2 118 000	33 000 000	8 189 000	150 112 000
SOURCE OF FUNDS					
Assessment on Member States	98 144 000	-	-	-	98 144 000
Income from work for others	3 851 000	-	-	-	3 851 000
Other miscellaneous income	4 810 000	-	-	-	4 810 000
Other UN organizations	-	2 118 000	-	-	2 118 000
TC old funds	-	-	20 000 000	-	20 000 000
TC new funds	-	-	13 000 000	-	13 000 000
Extrabudgetary Resources	-	-	-	8 189 000	8 189 000
TOTAL	106 805 000	2 118 000	33 000 000^{b/}	8 189 000	150 112 000

^{a/} Funds from FAO, UNEP, UNESCO, etc.

^{b/} TC resources include the Technical Co-operation Fund and funds from UNDP and other extrabudgetary sources which are foreseen for actual implementation in 1985. Allocations to individual programmes in this table are only indicative, based on extrapolations of past experience and do not prejudice in any way the priorities to be set by Member States.
The amount of \$33 000 000 is foreseen for actual implementation in 1985 while total new resources are expected to be \$43 500 000. Of the latter \$ 26 million (60%) represents the target for voluntary contributions to the TC fund for 1985.

	1985	1986	1987	Total
TC old funds	20 000 000	7 500 000	1 500 000	-
TC new funds : 1985	13 000 000	15 000 000	15 500 000	43 500 000
after 1985	-	13 500 000	23 000 000	-
Expected implementation	33 000 000	36 000 000	40 000 000	-

^{c/} The figures relate to 2.1, 2.2 and 2.3 after transferring the cost of SAL to Safeguards.

^{d/} Includes only the Library, all other services having been allocated to the user programmes.

THE REGULAR BUDGET
By programme area and programme

Table 2

Programme Area/Programme	1984 Budget	Programme increase (decrease) \$ %	1985 at constant prices	Price increase %	1985 Estimates	1986 Preliminary estimates
1. NUCLEAR POWER AND THE FUEL CYCLE						
1.1. Nuclear Power Planning and Implementation in Developing Countries	1 479 000	(21 000) (1.4)	1 458 000	5.8	1 543 000	1 700 000
1.2. Nuclear Power Plant Performance	1 071 000	27 000 2.5	1 098 000	5.7	1 161 000	1 274 000
1.3. Nuclear Fuel Cycle	1 494 000	(15 000) (1.0)	1 479 000	6.0	1 568 000	1 725 000
1.4. Radioactive Waste Management	2 858 000	15 000 0.5	2 873 000	6.0	3 044 000	3 349 000
1.5. Advanced Systems and Applications	1 573 000	8 000 0.5	1 581 000	5.8	1 672 000	1 842 000
Sub-Total	8 475 000	14 000 0.1	8 489 000	5.9	8 988 000	9 890 000
2. NUCLEAR APPLICATIONS						
2.1. Food and Agriculture	2 987 000	17 000 0.6	3 004 000	5.7	3 174 000	3 428 000
2.2. Human Health	2 302 000	42 000 1.8	2 344 000	5.8	2 480 000	2 780 000
2.3. Physical Sciences and Technology	3 777 000	73 000 1.9	3 850 000	5.9	4 078 000	4 376 000
2.4. The Laboratory	4 281 000	- -	4 281 000	5.9	4 533 000	5 077 000
2.5. International Centre for Theoretical Physics	1 179 000	- -	1 179 000	0.8	1 189 000	1 308 000
Sub-Total	14 526 000	132 000 0.9	14 658 000	5.4	15 454 000	16 969 000
3. NUCLEAR SAFETY AND RADIATION PROTECTION						
3.1. Radiation Protection	2 141 000	17 000 0.7	2 158 000	6.0	2 288 000	2 524 000
3.2. Safety of Nuclear Installations	2 360 000	54 000 2.2	2 414 000	6.0	2 559 000	2 820 000
3.3. Risk Assessment	596 000	(71 000) (11.9)	525 000	5.7	555 000	610 000
Sub-Total	5 097 000	- -	5 097 000	6.0	5 402 000	5 954 000
4. SAFEGUARDS						
4.1. Safeguards Implementation	19 547 000	1 091 000 5.5	20 638 000	6.1	21 906 000	24 377 000
4.2. Safeguards Development and Support	14 145 000	(462 000) (3.2)	13 683 000	5.6	14 449 000	16 194 000
- IPS	85 000	(85 000) (100.0)	-	-	-	-
Sub-Total	33 777 000	544 000 1.6	34 321 000	5.9	36 355 000	40 571 000
5. DIRECTION AND SUPPORT AREA						
5.1. Executive Management and Secretariat of the Policy-making Organs	5 602 000	14 000 0.2	5 616 000	6.0	5 955 000	6 490 000
5.2. Administration	7 660 000	(284 000) (3.7)	7 376 000	5.9	7 814 000	8 368 000
5.3. Technical Co-operation Servicing and Co-ordination	4 642 000	230 000 5.0	4 872 000	6.1	5 169 000	5 789 000
5.4. General Services	11 275 000	(473 000) (4.2)	10 802 000	5.6	11 410 000	12 209 000
5.5. Specialized Service Activities	5 099 000	24 000 0.4	5 123 000	5.7	5 416 000	5 969 000
5.6. Shared Support Services	940 000	- -	940 000	5.4	991 000	1 050 000
Sub-Total	35 218 000	(489 000) (1.4)	34 729 000	5.8	36 755 000	39 875 000
Total Agency programmes	97 093 000	201 000 0.2	97 294 000	5.8	102 954 000	113 259 000
Services provided to others	3 676 000	- -	3 676 000	4.8	3 851 000	4 052 000
TOTAL REGULAR BUDGET	100 769 000^{a/}	201 000 0.2	100 970 000	5.8	106 805 000	117 311 000
Less: Miscellaneous income						
Income from work for others	3 676 000	- -	3 676 000	4.8	3 851 000	4 052 000
Others	4 512 000	- -	4 512 000	6.6	4 810 000	5 030 000
Assessment on Member States	92 581 000 ^{a/}	201 000 0.2	92 782 000	5.8	98 144 000	108 229 000

a/ For comparison, the figures for 1984 and 1985 are prepared on the basis of an exchange rate of AS.16.60, since this rate was used in the calculation of the detailed budget estimates for 1984 in GC(XXVII)/686, while the final appropriations for 1984 were based on a rate of AS.17.50 GC(XXVII)/686/Mod.1. The effect of various exchange rates on the estimates at the Total Regular Budget level and the assessment level are illustrated below:

Exchange rate	1984		1985	
	Total Regular Budget	Assessment	Total Regular Budget	Assessment
AS. 15.70	105 159 000	96 810 000	111 458 000	102 629 000
AS. 16.60	100 769 000	92 581 000	106 805 000	98 144 000
AS. 17.50	<u>96 830 000</u>	<u>88 786 000</u>	102 630 000	94 120 000
AS. 18.40	93 277 000	85 363 000	98 864 000	90 490 000

THE REGULAR BUDGET

Summary of income

Table 3

Item	1983 Actuals	1984 Budget	Increase or (decrease) over 1984	1985 Estimate	1986 Preliminary estimate
Assessed contributions on Member States	75 818 590	92 581 000 ^{a/}	5 563 000	98 144 000	108 229 000
Special contributions and unused appropriations on transfer to permanent Headquarters	112 747	-	-	-	-
Miscellaneous income					
(a) Income from work for others					
Data processing services	1 057 703	1 230 000	(66 000)	1 164 000	1 206 000
Printing services	1 374 648	1 196 000	172 000	1 368 000	1 443 000
Medical services	415 395	417 000	24 000	441 000	472 000
Library services	669 424	833 000	45 000	878 000	931 000
Sub-total	3 517 170	3 676 000	175 000	3 851 000	4 052 000
(b) Attributable to specific programmes					
Publications of the Agency	505 215	700 000	(100 000)	600 000	640 000
INIS publications including microfiches	514 280	630 000	(30 000)	600 000	640 000
CINDA publications	19 813	20 000	-	20 000	20 000
Advertising	18 061	22 000	(2 000)	20 000	20 000
Laboratory income	230 609	210 000	(30 000)	180 000	180 000
Sales of surplus property	4 929	30 000	(20 000)	10 000	10 000
Amounts recoverable under safeguards agreements	304 215	200 000	70 000	270 000	290 000
UNDP programme support cost	1 141 855	800 000	(50 000)	750 000	750 000
SIDA programme support cost	48 084	-	-	-	-
Other programme support cost	9 715	-	-	-	-
Sub-total	2 796 776	2 612 000	(162 000)	2 450 000	2 550 000
(c) Not attributable to specific programmes					
Investment and interest income	4 267 131	1 500 000	450 000	1 950 000	2 050 000
Refund from the United Nations Joint Staff Pension Fund	94 705	-	-	-	-
Gain on exchange of currencies	793 104	-	-	-	-
Other	517 074	400 000	10 000	410 000	430 000
Sub-total	5 672 014	1 900 000	460 000	2 360 000	2 480 000
Total miscellaneous income	11 985 960	8 188 000	473 000	8 661 000	9 082 000
TOTAL	87 917 297	100 769 000 ^{a/}	6 036 000	106 805 000	117 311 000

^{a/} See footnote ^{a/} on table 2.

EXTRABUDGETARY RESOURCES 1983-1985

(as known on 1 July 1984)

Table 4

(excluding contributions in kind) ^{a/}

	1983 Actual obligations	1984 ^{b/} Estimate	1985 Estimate
Technical Assistance and Co-operation			
Austria	368 177	336 000	-
Belgium	21 882	99 000	-
Canada	14 167	28 000	-
Chile	-	10 000	-
Denmark	368	-	-
Federal Republic of Germany	592 889	1 663 000	[800 000]
Finland	126 670	93 000	-
France	14 392	40 000	-
Italy	1 128 256	10 584 000	[3 341 000]
Japan (RCA)	261 054	341 000	[265 000]
Saudi Arabia	13 338	12 000	-
Sweden	787 111	471 000	[50 000]
Union of Soviet Socialist Republics	(8 612)	831 000	[624 000]
United Kingdom of Great Britain and Northern Ireland	235 166	491 000	-
United States of America	469 055	4 022 000	[1 700 000]
Sub-total	4 023 913	19 021 000	[6 780 000] ^{c/}
Nuclear Power			
Federal Republic of Germany	(399)	-	-
Finland	-	15 000	-
United States of America	-	15 000	-
Sub-total	(399)	30 000	-
Nuclear Fuel Cycle			
Federal Republic of Germany	-	18 000	-
NEA/OECD	137 755	1 000	-
United States of America	(39)	16 000	-
Sub-total	137 716	35 000	-
Nuclear Safety			
Federal Republic of Germany	12 106	2 000	-
Finland	82 969	41 000	65 000
United States of America	57 562	78 000	97 000
Sub-total	152 637	121 000	162 000
Food and Agriculture			
Federal Republic of Germany	115 822	125 000	73 000
Italy	332 983	562 000	260 000
Japan	46 525	35 000	-
Sweden	105 433	270 000	112 000
United States of America	25 060	32 000	-
Sub-total	625 823	1 024 000	445 000
Life Sciences			
Japan (RCA)	-	150 000	120 000
United States of America	1 247	53 000	-
Sub-total	1 247	203 000	120 000

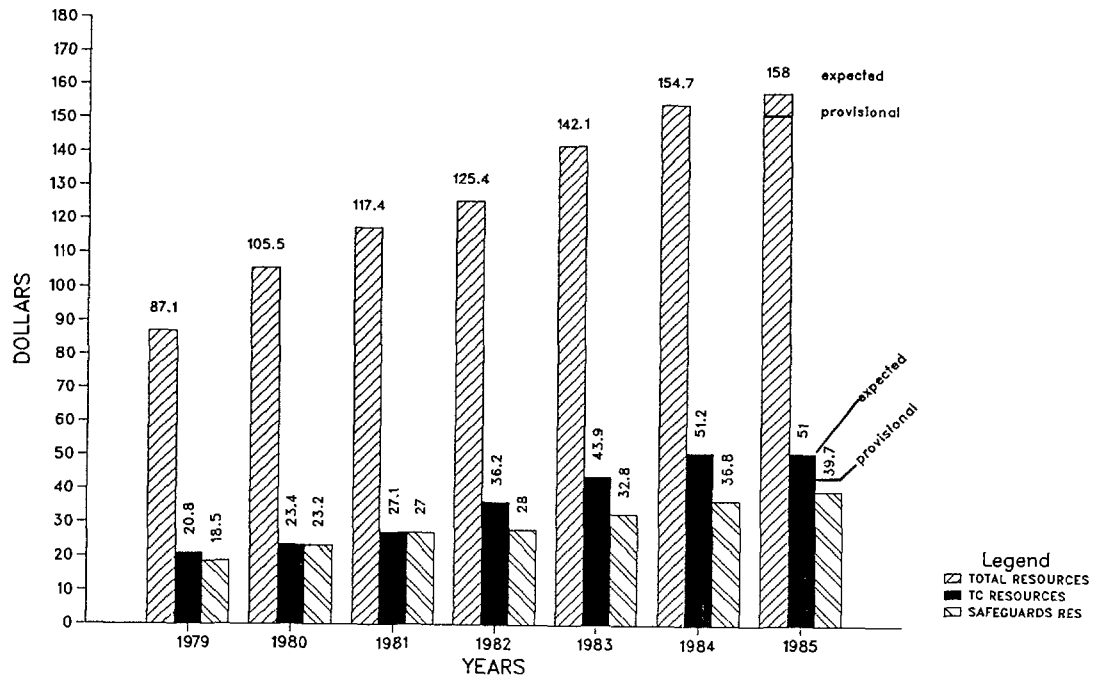
Table 4 (cont.)

	1983 Actual obligations	1984 ^{b/} Estimate	1985 Estimate
Research and Laboratories			
Australia (RCA)	44 762	129 000	110 000
Federal Republic of Germany	109 067	169 000	180 000
India (RCA)	-	50 000	50 000
Italy	-	150 000	150 000
Japan	88	-	-
United States of America	971	74 000	-
Sub-total	154 888	572 000	490 000
International Centre for Theoretical Physics			
Canada	-	54 000	-
Denmark	10 699 ^{e/}	10 000	10 000
Federal Republic of Germany	20 833 ^{e/}	21 000	-
Italy	3 000 000	3 000 000	3 000 000
Japan	27 564 ^{e/}	28 000	28 000
Kuwait	50 000 ^{e/}	75 000	75 000
Sweden	-	115 000	115 000
Other	92 505	388 000	276 000
OPEC	19 550	-	-
Sub-total	3 221 151 ^{d/}	3 691 000	3 504 000
International Laboratory of Marine Radioactivity			
European Economic Community	-	5 000	10 000
Federal Republic of Germany	-	50 000	-
Principality of Monaco	80 910	90 000	90 000
United States (National Science Foundation)	7 038	24 000	18 000
Sub-total	87 948	169 000	118 000
Safeguards			
Australia	51 285	98 000	80 000
Canada	296 315	305 000	300 000
Federal Republic of Germany	323 886	349 000	300 000
France	14 405	173 000	100 000
Japan	26 650	90 000	100 000
Sweden	21 300	104 000	50 000
Union of Soviet Socialist Republics	233 424	298 000	100 000
United Kingdom of Great Britain and Northern Ireland	56 124	119 000	120 000
United States of America	1 406 491	4 076 000	2 200 000
Sub-total	2 429 880	5 612 000	3 350 000
TOTAL	10 834 804	30 478 000	8 189 000

- ^{a/} In addition to the above indicated cash resources, Member States make contributions in kind consisting of cost-free experts and consultants, stipends for fellowships, training courses and other.
- ^{b/} Figures for 1984 represent unobligated balances available 1 January 1984 plus new contributions made and/or expected during 1984. Figures for 1985 contain estimates of new funds only.
- ^{c/} These figures are not included in the total extrabudgetary resources since they are already incorporated in the TC resources shown in Table 1.
- ^{d/} Represents actual obligations where marked ^{e/} and otherwise contributions to the Trieste funds against which obligations are incurred globally. Total net new obligations amount to \$ 3 619 218 including those in respect of prior years' funds but excluding funds from other UN organizations.

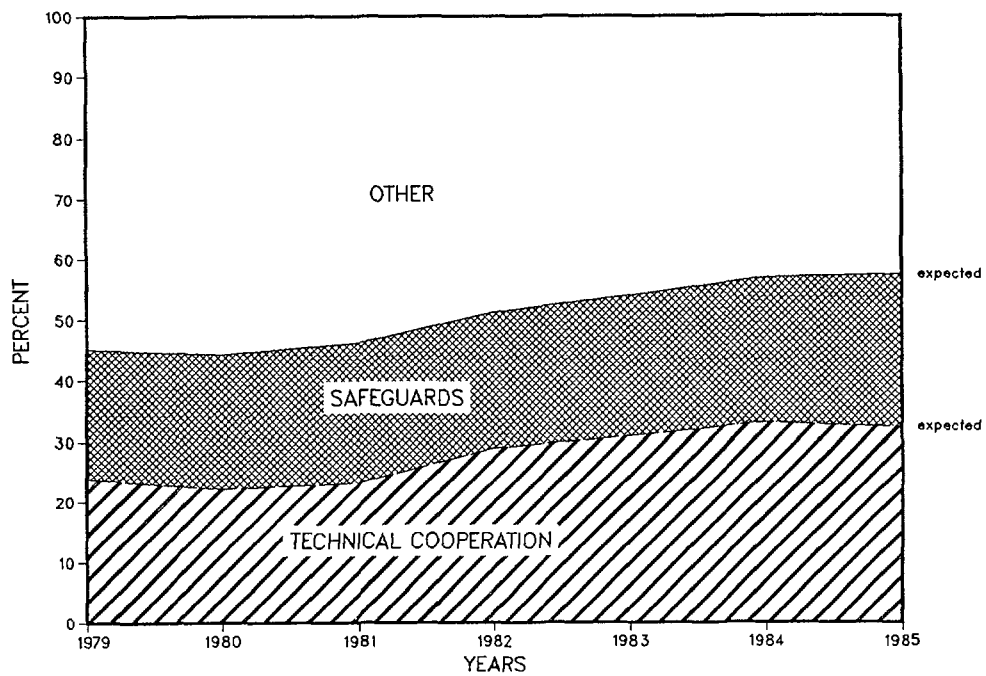
Graph 1

THE CONSOLIDATED BUDGET 1979-85
in million dollars



Graph 2

THE CONSOLIDATED BUDGET 1979-85
in percent



P A R T I

T H E P R O G R A M M E B U D G E T

PROGRAMME AREA 1

NUCLEAR POWER AND THE FUEL CYCLE

PROGRAMME AREA 1

NUCLEAR POWER AND THE FUEL CYCLE

LONG-TERM GOALS AND STRATEGIES

1/1. By the end of 1983, there were 313 nuclear power plants in operation and 207 under construction in a total of 31 Member States. The total generating capacity of nuclear power plants, which at present stands at 380 GW(e), is expected to increase to around 700 GW(e) by the year 2000 in comparison with the Agency's 1978 projection of about 1400 GW(e). The general slowdown in nuclear programmes in many countries has been caused chiefly by lower than expected growth in electricity demand, political constraints and increasing problems with financing, the latter having affected developing Member States in particular. At present only ten developing Member States, excluding European countries with centrally planned economies (CPE), have nuclear power plants under construction or in operation, and these plants account for no more than 5.7% of the world's nuclear capacity. If present constraints can be overcome, however, as many as ten additional developing countries may embark on nuclear power programmes before the end of the century.

1/2. The current slowdown in the growth of electricity demand and in nuclear power programmes in several countries has also severely affected development programmes for advanced systems by reducing the urgency for their commercialization. Nevertheless, advanced systems and technologies continue to be developed in at least 15 of the 31 Member States with nuclear power programmes. These include fast breeder reactors, high-temperature reactors, advanced converters, reactors for nuclear heat application and thermonuclear fusion reactors. The financing of extensive advanced reactor development programmes is becoming a major problem for individual countries which are increasingly turning to international co-operation as a means of supporting the large-scale efforts required.

1/3. The Agency's analysis of nuclear power plant operating experience over the last 15 years has indicated relatively low cumulative average load factors of around 64%. Improved performance can and should be achieved: it would be of great economic significance for operators and would have a positive effect on the further development of nuclear power throughout the world.

1/4. Adequate technology for the various steps of the nuclear fuel cycle has been developed over the years to meet the requirements of expanding nuclear power programmes. In recent years, however, expectations for nuclear power growth have not been fulfilled and demand for nuclear raw materials and fuel has decreased. This has led to overproduction in some countries and a significant fall in the uranium market price. While some new low-cost deposits continued to be developed, especially in Canada and Australia, and although a number of developing countries remain interested in evaluating and exploring their indigenous uranium resources, several countries have severely curtailed their exploration and production activities with the result that these may now be below the level needed to ensure future supplies. Although the situation stabilized to some extent in 1983, the long-term adequacy and economics of uranium supplies continue to be a cause for concern. As far as the back-end of the nuclear fuel cycle is concerned, uncertainties have led to delays in the reprocessing of spent fuel and, consequently, to an unexpectedly large accumulation of spent fuel assemblies and shortages of spent fuel storage capacities. This area is therefore the subject of growing interest.

1/5. Considerable importance continues to be attached to waste management activities by all countries involved in the development and use of nuclear energy. Appropriate technology now exists or can be adapted to meet present and future needs for low- and intermediate-level waste management, and the emphasis is gradually shifting from the disposal of such waste to that of high-level waste. The technology for the immobilization of high-level waste also exists, but the question of the safe disposal of such waste - although well developed and considered feasible - is still in the conceptual stage and

has not yet been implemented. The construction of deep geological repositories for this purpose is under active consideration, and in some countries such repositories are expected to become operational in the 1990s. Some experience has been gained from the management of wastes from uranium mining and milling but further work is needed. A number of States have found the dumping of solid low-level wastes into the sea to be more suitable than disposal on land, but this practice has recently become the subject of controversy and some countries have called for it to be banned.

1/6. The Agency's activities in the above fields will follow closely the changing situation in and requirements of its Member States, particularly the developing countries.

1/7. In accordance with the needs of developing countries for assistance in nuclear power planning, the Agency will provide comprehensive advice on decision making and project execution in this field. This requires a careful assessment not only of the future energy and electricity situation in the country concerned but also of the infrastructure (including manpower), industrial support, organizational structure, electric grids and financing required. Since it is essential that the competence needed to carry through such a programme should exist in a country, emphasis will be placed on the training of local manpower. Many of the tools used to provide assistance (data bank, methodologies, computer programs, guidebooks and training courses) have already been developed, and resources will increasingly be directed towards assisting developing Member States through general studies (such as the small and medium power reactor (SMPR) study) and providing advice and assistance to individual countries through the technical co-operation programme.

1/8. The nuclear power plant performance programme will aim at improving the technical and economic performance of nuclear power. To attain this goal, a better understanding of the reasons for the past performance of nuclear power plants with regard to costs, unavailability and unreliability is needed. This will partly be achieved through the evaluation of data collected in the Agency's Power Reactor Information System (PRIS) and through the exchange of information on significant reliability problem areas and on the experience gained in solving specific problems. In addition, in the area of quality assurance and control, which is of particular importance for both performance and safety, further guidelines on the practical application of the NUSS code and guides on quality assurance will be developed.

1/9. The main emphasis in the advanced systems and applications programme will be on expanding international co-operation in specific areas of the development of advanced systems. The INTOR project is an outstanding example of such co-operation. The main objectives will be to gain a better understanding of present problems and of the implications of the future introduction of advanced systems (through the exchange of information), to identify and solve specific problems relating to their safe and economic application (through co-operative studies and co-ordinated research programmes) and to disseminate information on the status of development to all Member States.

1/10. Nuclear fuel cycle activities will focus on such subjects as uranium and thorium resources, the technology of ore processing, the production of nuclear fuel and reactor materials, fuel performance and technology and spent fuel management. There will be some shift of emphasis towards the evaluation of information on the availability of nuclear materials and fuel cycle services in the next century and on progress in advanced fuel cycle systems. The principal objective of providing guidance and assistance to Member States on the above subjects will be accomplished through established mechanisms. Technology will be transferred by collecting, reviewing and disseminating information through technical meetings and by preparing technical reports, manuals and guidelines. Specialized assistance will be provided through technical co-operation programmes and training fellowships. Development work will be encouraged through co-ordinated research programmes.

1/11. The main objective of the radioactive waste management programme will be to develop guidelines for Member States for the safe and effective management of such waste. Studies on the handling, treatment, conditioning and storage of radioactive waste will be actively pursued and the further improvement of the basic technology that already exists in Member States with advanced nuclear power programmes will be encouraged. In the case of Member States whose nuclear power programmes are in the early stages of development, there is a need for timely and efficient dissemination of information. In the decontamination and decommissioning area, activities will be directed towards providing information on decontamination techniques that achieve minimum radiation dose (at acceptable cost) while generating smaller amounts of waste. The aim of the programme on the underground disposal of radioactive wastes will be to promote an exchange of information on experience, projects and research, to develop a set of codes and guidelines supporting existing Safety Series and other documents, and to prepare documents on various subjects relating to the disposal of low-, intermediate- and high-level wastes in underground repositories. The current review of the Definition and Recommendations (INFCIRC/205/Add./Rev.1) for sea disposal under the London Dumping Convention will be completed. The collection and dissemination of information on releases of radionuclides and their impact will continue, and work will commence on activities relating to the protection of the environment such as discharges from land-based sources and transboundary air pollution.

1/12. The International Laboratory of Marine Radioactivity in Monaco will continue to collect data on, and to study, the behaviour of long-lived radionuclides such as transuranics, technetium and their natural analogues in the marine environment, and especially in the deep sea. Intercalibration exercises will be performed and reference methods developed to ensure that such data are internationally comparable. Work will also continue on non-nuclear pollutants, and training will be given to technical personnel from developing countries on the measurement of radionuclides in marine environmental samples.

1/13. The work performed in the nuclear power and the fuel cycle area will be co-ordinated with that of UN and other international organizations including WHO, UNSCEAR, IMO, CMEA, CEC, OECD/NEA, UNEP, ICRP, UNIPED, IEA, the World Bank, IIASA, WEC, ISO, UN-DTCD, UNCNRET, UNIDO, IEC and GESAMP.

PROGRAMME AREA 1: NUCLEAR POWER AND THE FUEL CYCLE

Summary of resources by programme

Table 5

Programme	man-years		Planned expenditure for the implementation of the programme in 1985				
	P	GS	Regular Budget estimates	Funds from other UN organizations	TC resources	Other extra-budgetary resources	TOTAL
1.1. Nuclear Power Planning and Implementation in Developing Countries	12.5	6.1	1 543 000	-	830 000	-	2 373 000
1.2. Nuclear Power Plant Performance	6.0	3.5	1 161 000	-	450 000	-	1 611 000
1.3. Nuclear Fuel Cycle	11.5	6.0	1 568 000	-	2 170 000	-	3 738 000
1.4. Radioactive Waste Management	20.5	20.0	3 044 000	390 000	450 000	118 000	4 002 000
1.5. Advanced Systems and Applications ^{a/}	8.0	8.2	1 672 000	-	-	-	1 672 000
TOTAL	58.5	43.8	8 988 000	390 000	3 900 000	118 000	13 396 000

^{a/} This includes the manpower (1 P, 2 GS) and cost (\$167 000) of the office of the Director of the Division of Scientific and Technical Information.

PROGRAMME 1.1

NUCLEAR POWER PLANNING AND IMPLEMENTATION IN DEVELOPING COUNTRIES

DESIRED IMPACT

1.1/1. To contribute to a better assessment in Member States of the overall needs for energy and electricity and of the role of nuclear energy in satisfying these needs.

1.1/2. To promote the introduction or an extension of the use of nuclear power with acceptable reliability and safety levels in developing Member States.

Summary of manpower and costs by sub-programmeTable 6

Sub-programme	Man-years		1985 Cost estimates					Responsible Division
	P	GS	Staff	Meetings	Contracts	Other	Total	
1.1.1. Energy, electricity and nuclear power planning	6.5	3.2	601 000	25 000	17 000	230 000	873 000	Nuclear Power
1.1.2. Manpower and infrastructure requirements and development	4.4	2.3	413 000	29 000	-	72 000	514 000	Nuclear Power
1.1.3. Small and medium power reactors (SMPRs)	1.6	0.6	133 000	4 000	-	19 000	156 000	Nuclear Power
TOTAL	12.5	6.1	1 147 000	58 000	17 000	321 000	1 543 000	

Sub-programme 1.1.1Energy, electricity and nuclear power planning

RESULTS TO DATE (1980-84)

1.1.1/1. In response to requests, the Agency has made available and provided training in the use of its Wien Automatic System Planning (WASP) Package for about 60 electric system expansion planning (ESEP) studies in over 45 Member States.

1.1.1/2. ESEP studies have been carried out for Algeria and Morocco at their request. In co-operation with the World Bank (IBRD), electric power assessment missions and follow-up activities have been performed in Jordan and Turkey. Technical support was provided for some 15 other technical co-operation projects.

1.1.1/3. A guidebook on electrical generation system expansion planning and a training manual on the role of nuclear energy in national energy planning in developing countries are being published in 1984. Training courses on the same subjects have been conducted annually.

1.1.1/4. The MAED (Model for Analysis of Energy Demand) computer program was developed in 1981 to assess energy demand in developing countries and to calculate electricity demand inputs for the WASP model. A second general

methodology (the Aachen-EDE model), developed in co-operation with the Federal Republic of Germany, was completed in 1983.

1.1.1/5. A simplified set of computer models for projecting energy demand at global and regional levels (based on the IIASA study "Energy in a Finite World") has been established through a contract with the Institute for Energy of the Technical University of Vienna.

PLANS FOR 1985-86

1.1.1/6. It is planned in general to assist developing Member States to improve their capabilities with regard to the economic planning of nuclear power programmes within the context of overall electricity expansion planning.

1.1.1/7. In addition to those developing countries which are already operating or constructing nuclear power plants, up to 20 others are considering introducing nuclear power by the year 2000 and there is a strong possibility that at least 10-15 of these countries will do so. These developing Member States urgently require advice and assistance in formulating economically sound programmes to meet their growing needs for electricity and in determining the optimum timing and rate for the introduction of nuclear power.

1.1.1/8. In response to that need, the WASP package will be further developed and improved with the objective of making its utilization in developing countries easier and more economical. Two significant improvements will be completed. The first will be to introduce newly-developed and more efficient computational procedures which should reduce computer time by a factor of 10 and thus cut the cost and improve the practicability of running WASP calculations. The second will be to adapt WASP so that it can be used on small professional computers, thereby enabling developing countries to run the WASP program on readily available low-cost computers.

1.1.1/9. The MAED model and the Aachen-EDE model will be further improved to make them more suitable for estimating energy needs in developing countries and will be tested through on-the-job use in energy and nuclear power planning (ENPP) studies. Work will commence in 1985 on a guidebook on electricity demand forecasting in nuclear power planning, which will be a companion to the guidebook on Expansion Planning for Electrical Generation Systems published in 1984.

1.1.1/10. Advisory missions on energy and electricity demand assessment and supply planning will be provided to developing Member States on request. It is expected that such missions will be sent to about 12 developing countries in 1985 and 1986. Co-operation with the World Bank in implementing these missions will be sought. The Agency's methodologies and computer models will also be made available to other countries upon request through advisory missions and other means, and experts from such countries will receive instruction in Agency training courses and through planning studies carried out with Agency assistance.

1.1.1/11. Worldwide data on energy demand and supply together with related economic data will continue to be collected and stored in the Agency's Energy and Economic Data Bank (EEDB) on a unified and systematic basis. Work will be initiated in 1985 on the inclusion in the EEDB of data on the economic performance (investment and generation costs) of nuclear power in Agency Member States (see also sub-programme 1.2.2).

1.1.1/12. The exchange of information with other United Nations bodies and international organizations on the subject of projection methodologies and results will be promoted in an effort to improve the reliability and consistency of the various projections being published, particularly those for the growth of nuclear power.

1.1.1/13. A nine-week training course on electricity expansion planning and a four-week course on energy planning will be held annually.

Sub-programme 1.1.2Manpower and infrastructure requirements and development

RESULTS TO DATE (1980-84)

1.1.2/1. Seven guidebooks have been prepared on Manpower Development for Nuclear Power (1980), Qualification of Nuclear Power Plant Operations Personnel (1984), Nuclear Engineering Education Curricula (1984), Introduction of Nuclear Power (1982), Interaction of Grid Characteristics with the Design and Performance of Nuclear Power Plants (1983), Bid Specification for Nuclear Power Plants (1984) and Nuclear Power Project Management (1984). These are part of a series of guidebooks which provide general advice to developing Member States and serve as a basis for all related advisory services and technical co-operation projects.

1.1.2/2. The nuclear power training course programme launched in the mid-1970s has assumed major importance. About 1400 trainees have participated in courses on nuclear power and safety. An average of 2-4 courses have been held each year.

1.1.2/3. Missions advised five developing Member States on manpower requirements and in each case established the basis for national manpower development programmes which were subsequently reflected in technical co-operation requests. Technical support was provided for about 30 technical co-operation projects and four UNDP projects.

PLANS FOR 1985-86

1.1.2/4. The broad aim is to assist planning organizations and nuclear power plant owners in developing Member States to assess manpower and other infrastructure requirements and to provide guidance for the establishment of appropriate manpower and infrastructure development programmes.

1.1.2/5. Manpower development for a nuclear power programme is a long lead-time activity which requires a substantial national effort as well as assistance from abroad, particularly in countries which are just introducing nuclear power. There is a recognized need for advice and assistance in about 20 developing Member States which have launched or are considering nuclear power programmes. The same countries generally require assistance in establishing a systematic approach to the development of the infrastructure needed for a nuclear power programme (organizational structures, industrial support and electric grid). The need in a further 15-20 developing Member States is for longer-term preparation of the introduction of nuclear power.

1.1.2/6. Attention will centre on providing advisory services upon request to developing Member States using both existing guidebooks and those listed below.

1.1.2/7. A guidebook on the requirements for and training of technicians for nuclear power programmes will be prepared. Further guidebooks will be prepared on a systematic approach to the assessment and reinforcement of electric grids, on the requirements for and assessment of supporting industries and on the requirements for and role of research and development support from establishments such as nuclear research centres, electric industry research centres and universities.

1.1.2/8. A review of experience in nuclear power technology transfer will be started in 1986, as will the preparation of a guidebook on continuing engineering education for nuclear engineers.

1.1.2/9. Support for national manpower and infrastructure development programmes will be given to 6-8 developing countries through the mechanism of multi-year technical co-operation or UNDP projects.

1.1.2/10. A seminar on supporting industrial infrastructure requirements and development for nuclear power will be held in 1986.

Sub-programme 1.1.3

Small and medium power reactors (SMPRs)

RESULTS TO DATE (1980-84)

1.1.3/1. On the basis of information on available power reactor designs in the small and medium size range (100-600 MWe) collected and disseminated over many years, it was decided in 1983 to launch a project initiation study intended to bring together the three major partners in a future SMPR project (buyers, suppliers and financing institutions) to collect further information and arrive at a more clearly defined situation from which contract negotiations could start. The study is being carried out in a step-wise fashion. The first stage, which is not yet concluded, is examining whether a general case can be made for SMPRs on technical and economic grounds.

PLANS FOR 1985-86

1.1.3/2. The broad aim is to provide potential suppliers and buyers of small and medium nuclear power plants with a forum for assessing new developments in the availability of and market for SMPRs.

1.1.3/3. The first stage of the SMPR study should be completed by the end of 1984 or early 1985, at which point a decision may be taken to carry out, in 1985 and 1986, technical and economic pre-feasibility studies at a number of selected sites, taking particular account of local infrastructures. A positive decision on a second phase or its exact scope and content cannot be foreseen before the conclusion of the first phase. If, contrary to expectation, a second phase is not initiated in 1985 it is planned to continue an information collection and dissemination programme on this subject.

PROGRAMME 1.2

NUCLEAR POWER PLANT PERFORMANCE

DESIRED IMPACT

1.2/1. To contribute to the improved technical and economic performance of nuclear power in Member States.

Summary of manpower and costs by sub-programmeTable 7

Sub-programme	Man-years		1985 Cost estimates					Responsible Division
	P	GS	Staff	Meetings	Contracts	Other	Total	
1.2.1. Technical performance of nuclear power	3.1	2.3	297 000	36 000	36 000	328 000	697 000	Nuclear Power
1.2.2. Economic performance of nuclear power	1.9	0.6	167 000	47 000	38 000	49 000	301 000	Nuclear Power
1.2.3. Quality assurance and control	1.0	0.6	104 000	25 000	-	34 000	163 000	Nuclear Power
TOTAL	6.0	3.5	568 000	108 000	74 000	411 000	1 161 000	

Sub-programme 1.2.1Technical performance of nuclear power

RESULTS TO DATE (1980-84)

1.2.1/1. The data collected on nuclear power plant status and operating experience since the 1960s were merged into a single computerized data base in 1982 which by 1984 contained information on experience from about 2500 reactor years and some 14 000 plant outages. Since 1982, the data base (the Power Reactor Information System-PRIS) has been used for analytical studies of power plant performance and the principal causes of unavailability. Also, PRIS has been used to provide the World Energy Conference (WEC) with data on nuclear power plant availability for its periodic publication of global availability data for thermal generating plants.

1.2.1/2. Special data sets from PRIS have been provided upon request to participating Member States and power plant owners. This service has been used increasingly since 1983, with some five requests being received annually.

1.2.1/3. Technical information on nuclear power plant system performance has been exchanged through the International Working Groups (IWGs) on Reliability of Reactor Pressure Components and on Nuclear Power Plant Control and Instrumentation. Specialists' meetings have been established as useful and appreciated fora for the timely discussion and co-ordination of research and development in these fields.

1.2.1/4. A CRP on the irradiation embrittlement of advanced pressure vessel steels for nuclear reactors which ended in 1984 highlighted the advances made in steel technology which have resulted in the production of steels with predictable and greatly reduced radiation sensitivity.

PLANS FOR 1985-86

1.2.1/5. The broad aim is to assist nuclear power plant owners to improve power plant reliability in general and to achieve better economic results.

1.2.1/6. There is a significant need among some 80 nuclear power plant owners to improve the reliability and safety of the 300 nuclear power reactors currently in operation. Developing countries have particular difficulty in gaining access to operating experience in other countries. The cumulative average availability of about 64% from 2500 reactor years of nuclear power plant operation is too low, both in absolute terms and in comparison with the best performance of 80-85% which is consistently achieved in a few countries.

1.2.1/7. The principal area of activity will be the continued operation of PRIS. Performance data on some 300-400 reactor years and 2000-3000 outage descriptions will be added to the system annually. The results of the collation and review of this information will be made available to nuclear power plant operators in two documents published each year: the individual plant performance report and the analytical performance report. Special data sets (on, for example, all past outages caused by steam generator failure) will be provided to participating plant operators, national authorities and regulatory organizations on request. The listing of Power Reactors in the World (Reference Data Series No. 2) will be issued annually.

1.2.1/8. Efforts to harmonize nuclear power plant operating experience data formats with the International Union of Producers and Distributors of Electrical Energy (UNIPED), WEC, the Commission of the European Communities (CEC) and institutions in North America (NRC and NERC) will be continued.

1.2.1/9. The assessment of important technical problems relating to the improvement of nuclear power plant reliability will be strengthened, using PRIS to identify the most important subjects for an exchange of technical information and analysis in specialists' meetings, which will provide analytical conclusions and recommendations from each meeting. It is planned to consolidate these in an annual report on technical progress in nuclear power plant performance, in which analytical results from PRIS will also be included. In order to launch this effort, an ad hoc Senior Advisory Group will meet in 1985 both to provide technical guidance on the first issue of the report and to review the desired direction of, and mechanisms for, the future exchange of information, including that provided through the IWGs on the reliability of Reactor Pressure Components and Nuclear Power Plant Control and Instrumentation.

1.2.1/10. Research will be co-ordinated on the optimization of pressure vessel steel surveillance programmes and their analysis with a view to harmonizing different national practices and requirements (CRP 1984-87) and on advanced modelling and uses for nuclear power plant simulators (CRP 1985-88).

1.2.1/11. Experience regarding improvements in nuclear power plant availability, maintainability and operation will be reviewed in a symposium in 1985. A major symposium in 1986 will summarize the status of nuclear power technical and economic performance (jointly with sub-programme 1.2.2).

Sub-programme 1.2.2

Economic performance of nuclear power

RESULTS TO DATE (1980-84)

1.2.2/1. A report on past experience concerning the capital investment costs of nuclear and fossil-fuel-fired power plants was published in 1984. A systematic methodology was developed and used to normalize the cost data collected in order to examine various factors such as interest and escalation rates and construction times which influence investment costs in different countries.

1.2.2/2. A guidebook on the Technical Evaluation of Bids for Nuclear Power Plants was published in 1981.

1.2.2/3. A CRP on the economic implications of nuclear power introduction in developing countries was initiated in 1983.

PLANS FOR 1985-86

1.2.2/4. Broadly, it is planned to supply Member States, particularly developing countries, with up-to-date information on the comparative economic performance of nuclear and fossil-fuel-fired power plants.

1.2.2/5. To that end, power plant investment and generation cost data will be systematically collected and treated using standardized cost analysis methodologies in order to perform normalized cost comparisons between nuclear and fossil-fuel power plants. The results from these studies, which will be published in Agency reports, will provide important input for ESEP studies. Emphasis will be placed on providing information on the interaction between technical and economic performance and, in particular, on the costs and economic benefits of improving nuclear power plant availability.

1.2.2/6. Research will be promoted on the overall economic implications of introducing nuclear power into the energy systems of developing countries (CRP 1984-87) with the principal objective of providing a basis for a more comprehensive analysis in individual developing countries of the economic merits of nuclear power as compared with fossil-fuel sources of power, taking into account the costs and also the benefits of infrastructure development as well as the direct costs of the power plants and associated facilities.

1.2.2/7. An educational seminar on the costs and financing of nuclear power programmes in developing countries will be held in 1985.

1.2.2/8. A revised version of the Guidebook on the Economic Evaluation of Bids for Nuclear Power Plants (Technical Reports Series No. 175) published in 1976 will be issued in 1985.

1.2.2/9. A symposium on the technical and economic performance of nuclear power will be held in 1986 (jointly with sub-programme 1.2.1).

Sub-programme 1.2.3

Quality assurance and control

RESULTS TO DATE (1980-84)

1.2.3/1. The NUSS safety guidelines (prepared under sub-programme 3.2.5) were supplemented in 1984 by three manuals (on Quality Assurance (QA) Programme Auditing, on Training, Qualification and Certification of QA Personnel and on the Selection of QA Programme Levels) intended to explain the practical application of NUSS documents.

1.2.3/2. The shift in emphasis towards providing assistance in the practical application of QA requirements has found direct expression in a number of advisory services to developing Member States. These have been supplied mainly through the technical co-operation programme, regional seminars (Latin America, 1983) and national courses (Republic of Korea, 1980 and 1983; Egypt, 1983) and were aimed at creating awareness of the QA requirements. One interregional training course on quality assurance/quality control (QC) for nuclear power plants has been given each year either in English or French.

PLANS FOR 1985-86

1.2.3/3. The overall aim is to assist nuclear power plant designers, manufacturers and operators to establish quality assurance and control programmes.

1.2.3/4. To obtain high reliability and safety levels in the operation of nuclear power plants and to improve the performance of such plants, high levels of quality assurance and quality control must be established and maintained. Now that the necessary basic international standards have been established in the NUSS code and guides on QA, efforts will be concentrated on facilitating their effective implementation. For this purpose, further development of manuals is required, as is the provision of direct assistance through expert help and training, especially for developing Member States with nuclear power programmes.

1.2.3/5. A manual on quality assurance during site investigations for nuclear power plants will be published in 1985, and another on quality assurance for software for control and instrumentation systems in nuclear power plants is to be issued in 1986. Work on a manual on non-conformance control and corrective action will begin in 1985.

1.2.3/6. In response to requests from developing Member States, direct advisory services will be provided on the establishment of appropriate national QA programmes.

1.2.3/7. A technical report will be published in 1986 on methods for evaluating the effectiveness of quality assurance. This report will provide fundamental information which will be used to help shape both the Agency's QA programmes and national QA practices and programmes.

1.2.3/8. A seminar on quality assurance for nuclear power plants will be held in 1986.

1.2.3/9. One interregional training course and one or two national training courses in this field will be held annually.

PROGRAMME 1.3

NUCLEAR FUEL CYCLE

DESIRED IMPACT

1.3/1. To maintain an up-to-date picture of world uranium and thorium resources and of the exploration and production of these materials, to contribute to the development of nuclear fuel and to the technology of nuclear and reactor materials and to improvements in their performance and reliability and to contribute to the reliable and effective management of irradiated nuclear fuel.

Nuclear Fuel Cycle
Summary of manpower and costs by sub-programme

Table 8

Sub-programme	Man-years		1985 Cost estimates					Responsible Division
	P	GS	Staff	Meetings	Contracts	Other	Total	
1.3.1. Resources and supply of uranium and thorium	4.0	2.0	360 000	35 000	20 000	129 000	544 000	Nuclear Fuel Cycle
1.3.2. Processing and production of nuclear and reactor materials	3.0	1.0	256 000	1 000	5 000	71 000	333 000	Nuclear Fuel Cycle
1.3.3. Nuclear fuel performance	2.0	1.5	197 000	34 000	57 000	83 000	371 000	Nuclear Fuel Cycle
1.3.4. Spent fuel management	2.5	1.5	229 000	6 000	16 000	69 000	320 000	Nuclear Fuel Cycle
TOTAL	11.5	6.0	1 042 000	76 000	98 000	352 000	1 568 000	

Sub-programme 1.3.1Resources and supply of uranium and thorium

RESULTS TO DATE (1980-84)

1.3.1/1. Activities have focused on updating information on nuclear materials resources (mainly uranium) and on collecting and evaluating experience in uranium geology, exploration and production. Technical reports were published on Uranium Evaluation and Mining Techniques (1980), Uranium in the Pine Creek Geosyncline (1980), Uranium Deposits in Latin America (1981), Uranium Exploration Case Histories (1981), Vein Type and Similar Uranium Deposits in Rocks Younger than Proterozoic (1982), Uranium Exploration in Wet Tropical Environments (1983) and Geology and Metallogensis of Uranium Deposits of South America (1984). In addition, a technical report was issued on remote sensing in uranium exploration in 1981 and a manual on borehole logging for uranium exploration was prepared in 1982.

1.3.1/2. The following reports and manuals have been published as a result of joint activities with NEA: Uranium Resources, Production and Demand (biennial); Methodologies for Projecting Uranium Production Capability (1981); Projection of Uranium Production Capability (1984); Uranium Ore Reserve Estimation (1984). In addition, a modified resource category system for collecting and presenting information and a more refined production terminology were developed with the aim of improving the comparability and quality of international data. A review and updated estimate of world speculative uranium resources was made.

1.3.1/3. Support was provided to the International Uranium Evaluation Project (IUREP) which ended in 1983. Orientation-phase missions were sent to a total of 20 selected countries.

1.3.1/4. In uranium geology, technical documents reviewing current geological knowledge on five major types of uranium deposit have been prepared. A technical report on Age, Sedimentary Environments, and Other Aspects of Sandstone and Related Host Rocks for Uranium Deposits was issued in 1983 and another on the Correlation of Uranium Geology between South America and Africa is being published in 1984. A CRP on uranium in volcanic rocks is being initiated in 1984.

1.3.1/5. In the area of uranium exploration techniques, a manual on geochemical prospecting was prepared and recommendations were made for the preparation of reference materials for gamma-ray assay of geological materials. Geochemical Analysis System (GAS) computer programs for large computers have been obtained and prepared for distribution in 1984. A related system (MICROGAS) for microcomputers is also being made available in 1984.

1.3.1/6. Work continued on the computerized International Uranium Geology Information System (INTURGEO), which stores information on uranium geology and deposits and national uranium statistics, with information being compiled on uranium occurrences in Africa, Asia, North America and South America. Mapping and other graphics software were developed to assist data presentation, and the design of the system was made available to interested Member States.

1.3.1/7. Technical support was given each year to between 30 and 40 technical co-operation projects on uranium exploration and evaluation as well as to six large-scale UNDP-financed uranium exploration projects. Three training courses on uranium exploration and evaluation were held in 1981, 1982 and 1983 respectively.

PLANS FOR 1985-86

1.3.1/8. It is planned in general to assist Member States to assess world uranium and thorium resources and to improve their ability to explore and exploit indigenous uranium and thorium resources economically.

1.3.1/9. As in the past, most of the emphasis will be placed on uranium rather than on thorium. With regard to the first aspect mentioned above, the Agency will continue to collect information on uranium resources, production and demand. The quality and coverage of the information obtained will be improved, particularly with regard to classification and resource evaluation. Technical reports will be prepared on uranium resources and supply in Africa in 1985 and in Latin America in 1986.

1.3.1/10. The second element of the sub-programme is aimed mainly at the needs of developing countries. In the field of uranium exploitation, it is planned to prepare a report updating information on the technology, industrial practices and production facilities used in uranium mining. With regard to uranium geology, two technical reports will be prepared, one on the processes of uranium ore deposit formation in key types of deposits and the other on uranium geology in Asia and the Pacific region. As far as research and development in the field of uranium exploration are concerned, it is planned to publish three technical documents, one on resource evaluation procedures, one on the design, construction and use of calibration facilities and the third on analytical methods for uranium exploration, development, mining and ore processing. These will be used mainly by geologists and chemists in developing countries.

1.3.1/11. Further data will be added to INTURGEO. On the basis of INTURGEO data, a World Atlas of Uranium Occurrences and Deposits will be produced in 1986. The existence of the system and its potential for geologists in Member States will be made more widely known when the system is completed. A survey of computer software for use in the area of uranium geology and exploration will be undertaken in 1986.

1.3.1/12. A 3-6 week training course on selected aspects of uranium geology and exploration will be held once a year.

Sub-programme 1.3.2Processing and production of nuclear and reactor materials

RESULTS TO DATE (1980-84)

1.3.2/1. Activities have centred on the collection, evaluation and dissemination of information on the technology of uranium ore processing and the production of nuclear fuel and reactor materials, on the compilation of basic data on nuclear fuel cycle facilities throughout the world and on providing technical advice to Member States on nuclear fuel cycle technology.

1.3.2/2. The joint NEA/IAEA Working Group on Uranium Extraction published an extensive report on Uranium Extraction Technology and the proceedings of a workshop on the Economics of Uranium Ore Processing Operations in 1983, and began issuing a Newsletter in the same year. A review was made of advances in uranium ore processing and recovery from non-conventional resources and of the current situation with regard to the recovery of uranium from seawater. A technical report on advances in ore processing is being published in 1984.

1.3.2/3. Technical support was given to between five and seven technical co-operation projects relating to uranium ore processing each year. Interregional training courses on uranium ore processing were organized in 1981 and 1983, and one on the processing of uranium from mine to fuel element fabrication is being held in 1984.

1.3.2/4. The Nuclear Fuel Cycle Information System (NFCIS), a computerized data base containing basic information on nuclear fuel cycle facilities throughout the world (operational, under construction or planned) was established in 1983. A technical document on Nuclear Fuel Cycle Facilities of the World summarizing the information contained in the system is being published in 1984.

1.3.2/5. A technical document on the demand for and economic aspects of uranium enrichment services and on the status of enrichment facilities has been prepared.

PLANS FOR 1985-86

1.3.2/6. Broadly, the aim is to serve as a forum for the collection, evaluation and dissemination of information on the technology of uranium ore processing and the production of nuclear and reactor materials.

1.3.2/7. Efforts will concentrate on the technology of uranium extraction and refining and on industrial practices in this area. Several reports on the state of the art in uranium extraction, heavy water production and ion exchange technology in the nuclear fuel cycle will be published. A series of manuals will be prepared to cover specific aspects of the development of industrial projects for the production of uranium concentrates such as the laboratory testing of ores, pilot plant techniques and economic evaluation. Experience in process selection and design for the production of uranium concentrates will be reviewed in 1986.

1.3.2/8. Research will be co-ordinated on modifications to uranium ore processing methods aimed at minimizing the problems associated with the disposal of mill tailings (CRP 1984-88).

1.3.2/9. The NFCIS will be improved, expanded and regularly updated. The information in the system will be made available to Member States through summary reports which will be published periodically (the next will appear in 1985).

Sub-programme 1.3.3

Nuclear fuel performance

RESULTS TO DATE (1980-84)

1.3.3/1. Work has continued on the collection, evaluation and exchange of information on water reactor fuel element fabrication, with particular emphasis given to better fuel utilization (extension of burn-up) and to fuel element performance behaviour and reliability.

1.3.3/2. Through the International Working Group on Water Reactor Fuel Performance and Technology (IWGFPT) and its specialists' meetings, a review was made of fuel element performance computer models, internal fuel rod chemistry, fuel behaviour under power ramping and power cycling conditions, fuel element performance and fission gas release modelling, pellet-cladding interaction in water reactors, high burn-up in water reactor fuels, and coolant-cladding interaction. Technical documents were issued on post-irradiation examination techniques and the utilization of particle fuels in different reactor concepts.

1.3.3/3. A regional seminar on heavy water reactor fuel fabrication and control was organized in 1983, and another seminar on remote-handling equipment for nuclear fuel cycle facilities was held in 1984.

1.3.3/4. A guidebook on Quality Control of Water Reactor Fuel was issued in 1983, and a seminar on the same subject was held in 1984.

1.3.3/5. CRPs were initiated on the investigation of fuel element cladding interaction with water coolant in power reactors in 1982, on the development of computer models for fuel element behaviour in water reactors in 1981 and on examination and documentation methodology for water reactor fuel in 1983.

PLANS FOR 1985-86

1.3.3/6. The broad aim is to serve as a forum for the exchange of information on nuclear fuel fabrication technology and fuel performance and reliability and to contribute to the improvement of the performance and safe operation of nuclear power plants.

1.3.3/7. The principal focus of attention will continue to be water reactor fuel. Technical reports and documents will be prepared on fuel behaviour, fuel rod chemistry, fuel cladding corrosion and the behaviour of fuel in power ramping and cycling conditions. Research will be co-ordinated in order to develop a more uniform approach to computer models for predicting fuel element behaviour in light water reactors (CRP 1981-85), to exchange experience on fuel cladding interaction with water coolant (CRP 1982-86), and to exchange information on and to attempt to develop a common approach to examination and documentation methodology for water-reactor fuels (CRP 1983-88).

1.3.3/8. A symposium on improvements in water reactor fuel utilization will be held in 1986.

1.3.3/9. In addition, several technical documents will be prepared on various aspects of the fabrication and behaviour of advanced types of fuel for LWRs, FBRs and HTGRs, including economic and safety aspects.

Sub-programme 1.3.4

Spent fuel management

RESULTS TO DATE (1980-84)

1.3.4/1. Activities centred on the collection and evaluation of information on the back-end of the fuel cycle, and in particular on short-, medium- and long-term storage options and transportation and reprocessing and recycling techniques.

1.3.4/2. A technical document on spent fuel storage alternatives, especially dry storage techniques, was published in 1981. In co-operation with NEA, a technical report surveying world experience concerning the effects on spent fuel elements of long-term storage in water was issued in 1982.

1.3.4/3. A seminar on technical and environmental aspects of spent fuel management was held in 1983.

1.3.4/4. A guidebook summarizing experience and information in many areas of spent fuel storage was completed in 1983.

PLANS FOR 1985-86

1.3.4/5. Broadly, it is planned first to assess the spent fuel arisings and storage capacity requirements of Member States and, secondly, to serve as a forum for the exchange of information on technical and economic aspects of spent fuel transportation, storage and reprocessing.

1.3.4/6. With regard to the first element, information on spent fuel arisings and storage capacities will be collected through NFCIS (see sub-programme 1.3.2), and a technical report surveying world dry and wet spent fuel storage experience will be published.

1.3.4/7. As concerns the second aspect, a guidebook on spent fuel storage issued in 1984 will be updated in 1986. A technical document reviewing the various options for spent fuel management, including reprocessing and recycling, will also be prepared.

1.3.4/8. In addition, research will be promoted on the behaviour of irradiated fuel assemblies during extended storage with a view to exchanging experience in that area (CRP 1981-86).

PROGRAMME 1.4

RADIOACTIVE WASTE MANAGEMENT

DESIRED IMPACT

1.4/1. To contribute to the safe and effective management of radioactive waste generated from nuclear facilities.

Summary of manpower and costs by sub-programmeTable 9

Sub-programme		Man-years		1985 Cost estimates					Responsible Division
		P	GS	Staff	Meetings	Contracts	Other	Total	
1.4.1.	Handling, treatment, conditioning and storage of radioactive wastes	4.5	2.5	414 000	122 000	37 000	173 000	746 000	Nuclear Fuel Cycle
1.4.2.	Decontamination and decommissioning of nuclear installations	1.0	1.0	109 000	32 000	16 000	32 000	189 000	Nuclear Fuel Cycle
1.4.3.	Underground disposal of radioactive wastes	2.00	1.0	198 000	59 000	31 000	107 000	395 000	Nuclear Fuel Cycle
1.4.4.	Sea dumping and releases of radioactive effluents	3.0	2.5	313 000	42 000	84 000	94 000	533 000	Nuclear Fuel Cycle
1.4.5.	International Laboratory of Marine Radioactivity	10.0	13.0	1 005 000	-	33 000	143 000	1 181 000	Monaco Laboratory
TOTAL		20.5	20.0	2 039 000	255 000	201 000	549 000	3 044 000	

Sub-programme 1.4.1Handling, treatment, conditioning and storage of radioactive wastes

RESULTS TO DATE (1980-84)

1.4.1/1. Work continued on the three main areas of gaseous wastes, nuclear power plant and low- and intermediate-level (LIL) wastes, and high-level and alpha-bearing wastes.

1.4.1/2. Significant progress has been achieved in the management of gaseous and particulate radioactive wastes. A joint IAEA/NEA symposium on the management of gaseous wastes from nuclear facilities was held in 1980. Since then, nine technical reports have been prepared on various aspects of this subject, including one issued in 1980 on the separation, storage and disposal of krypton-85. A seminar on the testing and operation of off-gas cleaning systems was held in 1982. Technical documents on the testing and in-plant monitoring of off-gas cleaning systems and on particulate filter testing methods are being published in 1984.

1.4.1/3. A total of 12 reports have been prepared on aspects of nuclear power plant wastes. A CRP on the treatment of spent ion exchange resins for storage and disposal was completed in 1984. A code of practice on the management of radioactive wastes from nuclear power plants is in the final stages of preparation.

1.4.1/4. Several reports have been published on high-level and alpha-bearing wastes including a technical document on solidified high-level waste forms (1981) and a technical report on the handling and storage of conditioned high-level wastes (1983). A symposium on the management of alpha-contaminated wastes was held in 1980.

PLANS FOR 1985-86

1.4.1/5. The general aim is to assist Member States to enhance their ability to implement waste management programmes and practices in a safe and effective manner.

1.4.1/6. Work will focus on the management of wastes from nuclear power plants and on the conditioning of high-level waste. As far as the first element is concerned, two guides, one on the design of facilities for the treatment of radioactive wastes at nuclear power plants, and the other on the handling and treatment of wastes resulting from unplanned events at nuclear power plants will be prepared. These will be supporting documents to the code of practice on the management of radioactive wastes from nuclear power plants completed in 1984.

1.4.1/7. With regard to the conditioning of high-level waste, research will be co-ordinated on the performance of solidified high-level waste forms and engineered barriers under repository conditions with a view to exchanging experience between countries with active research programmes in this area (CRP 1984-89).

1.4.1/8. In addition to these activities, technical reports will be prepared on the design and operation of off-gas cleaning systems at waste conditioning facilities, on the management of gaseous waste at waste treatment facilities, on the treatment of alpha-bearing wastes, on the use of polymers for the immobilization of low- and intermediate-level wastes, and on the solidification of organic wastes.

1.4.1/9. Research will be co-ordinated on the evaluation of low- and intermediate-level radioactive waste forms and packages with a view to exchanging experience and identifying areas where improvements could be made (CRP 1985-88) and on the retention of iodine and other airborne contaminants during abnormal and accident conditions, the aim here being to exchange information on the design of and operating experience from facilities and ultimately to formulate design guidelines (CRP 1984-88).

1.4.1/10. Information on waste management research being carried out in Member States will continue to be systematically collected and published annually.

1.4.1/11. A regional seminar on management options for low- and intermediate-level wastes is to be held in South America in 1985.

Sub-programme 1.4.2

Decontamination and decommissioning of nuclear installations

RESULTS TO DATE (1980-84)

1.4.2/1. The technical reports that have been published cover basic techniques for decontamination, disassembly and waste management, and include reports on the decontamination of operational nuclear power plants (1981) and on the decommissioning of nuclear facilities (1983). Factors to be taken into account in decommissioning decisions for land-based nuclear reactor plants were described in a Safety Series report issued in 1980. A technical report containing a major review of decontamination technology as related to the inspection, maintenance, modification or decommissioning of nuclear facilities was prepared in 1983.

PLANS FOR 1985-86

1.4.2/2. The aim is to serve as a forum for the exchange of information in this field.

1.4.2/3. Technical reports will be prepared on the technology, safety and economics of the decommissioning of nuclear facilities, on the aspects of decontamination that must be considered before modifying or performing maintenance work and also on decontamination prior to decommissioning a facility. The reports will review the experience gained to date and will also attempt to formulate recommendations intended to help designers to take into account at the design stage factors that will facilitate future decommissioning.

1.4.2/4. Information will be collected on, and an inventory prepared of, nuclear facilities which have been decommissioned or are to be decommissioned in the near future.

1.4.2/5. A technical report will also be prepared on the decontamination and demolition of the concrete and steel structures of nuclear facilities with the purpose of reviewing experience accumulated to date. Research on the decommissioning and decontamination of nuclear facilities will be promoted with the aim of exchanging experience and promoting the investigation of this subject (CRP 1983-88).

Sub-programme 1.4.3

Underground disposal of radioactive wastes

RESULTS TO DATE (1980-84)

1.4.3/1. The programme has been reviewed annually by the Technical Review Committee on Underground Disposal (TRCUD) which was established in 1978. Safety Series reports and technical documents have been published on the following five major subject areas in connection with disposal in shallow ground, rock cavities and deep geological repositories: general and regulatory aspects and safety assessment criteria; site selection and investigations; repository design and construction; operation, shutdown and surveillance of repositories; and waste acceptance criteria. Within these categories, a total of 23 reports (including the proceedings of two symposia) have been prepared on basic guidance, regulation and criteria, safety analysis and assessment, site investigations, disposal of low- and intermediate-level waste in shallow ground and rock cavity repositories, heat and near-field effects from, and the performance evaluation of waste isolation systems in, high-level waste disposal in deep geological repositories.

1.4.3/2. Symposia on the underground disposal of radioactive wastes and on the management of wastes from uranium mining and milling, co-sponsored by NEA, were held in 1979 and 1982 respectively. A seminar on site investigation techniques and assessment methods was held in 1984.

1.4.3/3. A technical report on current practices and options for the confinement of uranium mill tailings was published in 1981.

PLANS FOR 1985-86

1.4.3/4. The broad aim is to assist Member States to improve their ability to establish safe and effective underground disposal repositories for radioactive waste.

1.4.3/5. Efforts will concentrate on shallow ground and deep geological disposal. In that connection, work will be initiated on a code of practice on underground disposal and guides to that code, and on Safety Series documents in the form of guides or recommendations on the regulation, siting, design, construction, operation, shutdown and closing of deep geological repositories. Work will continue on the international guidelines and technical criteria for underground disposal of high-level radioactive wastes.

The preparation of technical documents on in situ experiments, borehole plugging and shaft sealing will be initiated and work on a Safety Series document on waste acceptance criteria for deep geological disposal will be continued.

1.4.3/6. Research will be co-ordinated on the migration and dispersion of radionuclides from waste packages disposed of in shallow ground repositories (CRP 1984-89) and on the geochemistry of neptunium (CRP 1985-90). The aim in both cases is to exchange information and provide support for research in Member States.

1.4.3/7. A symposium on the siting, design and construction of underground repositories will be held in 1986.

Sub-programme 1.4.4

Sea dumping and releases of radioactive effluents

RESULTS TO DATE (1980-84)

1.4.4/1. A report on Nuclear Power, the Environment and Man was published in co-operation with WHO in 1983.

1.4.4/2. A major review of the migration of long-lived radionuclides from the nuclear fuel cycle in the terrestrial environment was made through a symposium in 1981. A seminar on the environmental transfer of radionuclides to man was held in 1983 following the publication in 1982 of a report reviewing generic models and data for such assessments. A technical document was issued in 1983 on de minimis levels for very low levels of radioactive wastes which could be considered as non-hazardous and directly disposable into the terrestrial environment.

1.4.4/3. Technical documents were prepared on the environmental transfer of radionuclides and their behaviour and the radiological basis for the control of such environmental releases of regional and global concern. Technical recommendations for the control of radiologically significant radionuclides to prevent transboundary air pollution by radioactive substances are being reviewed in 1984. A technical report was published in 1983 on atmospheric dispersion models relating to radionuclide discharges.

1.4.4/4. The results obtained under CRPs on the behaviour of tritium in some typical ecosystems, the behaviour of radium in aquifers and waterways, the cycling of transuranium elements in the marine environment and the dispersion of radionuclides from the storage of radioactive wastes in the terrestrial environment were published as technical reports and documents in 1981 and 1983.

1.4.4/5. Work was initiated in 1983 on the preparation of a general methodology for assessing the environmental impact of nuclear facilities.

1.4.4/6. On the basis of the recommendations of the GESAMP (United Nations Joint Group of Experts on the Scientific Aspects of Marine Pollution) working group on an appropriate oceanographic model for the dispersion of waste disposed into the sea (1983) and taking into account the radiological basis, the data base for the Agency's Definition for the dumping of low-level waste into the sea was reviewed in 1983. A revised version of the Definition and Recommendations is being prepared in 1984.

1.4.4/7. The definition of de minimis quantities of radioactive wastes which can be dumped into the sea as non-hazardous wastes under a regional permit and which were exempted from special permits was reviewed in 1983.

1.4.4/8. A review was made of the packaging requirements for sea dumping in 1980 and of the development of methodologies for the environmental assessment of sea dumping operations and the justification of sea dumping in place of land-based alternatives in 1982.

1.4.4/9. A symposium on the impact of radionuclide releases into the marine environment was held in 1980. A Safety Series report was published on the protection of the marine environment from radioactive waste disposal into the sea.

1.4.4/10. Reviews were made of hydrodynamic models and the behaviour of pollutants in coastal zones in 1982.

PLANS FOR 1985-86

1.4.4/11. In general, the aim is to assist Member States to improve their ability to control and assess the impact of releases of radioactive wastes into the aquatic, terrestrial and atmospheric environments.

1.4.4/12. A major area of activity concerns the Agency's role under the London Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter. A review of the Agency's Definition and Recommendations (issued in 1978) for the dumping of radioactive waste will be completed in 1985. A Safety Series report containing procedures and data collected and compiled since 1979 for the evaluation of ocean disposal of radioactive waste will be prepared, as will a technical report on procedures for site-specific modelling and pathway analysis in coastal marine environments.

1.4.4/13. Safety Series recommendations will be drawn up on the monitoring of the migration of radioactive effluents from uranium mill tailings.

1.4.4/14. Experience will be exchanged through the co-ordination of research on the environmental migration of radium and other contaminants present in solid and liquid wastes from the mining and milling of uranium (CRP 1981-85) and on the role of sediments in the transport and accumulation of radioactive pollutants in rivers and estuaries (CRP 1982-85).

1.4.4/15. In addition, work will commence on the development of methodologies for assessing the environmental impact of advanced reactor waste management through the preparation of a technical document.

Sub-programme 1.4.5

International Laboratory of Marine Radioactivity

RESULTS TO DATE (1980-84)

1.4.5/1. The behaviour of long-lived radionuclides such as transuranics and technetium was studied under field and laboratory conditions, in order to acquire data necessary for predicting the fate of radionuclides released into the marine environment. A CRP on transuranic cycling behaviour in the marine environment was completed in 1982.

1.4.5/2. Laboratory experiments were performed on the interaction of selected radionuclides with sediments collected from the North East Atlantic Dump Site, a potential dump site in the Pacific and various types of marine invertebrates with the aim of assessing the radiological impact of deep-ocean radioactive waste disposal. A CRP on the marine behaviour of long-lived radionuclides associated with the deep-ocean disposal of radioactive wastes was initiated in 1981.

1.4.5/3. Eight series of intercalibration exercises for radionuclide measurements in marine environmental samples such as seawater, sediments and biota have been organized since 1980 with the participation of about 40 national laboratories from 18 Member States. Upon completion of these exercises, samples were distributed on request to national laboratories for internal analytical quality control purposes.

1.4.5/4. Since 1980, the Monaco Laboratory has accepted 12 fellows, about 30 trainees and 10 visiting scientists.

1.4.5/5. At the request and with the financial support of the United Nations Environmental Programme (UNEP), the Monaco Laboratory played an active role in the implementation of UNEP's Mediterranean, Kuwait, West and Central Africa Action Plans. The services provided include the development of analytical methods, the organization of intercalibration exercises for various organic and inorganic marine pollutants, the maintenance of measuring instruments distributed to participating laboratories, the co-ordination of UNEP research programmes on pollutant behaviour, participation in base-line studies on pollutant distribution and training of technical personnel in pollutant measurements.

PLANS FOR 1985-86

1.4.5/6. The overall aim is to assist national marine research institutions to improve their ability to assess the environmental impact of releases mainly of radionuclides but also of other pollutants into the sea and to provide Governments with information on such releases.

1.4.5/7. The scientific results obtained by the Monaco Laboratory and its support activities for national institutions are required in order to provide the proper scientific basis for a better evaluation of the consequences of radioactive releases into the marine environment, including the deep-sea environment.

1.4.5/8. Work will focus on the evaluation of the environmental impact of radionuclide releases into the sea by means of the quantification of vertical flux processes, radiotracer experiments on the transfer coefficients of transuranic and other long-lived nuclides from water, food and sediments in marine species and environmental measurements of transuranic nuclides in the samples collected from interface boundaries (water/sediments, fresh-water/sea-water and so on). Information from the above studies will be systematically compiled and made available to developing Member States to assist them in assessing the environmental impacts of radionuclide releases. Research will be promoted on the fate of radionuclides introduced into the tropical marine environment (CRP 1985-88). The Monaco Laboratory will also organize intercalibration exercises with, and issue reference materials to, national institutions in order to promote analytical quality control, and will provide in-service training in marine environmental studies to scientists from developing countries.

1.4.5/9. Studies on the behaviour in deep-ocean sediments of long-lived radionuclides from existing and potential dump sites in the Atlantic and Pacific oceans will be continued, with the emphasis on obtaining data required for use in oceanographic models of radioactive waste behaviour in deep-sea environments.

1.4.5/10. With regard to the study of non-radioactive pollution of the sea, the Laboratory will continue to provide support for UNEP's Regional Seas Projects. In-service training on pollutant measurements given to technical personnel from developing countries will be increased.

PROGRAMME 1.5

ADVANCED SYSTEMS AND APPLICATIONS

DESIRED IMPACT

1.5/1. To facilitate international co-operation to ensure the long-term supply of nuclear energy in Member States through the timely introduction of new nuclear applications and advanced reactor systems.

Advanced Systems and Applications
Summary of manpower and costs by sub-programme

Table 10

Sub-programme	Man-years		1985 Cost estimates					Responsible Division
	P	GS	Staff	Meetings	Contracts	Other	Total	
1.5.1. Low-temperature nuclear heat applications	0.5	0.4	50 000	7 000	-	15 000	72 000	Nuclear Power
1.5.2. Advanced fission reactor systems	3.2	1.8	297 000	42 000	63 000	118 000	520 000	Nuclear Power
1.5.3. Nuclear fusion ^{a/}	0.8	0.2	71 000	16 000	-	29 000	116 000	Nuclear Power Research and Laboratories Scientific and Technical Information
	1.5	0.8	130 000	54 000	-	136 000	320 000	
	2.0	5.0	307 000		14 000	323 000	644 000	
TOTAL	8.0	8.2	855 000	119 000	77 000	621 000	1 672 000	

^{a/} This includes the manpower (1 P, 2 GS) and cost (\$167 000) of the office of the Director of the Division of Scientific and Technical Information.

Sub-programme 1.5.1

Low-temperature nuclear heat applications

RESULTS TO DATE (1980-84)

1.5.1/1. Considerable attention was devoted to the low-temperature heat applications of single- and dual-purpose plants during the early 1970s, but interest subsequently diminished in Member States and activities in this area ceased after two state-of-the-art summary meetings on nuclear district heating and desalination in 1978 and 1979 respectively. In the early 1980s, specific plans appeared in some Member States for nuclear district heating plants. Accordingly, a technical committee meeting to review nuclear heat applications was organized in 1983 which confirmed both the progress made in this field and the renewed interest of Member States in an active exchange of information on this subject organized through the Agency.

PLANS FOR 1985-86

1.5.1/2. In general, the aim is to provide planning and design organizations and utilities with a forum for exchanging information on the low-temperature heat applications of nuclear power, particularly district heating.

1.5.1/3. The use of nuclear power to replace fossil fuel as a primary energy source is again being considered in the area of low-temperature heat application, although there is a wide difference in the actual progress made in different regions. Several heat-only and co-generation plants are already in operation, under construction or in the final planning stage in Eastern European countries, particularly the Soviet Union. Although several different designs are under consideration in market economy countries, their introduction still depends to a large extent on public and political

acceptance of plants sited near population and consumption centres. In some developing countries, nuclear heat applications for desalination may be considered. Wider acceptance and market introduction require a more detailed exchange of information on actual programmes, designs, operating experience (especially with regard to technical and economic performance and safety) and economic competitiveness in relation to fossil-fuel-fired plants.

1.5.1/4. Work will concentrate on information exchange with specific emphasis on the design criteria, operating experience, safety requirements and applications of heat-only reactors, co-generation plants and existing power plants backfitted for additional heat applications. A technical report reviewing the potential of low-temperature nuclear heat will be prepared in 1985.

1.5.1/5. A technical report will be prepared in 1986 on the different plant designs for urban district heating.

Sub-programme 1.5.2

Advanced fission reactor systems

RESULTS TO DATE (1980-84)

1.5.2/1. Questions relating to the development and to the safe, reliable and economic operation of fast breeder reactor (FBR) systems have been reviewed annually by the International Working Group on Fast Reactors (IWGFR), which has considered programmes to ensure the reliability of sodium circuit components, including fuel and core structural behaviour, coolant boundary integrity, steam generator maintenance and leak prevention, and instrumentation for the early detection of possible malfunctions. A technical report on the status of the world-wide development of fast breeder reactors and an up-to-date summary report of the plant parameters of liquid metal fast breeder reactors (LMFBR) were prepared for publication in 1984.

1.5.2/2. The International Working Group on Gas-Cooled Reactors (IWGGCR) periodically reviewed the development of and future prospects for high-temperature gas-cooled reactors (HTRs) for electricity production and nuclear process heat applications. Reports on the status of gas-cooled fast and thermal reactors for fuel breeding, electricity generation and process heat application and on experience and prospects for high temperature process heat applications were published in 1983 and 1984 respectively. A technical report summarizing the development status and potential applications of HTR technology was prepared for publication in 1984.

1.5.2/3. A CRP was initiated in 1984 to evaluate the potential contribution of current advanced nuclear power programmes to the world energy supply (CRP 1984-87).

PLANS FOR 1985-86

1.5.2/4. The general aim is to provide a forum for research and development organizations, designers and operators to exchange information on the development, technology and economic and safety aspects of advanced fission reactor systems and to evaluate their potential value in expanding the long-term supply role of nuclear energy.

1.5.2/5. Eight Member States, including one developing country, have major LMFBR development programmes with 15 LMFBRs in operation or under construction and eight LMFBRs in the design stage. A further 12 Member States, including some developing countries, are conducting research and development on fast reactors or LMFBR components.

1.5.2/6. High-temperature nuclear process heat may become an important substitute for fossil fuel in various branches of industry (steel-making, coal gasification, environmentally clean energy transport) and is currently being developed in several Member States which have HTRs in operation or under construction. An international exchange of information on national gas-cooled reactor programmes and experience is required for this new reactor line.

1.5.2/7. Through the IWGFR and its specialists' meetings, information will be exchanged on selected common problem areas including safety-related topics and methods of improving plant economics. Research will be promoted on the detection of the initial stages of accidents in LMFBR cores with the aim of improving signal processing techniques for the analysis of boiling noise detection data (CRP 1984-87). A symposium to be held in 1985 will review fast breeder reactor experience and future trends.

1.5.2/8. Through the IWGGCR and its specialists' meetings, information will be exchanged on operating experience, design criteria and safety requirements for GCRs, and on the assessment, development and demonstration of high-temperature process heat applications such as coal gasification and liquefaction, steel-making and hydrogen production. In addition, research will be co-ordinated on the development and testing of high-temperature metallic materials with a view to exchanging results from various research and development programmes (CRP 1984-88).

1.5.2/9. Research will continue to be promoted on the role of advanced reactors in future energy systems of Member States with a view to performing a joint evaluation and interpretation of individual case studies prepared by participating institutes on the implications of introducing particular advanced systems (FBRs, HTRs, advanced light-water reactors (LWRs) and advanced heavy-water reactors (HWRs)) and their fuel cycles into specific countries and regions (CRP 1984-87). In addition, an exchange of information on selected areas of research and development programmes for advanced light and heavy water reactors in Member States will be arranged.

Sub-programme 1.5.3

Nuclear Fusion

RESULTS TO DATE (1980-84)

1.5.3/1. The International Tokamak Reactor (INTOR) Workshop has succeeded in providing the conceptual design of the next large tokamak experiment to succeed those currently in operation, has defined and studied the relevant critical physics and technological issues, assessed the existing technical data base and studied some of the technical problems associated with the multilateral construction of such a device.

1.5.3/2. The biennial International Conference on Plasma Physics and Controlled Nuclear Fusion Research has continued to provide a forum for the presentation of results by leading fusion scientists in the world.

1.5.3/3. Assistance has been provided to several developing countries in establishing plasma physics programmes.

1.5.3/4. A report on progress in fusion reactor design concepts was published in 1982 which identified priority areas for research and development in key technologies.

1.5.3/5. The journal Nuclear Fusion was issued every month and one topical issue entitled "Data Compendium for Plasma Surface Interactions" (in co-operation with the Oak Ridge National Laboratory, USA) was published. The fourth edition of the World Survey of Major Activities in Controlled Fusion Research was issued in 1982.

1.5.3/6. Draft versions of a fusion thesaurus, an index of scientists' fields of interest and a subject classification scheme have been produced within the Fusion Vocabulary Control project.

PLANS FOR 1985-86

1.5.3/7. The broad aim is to serve as a forum for the exchange of information on nuclear fusion research and experiment and on engineering aspects of nuclear fusion, and through publication of the journal Nuclear Fusion and its supplement, to present and disseminate scientific information on controlled thermonuclear fusion and fusion reactor technology.

1.5.3/8. It is planned to issue technical documents on mirror fusion (two), the operation of large tokamaks and alternative approaches to fusion, and to publish the proceedings of specialists' meetings on auxiliary heating and current drive in fusion devices (two), advances in the theory of thermonuclear plasmas, advances in inertial confinement, disruptive instabilities in tokamaks, computing for fusion, advances in stellarator research and impurity control in fusion machines. In addition, research will be co-ordinated on reactor-oriented plasma physics utilizing small devices (CRP 1984-87), the objective being to assist laboratories in developing Member States with their plasma research programmes.

1.5.3/9. The INTOR Workshop will continue to examine the critical issues involved in the construction of this machine. An assessment of the scientific data base to support INTOR will be made and the research and development work required will be identified. Emphasis will be placed on providing the information needed by any single or group of nations embarking on the construction of a next-step machine. Part 2 of the Phase II.A report detailing the results of this work will be published in 1985.

1.5.3/10. The Eleventh International Conference on Plasma Physics and Controlled Thermonuclear Fusion Research will be held in 1986.

1.5.3/11. Information will be collected and reviewed and three technical reports published on selected topics of fusion reactor engineering and development. A technical report on the status of fusion reactor engineering technology will be prepared in 1986. Efforts to select and define critical issues in fusion reactor engineering for which a substantial contribution can be made from fast and thermal reactor engineering will be promoted (CRP 1986-88).

1.5.3/12. The journal Nuclear Fusion will continue to evaluate, select, present and disseminate international scientific information from about 100 laboratories on controlled nuclear fusion and will be somewhat expanded to accommodate the increase in activity in the field. It will also report on selected relevant aspects of Agency programmes in fusion. The fifth edition of the World Survey of Major Activities in Controlled Fusion Research will be published in 1985. Contributions to this edition are expected from about 250 laboratories in Member States.

1.5.3/13. Work on the Fusion Vocabulary Control project will near completion.

PROGRAMME AREA 2

NUCLEAR APPLICATIONS

PROGRAMME AREA 2

NUCLEAR APPLICATIONS

LONG-TERM GOALS AND STRATEGIES

2/1. A unique feature of this programme area is the variety of topics dealt with and the wide range of research and development activities in which nuclear methods and techniques are utilized. A further distinctive characteristic of the activities performed in this area is that they are of actual or potential interest to virtually all Member States. The Agency's fundamental aim in promoting nuclear applications is, by providing support to local institutions employing nuclear techniques, to strengthen Member States' ability to solve problems independently.

2/2. The study of living systems, which was one of the early fields in which tracer and radiation methods were utilized, is being succeeded by the application of newly acquired knowledge in the fields of nuclear medicine, radiotherapy and agricultural biotechnology. It is essential that the Agency's long-term programme reflect adequately the expansion of these areas.

2/3. Through both in vivo procedures such as imaging and in vitro procedures such as radioimmunoassay (RIA), nuclear medicine is currently making the single most important contribution to the improvement of medical diagnosis. RIA is a versatile, cheap and simple technique that has great potential for the diagnosis of infectious and parasitic diseases. These features make it particularly suitable for extensive application in developing countries both in human and veterinary medicine.

2/4. Radiotherapy in the treatment of cancer is essentially a new programme which the Agency is planning in close co-operation with WHO. In addition to promoting co-ordinated activities in advanced fields of research, the Agency will establish sizable projects on simple brachytherapy procedures which do not require large capital investment in equipment and are therefore suitable for less developed countries.

2/5. The Agency's programme in agricultural biotechnology, which will be closely co-ordinated with FAO, will follow the latest trends in agriculture and the food sciences. Interest is growing throughout the world in fields such as the radiation preservation of foods, the more efficient use of fertilizers, the adverse environmental impact of agrochemical residues, the increasing rate of desertification and the biological control of insect pests. The Agency is active in all these areas and has established links with appropriate international institutes in developing countries such as the International Rice Research Institute (the Philippines), the International Institute of Tropical Agriculture (Nigeria) and the International Centre of Insect Physiology and Ecology (Kenya). It is planned to expand co-ordinated research activities concerning atmospheric nitrogen fixation and the use of plant tissue culture and genetic manipulation for plant breeding and insect pest control.

2/6. With respect to the physical sciences and technology programme, it should be noted that several industrial applications of nuclear techniques (such as gauging, flow and level control, process monitoring) are now readily available on a commercial basis. Also, the use of radiation processing of monomers and polymers is growing steadily in industrialized countries, but the technology relating to this technique is increasingly being developed by private companies. These two limiting factors have been taken into account in redefining the Agency's programme. The main areas where it is expected that demand from developing countries for Agency support will increase steadily are mineral prospecting, non-destructive testing, the sterilization of medical supplies and the evaluation of geothermal resources. In accordance with the specific requirements of Member States, university physics, research reactor utilization, assistance in core conversion to lower fuel enrichment, special instrumentation design and maintenance, the co-ordination of plasma physics

and fusion research and the provision of nuclear data services will continue to be the main components of the physical sciences programme in the near future.

2/7. The Agency's Laboratory will continue to play an important role in enhancing the effectiveness of the promotional activities of the different programmes. It will provide analytical support and other forms of technical back-up both for co-ordinated research programmes and for technical co-operation projects, organize on-the-job instruction and training courses and will conduct inter-laboratory comparisons for quality control purposes.

2/8. The mechanism of co-ordinated research programmes will continue to play a major part in promotional work. It is expected that the largest share of the Technical Assistance and Co-operation Fund will be allocated to projects in the "Nuclear Applications" area and that, as the Fund's resources increase, so the amount of technical support required for such projects will also increase. It is intended to make more use of regional forms of co-operation based on the successful RCA model and to foster the further integration of training-oriented activities involving both research and technical co-operation projects.

2/9. The promotion of nuclear applications in the various branches of health care, food and agriculture and industry will be closely co-ordinated with appropriate UN and other organizations such as WHO, FAO, UNESCO, UNEP, ILO, IMO, UNIDO, GESAMP, WMO, UNDP, UNSCEAR, EURATOM, CEC, OAU, OAS, ISO, ISO/REMCO, ICRU, ICRM, ICRP, BIPM, OIML, the Codex Alimentarius Commission, the International Organization for Medical Physics, the International Measurement Confederation, the International Committee for Standardization in Haematology, the International Union of Nutritional Science, IEMVT, ILRAD, ICIPE, SIDA, SAREC, ODA, USDA, US-AID, DANIDA, CIDA, the Dipartimento per la Cooperazione allo Sviluppo, IUPAC, IARC, the Consultative Group on International Agricultural Research, the Microbiological Resources Centre and the Regional International Organization for Plant Protection and Animal Health.

PROGRAMME AREA 2: NUCLEAR APPLICATIONS

Summary of resources by programme

Table 11

Programme	Man-years		Planned expenditure for the implementation of the programme in 1985				
	P	GS	Regular Budget estimates	Funds from other UN organizations	TC resources	Other extra-budgetary resources	TOTAL
2.1. Food and Agriculture	16	8	3 174 000	1 268 000	8 900 000	445 000	13 787 000
2.2. Human Health	12.9	9.0	2 480 000	20 000	4 700 000	410 000	7 610 000
2.3. Physical Sciences and Technology	26.6	17.2	4 078 000	-	11 500 000	490 000	16 068 000
2.4. The Laboratory ^{a/}	30	55 27 M&O	4 533 000	-	-	-	4 533 000
2.5. International Centre for Theoretical Physics	7	21	1 189 000	440 000	-	3 504 000	5 133 000
TOTAL	92.50	110.20 27 M&O	15 454 000	1 728 000	25 100 000	4 849 000	47 131 000

^{a/} The figures relate to 2.1, 2.2 and 2.3, after transferring the cost of SAL to Safeguards. The manpower, however, includes 6 P, 12 GS and 5 M & O posts in respect of SAL. In addition to the Regular Budget Manning Table, there are staff financed from FAO funds (3 P, 6 GS, 15 M&O).

PROGRAMME 2.1
FOOD AND AGRICULTURE

DESIRED IMPACT

2.1/1. Economically to increase agricultural production, reduce post-harvest losses and minimize pollution of food and the environment by fostering applications of isotopes and radiation relating to food and agriculture through a joint FAO/IAEA effort aimed at improving the ability of Member States, and particularly developing countries, to apply effective nuclear techniques in research and development (where necessary, in connection with other advanced methods).

Summary of manpower and costs by sub-programme

Table 12

Sub-programme	Man-years		1985 Cost estimates					Responsible Division
	P	GS	Staff	Meetings	Contracts	Other	Total	
2.1.1. Soil fertility, irrigation and crop production	4.2	1.4	353 000	14 000	145 000	112 000	624 000	Food and Agri-culture ^{a/}
2.1.2. Plant breeding and genetics	2.2	1.4	201 000	32 000	142 000	164 000	539 000	Food and Agri-culture
2.1.3. Animal production and health	2.2	1.3	206 000	32 000	142 000	106 000	486 000	Food and Agri-culture
2.1.4. Insect and pest control	1.1	1.3	126 000	14 000	137 000	103 000	380 000	Food and Agri-culture
2.1.5. Agrochemicals and residues	2.2	2.2	222 000	18 000	137 000	114 000	491 000	Food and Agri-culture
2.1.6. Food preservation	4.1	0.4	329 000	39 000	137 000	149 000	654 000	Food and Agri-culture
TOTAL	16.0	8.0	1 437 000	149 000	840 000	748 000	3 174 000	

^{a/} Full name of Division is "Joint FAO/IAEA Division of Isotope and Radiation Applications of Atomic Energy for Food and Agricultural Development".

Sub-programme 2.1.1

Soil fertility, irrigation and crop production

RESULTS TO DATE (1980-84)

2.1.1/1. Non-destructive methods which enable water movement and soil moisture status to be assessed in the field rather than in the laboratory have been developed under a CRP. Recommendations concerning management practices (cropping sequences, fallow systems, mulching, tillage practices, soil

fertility and plant genotype) which lead to better water conservation in soil, especially in semi-arid regions, were made for specific sites and are being published.

2.1.1/2. The non-judicious use of nitrogen fertilizer can give rise to environmental and health-related hazards. Based on the results of isotope-aided studies conducted under a CRP, recommendations are being published which indicate the most efficient and economic use of nitrogen fertilizer and the extent to which nitrogen levels can be increased without harming the environment.

2.1.1/3. A technique for using the isotope nitrogen-15 to measure quantitatively the fixation of nitrogen by leguminous crops in the field was developed in the Agency's Laboratory and is now in general use in many parts of the world.

2.1.1/4. The plant nutrition value of natural rock phosphate deposits in several developing countries was assessed in greenhouse experiments. Some good deposits which are potentially valuable as natural fertilizer were identified and will be subjected to field trials. In addition, preliminary isotope-aided studies performed at the Agency's Laboratory have demonstrated that the nitrogen-fixing plant Azolla, which grows in rice paddies, can effectively replace urea fertilizer.

PLANS FOR 1985-86

2.1.1/5. The overall aim is to assist agricultural research institutes in developing Member States to acquire the knowledge and capability to optimize fertilizer and water management practices and the biological fixation of atmospheric nitrogen in field crops under different farming systems with the help of radiation and isotope techniques.

2.1.1/6. Isotope labelling provides a unique means of directly determining the amount of nutrient taken up by a plant from any given source. The use of portable radiation equipment makes it possible to follow the moisture change in soil profiles in a reliable, non-destructive way. Hence, this work will lead to improved soil/water management and conservation practices under local field conditions.

2.1.1/7. Work will focus firstly on optimizing biological nitrogen fixation in different cropping systems and on the efficient use of natural biofertilizers (e.g. Azolla and blue-green algae) as a supplementary source of nitrogen. The ultimate aim is to reduce the need for costly nitrogen fertilizers and to increase productivity by as much as 30%. In that connection, research will be promoted to assist in adapting these isotope-aided methods for the specific purposes of optimizing pasture management (CRP 1982-86), multiple cropping systems (CRP 1981-85) and the use of Azolla and blue-green algae in rice cultures (CRP 1983-87).

2.1.1/8. The second area on which efforts will be concentrated is the quality of irrigation water, irrigation management and crop production in saline and salt-affected soils because of the dramatic increase in acreage of such soils in countries like Egypt, India, Pakistan, Peru, Sudan, Venezuela and several others. It is planned to promote research on the development and adaptation of isotopic labelling methods and the neutron moisture meter technique, the aim being to achieve optimum water management (CRP 1984-88).

2.1.1/9. In addition, field trials will be initiated to assess the value of naturally occurring rock phosphate as a source of phosphorus (CRP 1984-88) and research will be promoted on the ability of mycorrhizal associations to improve the utilization of soil nutrients (CRP 1985-89) and on the optimization of fertilizer and water uptake in tree crops (CRP 1984-88).

2.1.1/10. It is planned to publish a Laboratory training manual in 1985 on the use of isotope and radiation techniques in soil-plant relationship studies.

NUCLEAR APPLICATIONS

2.1.1/11. Technical reports will be prepared in 1985 and 1986 respectively on the use of nuclear techniques in studies of water conservation through improved soil and water management practices, and on the use of nuclear techniques in studies on fertilizer use efficiency.

2.1.1/12. The Soils Newsletter will be published four times a year.

2.1.1/13. The Agency's Laboratory performs preparatory research for field experiments within co-ordinated research programmes, and this includes soil physics and irrigation problems. ^{15}N analyses and training are also carried out. It is planned to organize annually a 6-8 week training course on isotope and radiation techniques in soil-plant relationship studies.

Sub-programme 2.1.2

Plant breeding and genetics

RESULTS TO DATE (1980-84)

2.1.2/1. A new approach involving the combined use of radiation and tissue culture techniques as a basis for more effective methods of mutation induction, mutant selection and mutant propagation was initiated and applied in research promoted by the Agency. The Laboratory, where a new tissue culture research training facility has been opened, played an active role in this work.

2.1.2/2. Some 200 improved mutant varieties of agricultural crop plants which have been released to growers and many valuable mutant stocks which are used as parents in cross breeding have resulted from CRPs and other Agency activities in this field. Considerable success in terms of increased yields, early maturity, improved disease resistance and so on has been achieved with many of these mutant cultivars, including rice mutant varieties in Hungary, India, the Republic of Korea, Pakistan, the Philippines, Thailand and the United States; bread and durum wheat and barley mutant varieties in Chile, Czechoslovakia, the German Democratic Republic, Greece, India, Italy, Pakistan, Sweden, the United Kingdom and the Soviet Union; legume crops (pea, soybean, French bean) in China, Egypt, India, Japan, Poland and the United States.

2.1.2/3. In order to supplement existing genetic resources, alternative germ plasm sources of semi-dwarf mutants in rice and wheat have been identified in two CRPs and are being used by plant breeders in Member States. A computerized system for recording and describing mutant germ plasm of plants has been established and the list of material made available to all Member States.

PLANS FOR 1985-86

2.1.2/4. The broad aim is to assist agricultural research establishments in developing Member States to acquire the skills and the capability to improve crops through mutation induction.

2.1.2/5. Mutation breeding is particularly useful when an established crop variety requires improvement in a specific characteristic such as plant architecture, maturity time or disease resistance. Ionizing radiation possesses efficient mutagenic properties and provides a strong complementary tool for plant breeding programmes.

2.1.2/6. Efforts will centre on providing plant breeding institutes in developing countries with the technology needed to generate useful genetic resources through mutation induction for the improvement of food crops. Within that framework, co-ordinated research to develop and adapt nuclear techniques in tissue culture approaches to plant breeding will be promoted

(CRP 1983-87, CRP 1983-88). Research will also be promoted with the aim of improving nitrogen fixation in leguminous crops (CRP 1984-89) and on the tolerance of rice to soil stress factors such as salinity, drought and mineral imbalances (CRP 1984-89).

2.1.2/7. In addition to the above activities, research will also be promoted on the genetic and physiological evaluation of dwarf- and semi-dwarf mutants of cereals for use in cross breeding because most modern short-stature (i.e. lodging resistant) cultivars derive this plant type from the same genetic base, which represents a risk in terms of potential vulnerability to pathogens and pests (CRP 1981-85, CRP 1982-86). Furthermore, research will be promoted on genetic improvement through induced mutations of basic food crops in Africa (CRP 1984-89), oil seed and leguminous crops in Latin America (CRP 1982-86), oil seed and industrial crops (CRP 1984-89), leguminous food crops in Africa and the Near East (CRP 1981-86), root and tuber crops (CRP 1983-88) and grain legumes in South East Asia (CRP 1977-85).

2.1.2/8. Publication of a revised edition of the Manual on Mutation Breeding is planned for 1986. A technical report on the possible use of mutation breeding for the rapid domestication of new crop plants will be prepared in 1986.

2.1.2/9. A data bank for induced mutant germ plasm resources will be maintained and information made available to Member States.

2.1.2/10. The Mutation Breeding Newsletter with information on, among other things, mutant lines of potential value in cross breeding, will be published quarterly.

2.1.2/11. A joint symposium with FAO will be held in 1985 to review the use of nuclear techniques and tissue culture for plant improvement.

2.1.2/12. The Agency's Laboratory provides essential technical support in terms of seed and tissue irradiation, analyses for mass screening and training on, among other things, aspects of the use of tissue culture techniques. It is planned to organize annually a 6-8 week training course on the induction and use of mutations in plant breeding.

Sub-programme 2.1.3

Animal production and health

RESULTS TO DATE (1980-84)

2.1.3/1. Research aimed at improving domestic animal production was promoted through several CRPs. A multi-disciplinary approach involving the fields of nutrition, reproduction and health was used to support research on improving water buffalo production in various Asian countries. It emerged from this and other programmes where radioimmunoassay (RIA) was used to study reproductive efficiency that there was a need to standardize laboratory procedures, and a quality control programme was set up for that purpose. The co-ordination centre, which performs inter-laboratory comparisons for the region, is in Bangkok. In addition, a regional network of research institutes has been established in Latin America with the support of technical co-operation funds, the objective being to improve the reproduction and management of meat- and milk-producing livestock using RIA.

2.1.3/2. A programme was set up at the Agency's Laboratory to support isotope-based analyses performed in CRPs by providing quality control services and distributing reagents. Furthermore, isotope-based techniques for assessing rumen function using an artificial rumen have been developed at the Laboratory for application in CRPs.

NUCLEAR APPLICATIONS

2.1.3/3. Programmes on the control of tick and tick-borne diseases have clearly demonstrated the value of isotope techniques in the study of defense mechanisms in the host animal and the possibility of developing radiation-attenuated vaccines against tick-borne diseases.

PLANS FOR 1985-86

2.1.3/4. It is planned in general to help agricultural research establishments in developing Member States to acquire the knowledge and capability to solve livestock production and health problems with the aid of isotope and radiation techniques.

2.1.3/5. The application of these techniques to problems associated with nutrition, reproduction and the adaptation of animals to the environment offers unique advantages and will contribute to improved livestock production and better control of animal diseases in Member States. For example, isotope labelling techniques facilitate the tracing of pathways and the fate of substances in nutrition studies and enable accurate determination of hormone levels in studies on animal reproduction and environmental adaptation. Furthermore, isotopic tracer techniques can delineate the effects of parasitic infections on the host animal and ionizing radiation can be used to produce attenuated vaccines against such infections.

2.1.3/6. Attention will focus first on developing and adapting RIA with a view to improving the reproductive efficiency of livestock and the diagnosis and control of infectious livestock diseases, and secondly on the use of isotopic tracers (including the use of a rumen simulator) to evaluate and enhance the nutritive value of domestic waste and agro-industrial by-products. With this aim, research will be co-ordinated on developing and adapting RIA for monitoring purposes with a view to improving the reproductive efficiency and productivity of large ruminants (CRP 1983-88).

2.1.3/7. As far as the application of isotopic tracers is concerned, research will be promoted on improving the use of non-protein nitrogen and agro-industrial by-products by ruminants (CRP 1980-85), optimizing grazing animal productivity around the Mediterranean (CRP 1982-87), and improving sheep and goat productivity (CRP 1983-88).

2.1.3/8. Furthermore, the development of radiation applications in the production of radiation-attenuated vaccines against parasitic diseases in farm animals will be promoted (CRP 1981-86).

2.1.3/9. A technical report on improving the productivity of indigenous animals in harsh environments will be prepared in 1985.

2.1.3/10. An educational seminar on the use of nuclear techniques in research aimed at improving meat, milk and wool production from ruminant animals in Africa and the Middle East is to be held in 1985.

2.1.3/11. A symposium on the use of nuclear techniques in studies of animal production in different environments will be held in 1986.

2.1.3/12. The Animal Production and Health Newsletter will be issued every three months.

2.1.3/13. The Agency's Laboratory will provide support in terms of isotope analyses, quality control of RIA analyses, the development of isotope-based techniques for assessing rumen function through the use of a rumen simulator, and training.

Sub-programme 2.1.4Insect and pest control

RESULTS TO DATE (1980-84)

2.1.4/1. The use of the sterile-insect technique (SIT) together with bait sprays and strict quarantine procedures has effectively halted the northward movement of the Mediterranean fruit fly into Mexico. Fly production initiated with Agency support in 1979 has continued at the Mexican factory and sterilized flies have been released in southern Mexico and Guatemala, resulting in the gradual push of the pest southwards. Similar SIT programmes have been set up to eradicate the medfly from Egypt and from two major fruit growing valleys in southern Peru.

2.1.4/2. Research on a genetic sexing mechanism commenced in 1981 at the Agency's Laboratory and through a CRP, the ultimate goal being to reduce the cost of medfly production.

2.1.4/3. A large-scale tsetse eradication programme initiated in Nigeria in 1977 with the aim of investigating the effectiveness and economics of the SIT in controlling or eradicating the riverine species of tsetse fly is now nearing completion. The prior suppression of the natural tsetse population using traps and screens followed by weekly releases of radiation-sterilized flies has led to the complete eradication of the target species Glossina palpalis from three riverine forest patches.

2.1.4/4. Tsetse mass rearing procedures have been simplified through the development of improved handling and feeding techniques. Colonies of tsetse are now maintained on both live animals and on an artificial feeding system involving the use of fresh blood or a re-constituted mixture of freeze-dried bovine and porcine blood fed through a silicone membrane. Work has begun on the development of a wholly artificial diet for tsetse flies.

2.1.4/5. Isotope labelling techniques have been introduced in Indonesia to study the movement and population fluctuation of rice insects, the objective being to develop an effective integrated method for controlling these insects.

PLANS FOR 1985-86

2.1.4/6. In general, it is planned to assist agricultural institutes and other specialized centres in developing Member States to gain the knowledge and develop the ability to use isotopes and radiation to cut down losses caused by insect and other pests.

2.1.4/7. Losses resulting from insect attack are frequently very severe, particularly in tropical and sub-tropical countries. Radiation is used to induce sterility in insects for control by the SIT, an approach which is species-specific and environmentally safe. Radiation can also be used to induce genetic changes in insects so that new control methods can be developed. In many cases, isotopes are unique tools in entomological research and can be used to improve integrated pest management programmes. Isotopes also constitute a powerful tool in the study of insect physiology and ecology and may lead to better insect control methods.

2.1.4/8. The most important area of work will be the application of the SIT for tsetse and medfly control. The SIT has now been developed to the stage where it is being applied on a very large scale to eradicate several harmful insects. An industrial-scale campaign to eradicate the medfly in Egypt will be implemented at a cost of more than US \$30 million in the period 1983-1987. This project involves designing and constructing industrial facilities, producing one billion flies a week, transferring the necessary know-how and creating the infrastructure required, which includes manpower training.

Another major medfly eradication project will continue to be executed in southern Peru at a cost of some US \$1.5 million over the period 1982-1987. The large-scale tsetse field project in Nigeria (costing US \$3 million) will be completed in 1985. The initiation of a second phase covering a much larger area is being considered. It is foreseen that several similar projects in Africa and Latin America will be initiated in 1985 and 1986. The Agency's role in the execution of such large-scale projects derives from some 20 years' experience in developing and applying the SIT both experimentally and in field campaigns, and involves providing research back-up on selected aspects of the SIT (mainly performed at the Laboratory) as well as general scientific guidance and assistance in project management. There is no other organization, industrial or international, which is in a position to assume these responsibilities.

2.1.4/9. It is also planned to promote the SIT by co-ordinating research in Member States on tsetse fly ecology (CRP 1984-89), the development of genetic sexing mechanisms in fruit flies (CRP 1981-87), the development of medfly attractants and traps (CRP 1984-88) and the development of artificial diets for tsetse flies (CRP 1980-87). Technical reports will be issued in 1985 and 1986 on medfly eradication by means of isotopes and radiation and on radiation-induced genetic control of insect pests.

2.1.4/10. Apart from the above activities, research will also be promoted to develop genetic methods of controlling Lepidoptera (the most serious field crop insect pests) using radiation (CRP 1985-89). A technical document on the genetic control of major insect pests of field crops will be prepared in 1986.

2.1.4/11. Work will commence on the development of the SIT for mosquito control (CRP 1985-89).

2.1.4/12. It is planned to publish a revised edition of the Laboratory Training Manual on Isotopes and Radiation in Entomology in 1986.

2.1.4/13. The Information Circular (newsletter) will continue to be published quarterly.

2.1.4/14. The Agency's Laboratory will provide essential scientific and technical support for the above activities in terms of research, training, development of pilot-plant scale rearing systems, maintenance of back-up insect colonies, provision of freeze-dried blood and quality control procedures.

Sub-programme 2.1.5

Agrochemicals and residues

RESULTS TO DATE (1980-84)

2.1.5/1. A controlled-release formulation of the insecticide endosulfan was prepared in the Agency's Laboratory in 1983 which extends the half-life of the insecticide from 3-7 days to 21-28 days, thereby enabling better chemical control of the tsetse fly. A specific, sensitive analytical procedure was also developed for the determination of homidium and samorin residues in cattle blood, these being drugs which are widely used for the control of African trypanosomiasis.

2.1.5/2. Data from CRPs on pesticide residues in food revealed that agricultural practices in one Member State result in unacceptable levels of leptophos, and that rice bran (fed to livestock) in another Member State contained potentially hazardous benzene hexachloride residues.

2.1.5/3. Research promoted under Agency CRPs has also led to the following findings and developments: procedures designed to eliminate specific pesticide residues in edible oils were identified in a study of oil processing; under aerobic or anaerobic conditions, it was found that there are significant differences in the rate of degradation of pesticides used to control paddy rice pests, primarily because of differences in microbial activity; techniques employing labelled substrates to measure primary production and trace contaminants in inland water bodies were devised; a high-temperature distillation technique was developed to identify bound pesticide residues.

PLANS FOR 1985-86

2.1.5/4. Broadly, it is planned to assist agricultural research establishments in developing Member States to acquire the knowledge and capability to optimize the utilization of agrochemicals for the purpose of improving the protection of crops and livestock and minimizing harmful effects on the environment.

2.1.5/5. In view of the minute residue concentrations normally encountered in the various agricultural products and the environment, isotope-labelled substrates offer unique and sometimes the only means of obtaining fast and reliable results.

2.1.5/6. Attention will centre on the application of isotopic labelling to improve the effectiveness of agrochemicals in protecting food sources from pests. This includes, on the one hand, developing controlled-release formulations of pesticides and studying them in order to determine release rates under different environmental conditions and, on the other hand, monitoring the behaviour of sex attractants (pheromones) in order to optimize their efficiency in insect pest management campaigns. With these ends in view, research will be co-ordinated on the use of isotopic techniques to study the fate of persistent pesticides in the tropics (CRP 1983-88), in studies of agricultural chemical residues in meat, milk and related livestock products (CRP 1982-86), in isotopic tracer-aided studies of pesticide residues in stored products (CRP 1982-87) and in the development and evaluation (by means of radioisotopes) of controlled-release formulations of pesticides to reduce residues and increase efficacy (CRP 1982-87).

2.1.5/7. An educational seminar will be organized in 1985 on research and development of controlled-release technology for pesticides using isotopes.

2.1.5/8. Apart from the above work, research will be promoted on the development of isotopic tracer techniques to improve rural methane production from biomass (CRP 1982-86).

2.1.5/9. Furthermore, it is planned to establish an isotopic tracer-aided programme to study the efficient use of agrochemicals (pesticides, fertilizers and so on) in rice-fish ecosystems (CRP 1984-88).

2.1.5/10. A technical report will be prepared in 1986 on isotope-aided studies of pesticide residues in different ecosystems.

2.1.5/11. The Agrochemicals Newsletter will be issued four times annually.

2.1.5/12. The Agency's Laboratory will provide essential technical support for the above activities in terms of training, analytical methods, research and quality control. More specifically, the Laboratory is developing and testing simple and reliable instrumentation to be recommended for use in determining agrochemical residues in tropical conditions.

Sub-programme 2.1.6

Food preservation

RESULTS TO DATE (1980-84)

2.1.6/1. A crucial step forward in the evaluation and recognition of the wholesomeness of irradiated food was taken in 1980 when the Joint FAO/IAEA/WHO Expert Committee on the Wholesomeness of Irradiated Foods (JECFI) concluded that the irradiation of any food up to an overall average dose of 10 kGy caused no toxicological hazard and hence toxicological testing of foods so treated was no longer required. In 1983, the Codex Alimentarius Commission adopted the Codex General Standard for Irradiated Foods, the provisions of which are based on the conclusions and recommendations of JECFI.

2.1.6/2. CRPs initiated in 1981 provided useful data on the safety of irradiating a variety of foods. This has resulted in the development of techniques employed in a number of practical applications, such as the decontamination of spices and frozen seafoods, the disinfection and extension of the shelf-life of some tropical fruits and the improvement of the hygienic quality of several raw materials used in food production. With the support of a CRP initiated in 1980 within the RCA framework, food irradiation technology in several Asian countries has developed to the stage where it can be utilized by the relevant food industries and trade enterprises.

2.1.6/3. Over the period, 109 scientists from 40 developing countries attended training courses and 20 scientists from 16 developing countries received extensive practical training in food irradiation at the International Facility for Food Irradiation Technology (IFFIT) which is jointly sponsored by the IAEA, FAO and the Government of the Netherlands.

PLANS FOR 1985-86

2.1.6/4. The broad aim is to assist food and agricultural research establishments and national food and health authorities in developing Member States to become familiar with and proficient in the use of irradiation as a means of preserving food and achieving improved health protection.

2.1.6/5. Work will concentrate on improving the economic feasibility of using the food irradiation process to reduce spoilage losses in fruits, vegetables and fishery products, to eliminate food-transmitted enteric pathogens of animal origin, to disinfest fresh and stored products of insects and to render parasites inactive. To that end, efforts will be made to co-ordinate an exchange of operating experience from pilot-scale food irradiation facilities (CRP 1982-85). Research will also be promoted on the factors influencing the utilization of the food irradiation process (CRP 1980-85). It is planned to establish a regional project, in continuation of the original RCA in Asia, which will co-ordinate an exchange of operating information from pilot irradiation facilities treating selected food items of specific interest to the Asian region (CRP 1984-89).

2.1.6/6. Furthermore, research will be co-ordinated on insect disinfection of food and agricultural products by means of irradiation (CRP 1981-86).

2.1.6/7. The Food Irradiation Newsletter will be published four times a year.

2.1.6/8. A symposium on food irradiation processing will be organized in 1985.

2.1.6/9. An educational seminar for Asia and the Pacific on the practical application of food irradiation will be held in 1986.

2.1.6/10. International co-ordination of work in this field will be strengthened through the International Consultative Group on Food Irradiation, which was established in 1984 for an initial period of five years.

2.1.6/11. Collaboration with FAO, WHO and the Codex Alimentarius Commission will continue in order to promote international agreement on the general acceptability of the food irradiation process and to achieve acceptance by individual national governments of the Codex General Standard for Irradiated Foods. A technical document is planned for 1985 in collaboration with FAO and WHO which will give recommendations on the wholesomeness of high-dose irradiated foods.

2.1.6/12. If financial support continues to be provided by the sponsors, consideration will be given to extending the operation of IFFIT beyond 1985.

PROGRAMME 2.2

HUMAN HEALTH

DESIRED IMPACT

2.2/1. To contribute, in collaboration with other appropriate international organizations, to the acquisition and subsequent application by Member States of nuclear methods to solve problems relating to the health and well-being of their people, and in so doing to strengthen national research capacity in this field.

Summary of manpower and costs by sub-programmeTable 13

Sub-programme	Man-years		1985 Cost estimates					Responsible Division
	P	GS	Staff	Meetings	Contracts	Other	Total	
2.2.1. Nuclear medicine	3.9	2.3	393 000	74 000	220 000	108 000	795 000	Life Sciences
2.2.2. Radiotherapy	1.1	0.5	94 000	-	88 000	24 000	206 000	Life Sciences
2.2.3. Applied radiation biology	2.5	1.9	265 000	21 000	131 000	64 000	481 000	Life Sciences
2.2.4. Trace elements in the environment and in nutrition	1.1	1.1	112 000	-	114 000	75 000	301 000	Life Sciences
2.2.5. Dosimetry	4.3	3.2	416 000	14 000	121 000	146 000	697 000	Life Sciences
TOTAL	12.9	9.0	1 280 000	109 000	674 000	417 000	2 480 000	

Sub-programme 2.2.1

Nuclear medicine

RESULTS TO DATE (1980-84)

2.2.1/1. Support has been provided for about 100 new technical co-operation projects which have resulted in the establishment and upgrading of a wide range of nuclear medicine techniques in developing countries. Work on the evaluation of radionuclide tracer procedures for the diagnosis of parasitic, thyroid and liver diseases was initiated through a number of CRPs. Quality assessment programmes covering some 150 laboratories in developing countries were implemented for radioimmunoassay (data processing, assay of thyroid hormones) and for in vivo techniques (instrument performance), chiefly through CRPs and technical co-operation projects.

PLANS FOR 1985-86

2.2.1/2. The broad aim is to assist hospitals and medical research institutions in developing Member States to introduce and develop the effective use of radionuclide tracers in medical diagnosis and research with a view to improving human health through better diagnosis of patients, upgrading public health management capabilities and achieving a better understanding of disease and its prevention or management.

2.2.1/3. Research will be co-ordinated on strategies for the efficient selection of radioimmunoassay (RIA) tests to diagnose thyroid diseases (CRP 1983-86) and of radionuclide tests to diagnose liver diseases (CRP 1984-88). In both cases, the aim is to promote more efficient diagnosis. Research will also be co-ordinated with the aims of investigating and enhancing the accuracy with which RIAs of thyroid hormones are performed (CRP 1983-87) and of studying and improving the accuracy of procedures currently used in nuclear medicine laboratories for testing the reliability of instrument performance in Asia (CRP 1984-88) and in Latin America (CRP 1984-88). Research will be promoted on three other topics, namely the improvement of RIA diagnosis for the identification of parasitic infections (schistosomiasis, malaria and filariasis) (CRP 1982-86, CRP 1984-87 (RCA)), the development of a RIA technique usable in the field for the early and easy detection of malaria infection in mosquitoes (CRP 1983-87), and finally the development and testing of radiopharmaceuticals whose preparation is feasible and useful in developing countries (CRP 1985-89) (in conjunction with sub-programme 2.3.2).

2.2.1/4. A symposium will be organized in 1985 which will facilitate an exchange of experience on the medical applications of nuclear techniques in developing countries.

2.2.1/5. An educational seminar will be held in 1985 to promote good practices in radioimmunoassay in Latin America, and another in 1986 on the quality control of nuclear medicine instruments in Africa and the Middle East.

2.2.1/6. It is planned to hold annually a two-week training course on quality control and data processing in RIA, a two-week RCA course on radionuclide techniques in the study of parasitic infection, a 2-3 week course on RIA techniques and an eight-week interregional course and study tour on general nuclear medicine.

Sub-programme 2.2.2Radiotherapy

RESULTS TO DATE (1980-84)

2.2.2/1. Work carried out under CRPs on the improvement of cancer radiotherapy demonstrated that hyperthermia and some chemotherapeutic drugs (Bleomycin, Interferon) as well as radiosensitizers (Misonidazole) could modify radiation and chemotherapy effects and held out good prospects for improving cancer treatment in developing countries. Research initiated in 1983 on cancer treatment by conventional radiation combined with physical or chemical means has confirmed the potential value of this approach. A CRP on the effectiveness of high-LET (Linear Energy Transfer) radiation commenced in 1982.

2.2.2/2. At a seminar held in 1981, it was shown that brachytherapy was a potentially useful radiotherapy technique for developing countries. A joint IAEA/WHO technical co-operation project to promote the application of brachytherapy for cancer of the cervix was therefore initiated in Egypt in 1983, with the support of the Government of Italy.

PLANS FOR 1985-86

2.2.2/3. Broadly, it is planned to assist hospitals and medical research institutions mainly in developing Member States to make wider use of intracavitary radiation therapy for cancer of the cervix, to introduce combined treatment by conventional radiotherapy and physical or chemical means and to investigate the use of high-LET radiation for more effective cancer treatment.

2.2.2/4. Efforts will concentrate on promoting the application of brachytherapy for cancer of the cervix. The joint IAEA/WHO technical co-operation project being executed on that subject will run until 1986 at a total cost of US \$1 085 000. If funds become available, consideration will be given to setting up similar projects in other developing Member States.

2.2.2/5. A second area of priority will be the promotion of research involving the collection and evaluation of recent biological data on combining conventional radiation treatment with physical and chemical means in RCA member countries in Asia (CRP 1983-87) and in Member States in general (CRP 1983-87). The aim of both programmes is to develop methods for exploring the practical application of these techniques in the specific conditions of the developing countries.

2.2.2/6. Thirdly, research will be co-ordinated with a view to assessing the effectiveness and results of using high-LET radiation for non-conventional radiotherapy (CRP 1982-87).

2.2.2/7. Five-week regional training courses on new techniques for improving radiotherapy and on intracavitary therapy (RCA) will be organized in alternate years.

2.2.2/8. A symposium to consider the present status and future trends of radiation therapy in developing countries will be arranged in 1986.

Sub-programme 2.2.3

Applied radiation biology

RESULTS TO DATE (1980-84)

2.2.3/1. Research under a CRP on the application of ionizing radiation for the sterilization of medical supplies in local health-care services in Asia and the Far East has contributed to the development of suitable practices and to manpower training. Several Member States in the region have since commissioned cobalt-60 gamma irradiators for a larger-scale production of sterile medical supplies to improve the standard of national health care services.

2.2.3/2. Growing interest has been shown by the countries of Asia and the Far East in the extension of radiation sterilization practices to suitable biological tissue grafts for rehabilitative surgery of the disabled. A review of the status of this technique in the region was made in 1983 and steps were recommended for improving the clinical quality and yield of tissue grafts for safe storage in tissue banking facilities. A seminar on the topic in 1984 helped to disseminate the latest information on technical details and practices among the potential end-users of such radiation-sterilized grafts. A new CRP within the RCA framework was initiated in 1984 to promote research on suitable graft development from local biological resources.

2.2.3/3. Research under a CRP on radiation cytogenetics of in vitro peripheral blood lymphocytes clarified the role of cell cycle parameters and their effect on the yield of chromosomal aberrations following exposures to low doses of low- and high-LET radiation. This information is of considerable significance for the effective biological dosimetry and radiation protection of accidentally exposed workers at nuclear installations. A CRP on the use of radiation induced chromosomal aberration for radiation protection was initiated in 1982 in conjunction with the "Nuclear Safety" programme.

2.2.3/4. Research under a CRP initiated in 1983 on the radiation treatment of sewage sludge helped to develop pathogen disinfection practices in developing countries and to improve sludge settling parameters. The results obtained so far indicate that sludge may be safely re-utilized as fertilizer and soil conditioner without the risk of spreading infectious diseases.

2.2.3/5. An international symposium in 1981 on the health impacts of different energy sources reviewed the current status of risk evaluation criteria for established technologies and identified aspects of quantitative methodologies for further research support. A CRP on the development of genetic toxicology methodologies for chemical and physical pollutants from energy sources has helped to generate essential new data. A symposium in 1983 on the biological effects of low-level radiation reviewed current data in that field. A CRP on the methodology of epidemiological studies of health impacts from low-level ionizing radiation was completed in 1984. A set of computer programs for case-control epidemiological studies has been developed.

PLANS FOR 1985-86

2.2.3/6. The general aim is to assist national health authorities and research institutions concerned with radiation biology mainly in developing countries to raise the standards of their health-care services.

2.2.3/7. Attention will focus on promoting radiation sterilization practices suitable for the medical supplies and pharmaceuticals used in developing countries. In that connection, research will be co-ordinated with a view to promoting existing practices for the radiation sterilization of medical supplies and adapting them to the specific local conditions prevailing in Africa and the Middle East (CRP 1983-87). Practices for the radiation sterilization of tissue grafts and the establishment of tissue banking in Asia will also be promoted (CRP 1984-88).

2.2.3/8. A code of practice on radiation sterilization techniques issued in 1975 will be updated, and practices for the radiation sterilization of medical supplies designed to upgrade local health services in Africa and the Middle East will be promoted through an educational seminar in 1985.

2.2.3/9. A second area on which efforts will be concentrated is the control of schistosomiasis, where research will be promoted on the development of a radiation-attenuated vaccine against this disease (CRP 1984-87).

2.2.3/10. In addition, it is intended - in conjunction with the "Nuclear Safety" programme - to develop a biological dosimeter for radiation protection through a co-ordinated research programme (CRP 1982-85).

2.2.3/11. Finally, research will continue to be promoted on the radiation treatment of sewage sludge to make it safe for re-utilization (CRP 1983-85) (jointly with the "Physical Sciences and Technology" programme).

Sub-programme 2.2.4

Trace elements in the environment and in nutrition

RESULTS TO DATE (1980-84)

2.2.4/1. Work performed under various CRPs has shown that nuclear analytical techniques are competitive with other methods (for several elements they are the only applicable methods) for at least 16 of the 24 minor and trace elements currently considered to be of nutritional or toxicological interest. Work on trace elements in human milk has provided new information which is leading to a re-assessment of the nutritional requirements of young babies.

2.2.4/2. Technical reports have been prepared on, among other topics, the comparison of nuclear and non-nuclear techniques for the determination of trace elements in biological materials (1980), the elemental composition of human and animal milk as determined by activation analysis and other trace analysis techniques (1982), a survey of currently available reference materials for use in connection with the determination of trace elements in biological materials (1983), nuclear-based techniques for the *in vivo* study of human body composition (1984), quality assurance of biomedical neutron activation analysis (1984) and nuclear techniques in occupational health studies (1984). Also, reports have been issued on three intercomparison materials prepared in the Agency's Laboratory, and analytical quality control services of various kinds have been provided to approximately 400 laboratories in 55 Member States.

2.2.4/3. The Agency's Laboratory provided 9 man-months (m/m) of on-the-spot training in 1983 and 1984.

PLANS FOR 1985-86

2.2.4/4. It is planned generally to assist nuclear research institutions and other research establishments responsible for nutrition and health-related environmental research to develop and promote nuclear analytical techniques as applied to problems of environmental health and human nutrition, to develop analytical quality assurance protocols and to provide quality control services applicable in these and related fields.

2.2.4/5. Nuclear analytical techniques play an important role in the study of environmental levels of toxic heavy metals and nutritional imbalances of essential trace elements, the latter having an important impact on the health of more than 500 million people, particularly in developing countries.

2.2.4/6. Work will focus on the development and application of nuclear methods in the investigation of human dietary intakes of trace elements, in occupational health studies and in hair analysis as a means of estimating internal body burdens. As concerns the first aspect, research will be co-ordinated with a view to assessing typical dietary intakes of nutritionally important trace elements under diverse geographical and social conditions and to assisting laboratories in developing Member States to acquire the capability to carry out this and related kinds of nutritional research (CRP 1983-88). As far as occupational health studies are concerned, research will be co-ordinated to promote and improve nuclear analytical techniques as applied to the study of exposure to heavy elements (CRP 1982-87). With regard to human hair analysis, research will be promoted to evaluate the significance of hair analysis as a means of monitoring internal body burdens of environmental mineral pollutants (CRP 1983-88).

2.2.4/7. Apart from the above activities, it is also planned to initiate research aimed at promoting and demonstrating the applications of stable isotopes in nutritional research (CRP 1986-90) and to promote research on the health-related monitoring of bio-environmental specimens within the RCA framework, the objective being to assist laboratories in developing Member States to acquire the capability to monitor compliance with regulations on toxic substances in foods (CRP 1985-89).

2.2.4/8. The Agency's Laboratory will prepare new quality control materials not otherwise available for use in the above-mentioned fields and will also provide analytical support for CRPs.

2.2.4/9. Quality control guidelines (protocols for quality assurance) will be prepared in 1985 for use in national laboratories involved in trace element research. Also, a directory of certified reference materials for use in environmental and nutritional research will be published in 1985. A technical report on nuclear techniques in occupational and environmental health studies will be prepared in 1986, as will a technical document on isotope tracer methods for studying the bio-availability and nutritional status of essential and toxic mineral elements.

2.2.4/10. A seminar on stable isotopes in medicine will be organized in 1986.

Sub-programme 2.2.5

Radiation dosimetry

RESULTS TO DATE (1980-84)

2.2.5/1. The IAEA/WHO Network of Secondary Standard Dosimetry Laboratories (SSDLs) has become an internationally recognized institution within the world's metrology system. Membership in the network rose to 48 with 36 laboratories in the developing world. Over 20 SSDLs have become operative, performing dosimeter calibrations, dose comparison measurements and local training, while about 10 are in an early stage of development. The network is supported by 12 affiliated national standards laboratories and five collaborating organizations, including the Bureau international des poids et mesures (BIPM), the International Commission on Radiation Units and Measurements (ICRU) and the International Organization of Legal Metrology (OIML). In about 60% of the countries where SSDLs are located, calibration of radiotherapy dosimeters has become a legal requirement.

2.2.5/2. Seven SSDLs participated in a CRP on the measurement of depth dose of cobalt-60 and various X-ray qualities in a standardized phantom. An evaluation of the development of the IAEA/WHO Network of SSDLs was carried out in 1984, following which recommendations were made regarding future activities.

2.2.5/3. In its function as the central laboratory of the network, the Agency's Laboratory conducted four dose intercomparison exercises among SSDLs and participated in a dose intercomparison organized by the BIPM. Four

calibration missions were undertaken to 10 SSDLs in the Middle East and Europe, to 12 SSDLs in Latin America and to six countries in Africa. A training seminar on calibration procedures in SSDLs was held in 1983.

2.2.5/4. Two four-week training courses for technical staff from SSDLs were held in 1981 and 1984. In addition, on-the-spot training was given to technical staff from SSDLs at the Agency's Laboratory at the rate of 8 m/m per year.

2.2.5/5. Within the framework of the IAEA/WHO postal dose service for radiotherapy, evaluations were performed for 14 batches of thermoluminescent dosimeters (TLDs) involving a total of 630 measurements. The results show that while the percentage of hospitals with unacceptable deviations varies (the average figure is 30%), there has been a noticeable improvement in the last three years.

2.2.5/6. In 1983, an advisory group on the future of the dose intercomparison service for radiotherapy recommended that the service be extended to all hospitals in developing countries not covered by SSDLs. An automated reader was consequently purchased in 1983 to increase the number of hospitals covered. It was also recommended that a co-ordinating centre should be designated in each country in order to improve the distribution and return of dosimeters.

2.2.5/7. A training seminar on high-dose dosimetry in industrial radiation processing was conducted in 1982. A technical report on High-Dose Measurements in Industrial Radiation Processing (TRS No. 205) was published in 1981. A CRP on electron high-dose intercomparison for radiation processing was initiated in 1983 in preparation for the organization of a dose assurance service for electron beam irradiators.

2.2.5/8. An international high-dose assurance service for radiation processing facilities in Member States has been established. In accordance with an agreement concluded in 1984 with the Government of the Federal Republic of Germany, the Gesellschaft für Strahlen- und Umweltforschung (GSF), Neuherberg, will be the operating laboratory in this service.

2.2.5/9. The first international symposium on high-dose dosimetry was held in 1984.

2.2.5/10. A technical document on The Agency's Dosimetry Laboratory - A Manual for SSDLs was completed in 1984, as was another publication on Cobalt-60 Teletherapy - A Compendium of International Practice (jointly with WHO).

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2.2.5/11. The aim is to assist national health and regulatory authorities, radiotherapy hospitals, SSDLs and operators of radiation processing plants to establish the necessary dosimetry infrastructure.

2.2.5/12. While a measurement infrastructure was established long ago in other fields of metrology, in the area of ionizing radiation the need for such an infrastructure has arisen only in the last few decades. As a result, national facilities for dosimetry are still in the process of being set up, particularly in developing countries.

2.2.5/13. Annual dose intercomparisons between selected groups of about 20 SSDLs and the Agency's Laboratory will be performed with the participation of primary standards laboratories. In the SSDL Circular Letter, published twice a year, annual reports from SSDLs will be reproduced and pertinent physical data and information on working procedures published. The Circular Letter also contains advice on the organization of national or regional dose intercomparison schemes for radiotherapy to be implemented by SSDLs. An interregional technical co-operation project involving 25 SSDLs

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and costing over US \$250 000 is currently being executed with the aim of building up the facilities and expertise required for SSDLs.

2.2.5/14. Periodic (three per year) dose intercomparisons by mail for radiotherapy centres in developing countries will be performed in conjunction with WHO and its regional offices. The present rate of some 120 intercomparisons a year is to be increased to about 300.

2.2.5/15. The high-dose gamma intercomparison exercise will continue to be implemented under contract by outside laboratories, and research will be co-ordinated on the development of suitable dosimetry systems for electron high-dose intercomparison for radiation processing (CRP 1984-89). The ultimate objective is to establish a world-wide dose assurance service for industrial radiation processing.

2.2.5/16. A code of practice for the dosimetry of high-energy gamma and electron beams will be completed in 1986.

2.2.5/17. The Agency's Laboratory will be involved in performing the above dose intercomparisons and will provide on-the-job training for technical SSDL staff upon request.

PROGRAMME 2.3

PHYSICAL SCIENCES AND TECHNOLOGY

DESIRED IMPACT

2.3/1. To foster the use of nuclear methods to solve problems in the physical sciences and industry, and in so doing to strengthen research capacity in these fields.

Summary of manpower and costs by sub-programme

Table 14

Sub-programme	Man-years		1985 Cost estimates					Responsible Division
	P	GS	Staff	Meetings	Contracts	Other	Total	
2.3.1. Physics	2.3	1.3	228 000	89 000	134 000	161 000	612 000	Research and Labs
2.3.2. Chemistry	3.1	1.1	243 000	25 000	57 000	199 000	524 000	Research and Labs
2.3.3. Hydrology	5.2	3.2	414 000	45 000	66 000	106 000	631 000	Research and Labs
2.3.4. Industrial applications	2.1	1.1	235 000	26 000	47 000	32 000	340 000	Research and Labs
2.3.5. Nuclear data	13.5	10.5	1 220 000	38 000	77 000	424 000	1 759 000	Research and Labs
2.3.6. Instrumentation	0.4	-	45 000	-	121 000	46 000	212 000	Life Sciences and Research and Labs
TOTAL	26.6	17.2	2 385 000	223 000	502 000	968 000	4 078 000	

Sub-programme 2.3.1Physics

RESULTS TO DATE (1980-84)

2.3.1/1. Activities have focused on nuclear techniques which are particularly suitable for use in developing countries, and in particular on Mössbauer spectroscopy, positron annihilation and the use of small computers in nuclear experiments. Technical documents were published on Data Acquisition and Analysis Systems (TECDOC No. 290), Sample Preparation Techniques in Trace Element Analysis (TECDOC No. 300) and Research and Teaching Nuclear Sciences at Universities in Developing Countries (TECDOC No. 257).

2.3.1/2. A series of educational seminars aimed at improving the utilization of research reactors were held in 1980, 1981 and 1983. A five-week study tour and a four-week training course on research reactor utilization were conducted in 1982 and 1983 respectively.

2.3.1/3. A CRP aimed at assisting participating centres in developing neutron scattering techniques for applied research was completed in 1982.

2.3.1/4. Technical reports on the Use of Research Reactors for Basic Research in Developing Countries and on the Analysis and Improvement of Instrumentation and Control Systems for Research Reactor Modernization are being published in 1984.

2.3.1/5. A comprehensive guidebook on Research Reactor Core Conversion from the Use of Highly Enriched Uranium to the Use of Low Enriched Uranium Fuels was published in 1980 (TECDOC No. 233). Two additional guidebooks on core conversion are being prepared in 1984, one on the conversion of heavy water research reactors and the second on safety and licensing issues relating to core conversion. Furthermore, a guidebook on Core Instrumentation and Pre-Operational Procedures for Core Conversion HEU to LEU was issued in 1984 (TECDOC No. 304). Missions have been sent to five countries to advise on core conversion for specific research reactors.

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2.3.1/6. The overall aim is to assist nuclear research institutions and university laboratories in developing Member States to raise the standard of applied nuclear research and to utilize their research reactors more efficiently.

2.3.1/7. Nuclear physics forms the basis of nuclear activities in a country and is a prerequisite for the introduction and application of nuclear techniques. There is a need in over 40 developing countries for assistance in establishing the appropriate nuclear physics infrastructure and in applying nuclear techniques.

2.3.1/8. Advisory missions will continue to be sent to Member States on request to promote the introduction of nuclear techniques which are particularly suitable for application in the developing countries (XRF, neutron activation analysis, positron annihilation techniques and so on).

2.3.1/9. In addition, research will be co-ordinated with a view to promoting the application of solid-state track detectors as an extremely cost-effective nuclear analytical technique (CRP 1985-87). Research will be initiated on the development of programs that can be run on microcomputers, the aim being to overcome the severe problem of the lack of software for nuclear applications in developing Member States (CRP 1984-87). A technical report will be published on improved nuclear methods in the study of specific materials such as metals and alloys.

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2.3.1/10. In the area of research reactor utilization, research will be co-ordinated on core management techniques in order to improve radioisotope production in low- and medium-power research reactors (CRP 1984-87) and on the development of software for small computers for research reactor operation (CRP 1984-87).

2.3.1/11. Further, it is planned to prepare guidebooks on the efficient use of research reactors, on the physical properties of LEU-fuel-converted reactors and on solid-state physics and radioisotope production aspects of reactor utilization.

2.3.1/12. A training seminar on applied research and service activities for research reactor operation will be organized in 1985, and a symposium on the significance and impact of nuclear research in developing countries will be held in 1986.

2.3.1/13. A regional training course on X-ray fluorescence analysis will be arranged annually.

Sub-programme 2.3.2

Chemistry

RESULTS TO DATE (1980-84)

2.3.2/1. In the area of the chemistry of fusion systems, a review was made of developments in tritium breeding materials, tritium systems, containment and structural materials, and the interactions between these materials.

2.3.2/2. The present status of radiochemical techniques for separation and concentration prior to analysis has been reviewed under a CRP initiated in 1981, as a result of which the selectivity and sensitivity of the methods used has improved.

2.3.2/3. A CRP on methodologies for establishing the lifetime of organic materials and components in high radiation fields relevant to their use in nuclear reactors and irradiation apparatus was initiated in 1983.

2.3.2/4. In co-operation with the CEC Central Bureau for Nuclear Measurements, a comprehensive study has been made of nuclear reference materials in all Member States with the aim of identifying and quantifying requirements for such materials, encouraging the production and certification of high priority nuclear reference materials not currently available and improving their availability to users in Member States.

2.3.2/5. A major international conference on radiopharmaceuticals and labelled compounds is being held in 1984.

2.3.2/6. Through the Agency's Laboratory, analytical services were provided to projects and institutes in 18 Member States and missions were undertaken to a number of States to advise on analytical techniques, equipment and facilities in support of uranium prospection. The analytical capacity of the Agency's Laboratory was enhanced with the addition of laser fluorimetry. Fourteen fellows received in-service training, mainly in uranium determination techniques. Twenty-four new reference materials were produced and eight old ones phased out. Intercomparisons were organized at an average annual rate of 4-6 per year, with 30 institutes from 20 Members States participating in each. The trend in analytical quality control was towards increased production of materials certified for ultra-low trace element contents, and this was supported by the installation in the Laboratory of a clean room and the purchase, with UNEP funds, of a new atomic absorption spectrometer. An analytical service was set up in support of the WMO Background Air Pollution Monitoring Network (BAPMON) at the request of that organization.

PLANS FOR 1985-86

2.3.2/7. The principal aim is to assist analytical laboratories, isotope production centres and fusion research establishments in Member States to improve the standard of their work mainly as regards quality control in analytical chemistry.

2.3.2/8. Analytical laboratories in Member States need to establish reliable and accurate analytical capabilities, including radiochemical and chemical separation techniques for application in the study of raw materials, geology, agriculture, biosciences, health, the environment and nuclear materials. Isotope production reactors in 40 countries and over 50 accelerators in 20 countries (including many developing Member States) benefit from work on the establishment of procedures and protocols for strict quality control of isotopes for use in nuclear medicine. The programmes which support the research effort on the damaging effects of radiation in materials and on fundamental studies in the chemistry of fusion materials are of direct benefit to those 10 to 15 advanced Member States which participate in them and also provide ready access to the latest developments for the smaller institutes and developing Member States.

2.3.2/9. Efforts will centre on providing assistance in the area of analytical quality control. With this aim, the programme of intercomparisons for materials such as nuclear source materials, environmental materials and biological materials which is designed to check the validity of analytical procedures and results will be continued. Approximately four intercomparisons will be organized each year with the participation of about 40 laboratories, and the results will be published in technical documents. Some six to eight new reference materials which are not available commercially will be prepared and distributed.

2.3.2/10. In the same field, technical reports will be drawn up on nuclear techniques in the analysis of environmental samples, chemical standards for nuclear fuel analyses and safeguards purposes, training requirements in radiochemistry and nuclear analytical techniques and the comparison of nuclear analytical methods with competitive methods. The remaining 2-3 volumes of the 14-volume data compilation on Chemical Thermodynamics of Actinide Elements and Compounds will be prepared. In addition, research will be promoted on chemical aspects of nuclear methods of analysis with the aim of improving the versatility of such methods.

2.3.2/11. In the area of the chemistry of fusion materials, technical reports will be published on tritium handling systems and breeder technology and on the chemical aspects of fusion technology. Also, research will be promoted on the establishment of a tritium breeder materials data base, the objective being to facilitate the selection of materials for fusion reactor design (CRP 1985-88).

2.3.2/12. With regard to the chemistry of labelled compounds and radiation for biological and medical applications, research will be co-ordinated on the production of short-lived nuclides using cyclotrons and enriched stable targets for the development of new radiopharmaceuticals (CRP 1982-85), on the development of $^{99}\text{Tc}^{\text{m}}$ generators using low-power research reactors in order to assist developing countries to produce radiopharmaceuticals from their existing research reactors (CRP 1983-86 (RCA), CRP 1983-86 (Europe and Middle East)) and on the chemistry and biochemistry of radiopharmaceuticals (CRP 1985-89). Furthermore, technical reports will be prepared on the benefits of enriched targets for isotope production, recent advances in radiopharmaceutical research, reactor production of fluorine-18 and the preparation of radiopharmaceuticals, stable isotope - labelled compounds in biomedical applications and radiation technology and its biomedical applications.

2.3.2/13. An educational seminar on radionuclide generator technology will be conducted in 1986.

2.3.2/14. The Agency's Laboratory will organize the performance of intercomparisons and will prepare and distribute reference materials. It will act as a service laboratory to Agency projects and will provide training in nuclear analytical methods. The Laboratory will co-operate with the WMO air pollution monitoring network by analysing samples from a number of countries and undertaking inter-laboratory comparisons.

Sub-programme 2.3.3

Hydrology

RESULTS TO DATE (1980-84)

2.3.3/1. The status of the use of isotope techniques in hydrology was reviewed at an international symposium in 1983. This was followed by an interregional training course on the use of environmental isotopes in hydrology. Since 1980, 56 scientists have been awarded fellowships in isotope hydrology.

2.3.3/2. Nine publications were issued, including a completely revised edition of the Guidebook on Nuclear Techniques in Hydrology and a technical report on Stable Isotope Hydrology.

2.3.3/3. Assistance has been provided in the establishment of seven national environmental isotope analytical facilities. The majority of these were environmental tritium systems in the Asian and Pacific region under the aegis of the RCA. New developments in analytical techniques for the environmental isotope analysis of water samples in the Agency's Laboratory have resulted in an appreciable increase in sample output.

2.3.3/4. The Agency has provided services under contract to national institutions and other United Nations organizations.

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2.3.3/5. In general, it is planned to assist hydrology and hydrometeorology organizations and nuclear and hydrology research establishments to develop the skills to explore and evaluate water resources and to utilize and manage such resources more efficiently.

2.3.3/6. Improved knowledge of water resources and the more efficient utilization and management which result are of increasing importance in many countries and particularly in semi-arid, arid and humid tropical regions. National capabilities in this field are in the process of being established and upgraded in developing countries. Because of the unusual combination of expertise and laboratory facilities at its disposal, the Agency is able to provide valuable assistance to hydrology and hydrometeorology institutions in developing countries in building up their infrastructure in this area.

2.3.3/7. As far as the development of methods and techniques is concerned, it is planned to prepare technical reports on tritium for measuring the discharge of rivers, on the use of radioisotope gauges for measuring suspended sediments in rivers, on methods for interpreting isotope data, on the application of environmental isotopes in geochemistry of natural waters and on the hydrogeology of fractured and fissured rocks.

2.3.3/8. As a means of assisting groups of Member States to solve practical problems, research will be co-ordinated on the application of environmental isotope techniques to groundwater problems (CRP 1980-85) and on the application of isotope techniques in hydrology (CRP 1983-86) and geothermal exploration (CRP 1983-86) in the Latin American region.

2.3.3/9. An educational seminar on the application of isotope and nuclear techniques in hydrology in arid and semi-arid lands will be held in 1985 and

another for Asia and the Pacific on isotope hydrology techniques will be organized in 1986.

2.3.3/10. The Agency's Laboratory will be involved in performing periodic intercomparisons of environmental isotope analyses (those for stable isotope measurements, for example, involve more than 70 laboratories) and in distributing reference samples to Member States. The Laboratory will also provide back-up services for technical co-operation field projects in hydrology. Furthermore, in co-operation with WMO, analytical services will be provided and assessments and results published in connection with the world survey on the isotopic concentration of precipitation.

Sub-programme 2.3.4

Industrial applications

RESULTS TO DATE (1980-84)

2.3.4/1. Support has been given to a large-scale UNDP project on the industrial application of radioisotopes and radiation technology in Asia and the Pacific region which is being implemented within the RCA framework. In that context, radiation plants for the vulcanization of natural rubber and the radiation curing of wood surface coatings have been constructed, training-demonstration courses on nucleonic control systems in the paper and steel industries have been organized and a certification and training scheme for non-destructive testing has been set up.

2.3.4/2. A CRP on the application of nuclear analytical methods for the exploration of mineral resources in developing countries was initiated in 1982, and a seminar on the same subject was held in that year.

2.3.4/3. Technical documents on the use of nuclear techniques to improve industrial safety and reduce environmental pollution and on the engineering design for radiation processing systems were prepared in 1983.

PLANS FOR 1985-86

2.3.4/4. The general aim is to assist industrial research and standards institutions, safety organizations and manufacturing industries particularly in developing countries to exchange information on the application of nuclear methods and techniques in industrial processes.

2.3.4/5. It is planned to prepare technical reports or guidelines on nuclear techniques and methods in mineral exploration and exploitation, on radiation technology for low-energy electron beam applications, the practical applications of tracers in chemical processing, the critical assessment of the industrial application of radioactive tracers, advances in industrial applications of low energy electron beam accelerators, the use of radiation technology for the preparation of functional polymer materials, irradiation facilities to test the resistance of organic materials for the nuclear industry and the technological and economic comparison of irradiation and conventional methods.

2.3.4/6. Research will be co-ordinated on the radiographical evaluation of welds and castings (CRP 1985-88), on nuclear analytical techniques in mineral exploration (CRP 1982-86), on nuclear borehole logging for mineral exploration (1985-87) and on the use of radiation technology in the immobilization of bioactive materials (CRP 1982-86), the aim being to develop new or more accurate techniques in these fields. Research will also be co-ordinated on the radiation modification of polymers for industrial and medical use with a view to developing new products (CRP 1985-88) and on radiation damage to organic materials for nuclear reactors, the objective here being to predict the behaviour and improve the quality of such materials (CRP 1984-87).

2.3.4/7. A training course will be organized each year on industrial irradiation technology or non-destructive testing.

Sub-programme 2.3.5

Nuclear data

RESULTS TO DATE (1980-84)

2.3.5/1. Nuclear data activities continued to be based on the review and recommendations of the Agency's International Nuclear Data Committee (INDC).

2.3.5/2. Fifteen reports were published reviewing the status and requirements for nuclear and atomic data in a number of important fields of application including: neutron source and standard reference nuclear data; radiation damage and nuclear safety; nuclear waste management; nuclear fusion research; nuclear geophysics techniques for the exploration of natural resources; and medical radioisotope production.

2.3.5/3. CRPs were initiated on the measurement and analysis of 14 MeV neutron cross-sections (1983) and the validation and benchmark testing of actinide nuclear data (1984). CRPs on the intercomparison of evaluations of actinide neutron nuclear data, and plasma-wall interactions in magnetic confinement plasma devices were concluded in 1982 and 1981 respectively. CRPs on the measurement and evaluation of atomic collision data for diagnostics for magnetic fusion plasmas, and on the measurement and evaluation of transactinium isotope decay data were terminated in 1984.

2.3.5/4. The Agency continued to co-ordinate international data centre networks in the following data fields: nuclear reaction data (seven data centres); nuclear structure and decay data (sixteen data centres); and atomic and molecular data for fusion (nine data centres). As a result of these activities, up-to-date computer-based files, handbooks and other publications of bibliographic and numerical nuclear and atomic data have been made available to scientists in all Member States.

2.3.5/5. Since the beginning of 1980, an average of 250 nuclear data tapes (incoming and outgoing) have been processed and validated each year. Some 200 000 data records have been added to the international EXFOR file of experimental nuclear data and about 1 110 000 data records of evaluated data have been collected annually. The total number of available individual nuclear data files has risen from 50 to 86.

2.3.5/6. The following special purpose evaluated nuclear data files have been assembled: the EXFOR/V and INDL/V evaluated data files (52 000 data records); the INDL/A file of evaluated neutron data of actinide isotopes (310 000 data records); the IRDF-82 International Reactor Dosimetry File (225 000 data records); and the INDL/F-83 IAEA data library for fusion reactor neutronics calculations for INTOR (130 000 data records).

2.3.5/7. The intercomparison of a number of nuclear data processing programs was started with the co-operation of more than 20 laboratories in Member States and has already led to significant improvements in the calculational accuracy of several widely used programs.

2.3.5/8. Computer programs for format translation and for data validation and checking have been prepared in response to needs expressed by developing Member States.

2.3.5/9. As part of its data services and in response to over 2600 requests received from individual scientists in more than 60 Member States (including 45 developing countries), the Agency has distributed more than 3600 reports, 215 000 sets of numerical data and 326 data processing codes.

2.3.5/10. The computer index to the literature on neutron data (CINDA) has been published annually. CINDA-83, a cumulative compendium of neutron data references covering the years 1977-83, was issued in 1984.

2.3.5/11. The 1983/1984 edition of the WRENDA publication, which summarizes current requests for nuclear data needed in nuclear technology, was published in 1984.

2.3.5/12. The first edition of the computer-based index to references on atomic and molecular collision data relevant to fusion (CIAMDA) was published in 1980.

2.3.5/13. The International Bulletin on Atomic and Molecular Data for Fusion has been issued quarterly and is now distributed (upon request) to more than 1000 scientists in Member States.

2.3.5/14. The 1982 INDC/NEANDC nuclear data standards file entitled Nuclear Data Standards for Nuclear Measurements was published in 1983 (Technical Reports Series No. 227). A revised edition of the Nuclear Activation Data Handbook has been prepared for publication. The report on Progress in Fission Product Nuclear Data, which summarizes current research activities, continued to be published annually and the Nuclear Data Newsletter was issued twice a year.

2.3.5/15. Twenty-two fellowships have been arranged and 16 expert missions implemented since 1982 under the interregional technical co-operation project on nuclear data techniques and instrumentation (INT/1/018) which involves 40 laboratories in 29 Member States. Two interregional training courses have been conducted on the utilization of neutron generators (1982) and on neutron physics and nuclear data measurements with accelerators and research reactors (1983). Furthermore, in co-operation with the International Centre for Theoretical Physics, three training courses have been organized on nuclear theory for applications (1980), advances in nuclear theory and nuclear data for reactor applications (1982) and nuclear model computer codes (1984).

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2.3.5/16. The aim is to provide nuclear data services to nuclear research establishments in developed and developing countries and to co-ordinate the compilation, exchange and dissemination of these data on a world-wide basis in co-operation with other national and regional data centres.

2.3.5/17. Accurate and reliable nuclear data are required in all areas of nuclear technology, nuclear sciences and applied nuclear techniques.

2.3.5/18. Work will be carried out in three main areas. The first will be to assess the status of nuclear data required for selected important aspects of nuclear technology. Technical documents on nuclear data for applications in medical diagnostics and therapy, atomic and molecular data for fusion, nuclear data for safety, nuclear data for geophysics and on 14 MeV neutron emission spectra will be prepared in 1985 with the aim of reviewing the current status of and requirements for nuclear data in these fields. A document on the results of the REAL-84 inter-laboratory project for radiation damage estimates will be issued in 1985. In 1986, further documents on nuclear data for fusion and on neutron source properties will be published, and data requirements for X-ray and proton-induced X-ray emission (PIXE) analysis will be assessed. The INDC will review the Agency's nuclear data activities in the same year.

2.3.5/19. Research will be co-ordinated on nuclear data for structural materials for fission and fusion reactor systems (CRP 1984-88), on the validation of actinide evaluated nuclear data files (CRP 1984-86), on the measurement and analysis of fast neutron data needed for fission and fusion reactor technology (CRP 1983-87) and on the measurement and analysis of (p,n) and (α ,n) reaction cross-sections and of emission neutron spectra (CRP 1985-89). In all cases, the aim is to generate required new data and to improve the accuracy of existing evaluated data as well as to assist

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laboratories in developing countries to acquire and implement the relevant nuclear measurement techniques.

2.3.5/20. The second major component will be the continued co-ordination of the activities of three data centre networks for nuclear reaction data, nuclear structure and decay data, and atomic and molecular data for fusion by collecting, verifying, standardizing and disseminating data. Three specialized computer-based files of validated nuclear data for nuclear reactor structural materials, fusion reactor design, nuclear materials safeguards and nuclear geophysics techniques will be developed. Nuclear reaction data files will continue to be validated by inter-laboratory comparisons of benchmark calculations (involving more than 20 laboratories).

2.3.5/21. CINDA will continue to be published annually on the basis of bibliographic information supplied by the co-operating data centres as well as by the Agency itself.

2.3.5/22. With regard to atomic data, work will concentrate on building up a computer-based file of evaluated atomic collision data for fusion which is to be established in 1986. The International Bulletin on Atomic and Molecular Data for Fusion will continue to be published quarterly. The second edition of the Computer Index to Atomic and Molecular Data (CIAMDA) will be published in 1985. Technical documents on the compilation and dissemination of material properties' data for fusion technology will be issued in 1985 and 1986.

2.3.5/23. The third major activity will be to serve as one of four nuclear data centres in a world-wide network (the others being the Brookhaven, Obninsk and Saclay centres). The Agency will provide nuclear data centre services to the areas not covered by the other three centres, consisting primarily of developing countries. Data from the developing countries will continue to be collected, evaluated, stored in computerized files and exchanged with the other centres, and requests from developing countries for nuclear data for specific applications will be met. A Newsletter containing updated information on nuclear data files available from the Agency will be published biannually.

2.3.5/24. An interregional technical co-operation project on nuclear data techniques and instrumentation involving more than 40 laboratories in developing and developed countries is currently being executed at a cost of about US \$300 000. A training course on the production, processing and application of nuclear data will be organized annually.

Sub-programme 2.3.6

Instrumentation

RESULTS TO DATE (1980-84)

2.3.6/1. Two training courses have been developed which are now given annually: an advanced course on the design and construction of nuclear electronic equipment (three months) and a course for those responsible for the maintenance of such equipment, especially that used in nuclear medicine (nine weeks). For the advanced course, a modular series of simple nuclear instruments (scalers, power supplies and so on) has been developed and is now being offered in kit form. This is a useful teaching aid and can also be used in a nuclear counting system which is easy to maintain.

2.3.6/2. Equipment failure in developing countries is often caused by transient conditions on an unstable mains voltage supply. Protective devices have been developed in the Agency's Laboratory and are now provided along with equipment supplied under technical co-operation agreements.

2.3.6/3. This is a new sub-programme which brings together activities previously carried out in different sections of the Agency.

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2.3.6/4. The broad aim is to assist nuclear and medical institutions in developing Member States to improve their ability to construct, maintain and repair nuclear instruments as well as to use them more effectively.

2.3.6/5. Advisory missions will be sent to developing countries on request to solve specific instrumentation problems such as the modification of instruments for specific purposes or to instruct local technicians on the maintenance of nuclear electronics equipment. In addition, these missions will promote the use of professional microcomputers for more effective utilization of nuclear instruments and facilities through on-line control of experiments.

2.3.6/6. Kits developed by the Agency for the modular nuclear counting system will be made available at the rate of about 300 per year for use in laboratories in developing Member States. In support of this activity, research will be co-ordinated on the design and testing of new electronic modules for these kits with a view to increasing their versatility (CRP 1983-85). Efforts to formulate and implement maintenance plans for nuclear laboratories in South East Asia (CRP 1979-86) and in Latin America (CRP 1980-86) will continue.

2.3.6/7. About 300 protective power conditioning devices will be made available to developing countries.

2.3.6/8. It is planned to organize annually a three-month training course on nuclear electronics, an eight-week training course on nuclear instrumentation for technicians and a six-week course on the maintenance of nuclear instruments.

2.3.6/9. The Agency's Laboratory provides in-service training in the use of nuclear electronics instrumentation and co-ordinates the production of kits for the modular nuclear counting system.

2.3.6/10. Initial steps will be taken for the establishment of a service for the supply of spare parts for electronic equipment provided by the Agency to laboratories in developing countries.

PROGRAMME 2.4

THE LABORATORY

Summary of manpower and costs by sub-programme

Table 15

Sub-programme	Man-years		1985 Cost estimates					Responsible Division
	P	GS	Staff	Meetings	Contracts	Other	Total	
2.4. The Laboratory	30.0	55.0 27.0 M&O	4 136 000	-	-	397 000	4 533 000	Laboratory

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RESULTS TO DATE (1980-84)

2.4/1. Both the range and scale of the Laboratory's work have increased during this period. The number of staff working at the Laboratory has grown, old laboratories have been renewed and remodelled and some new ones have been erected. The number of fellows from developing countries who receive in-service training has risen significantly, reaching a total of 38 in 1983.

2.4/2. This growth has not been accompanied by an increase in the Laboratory's Regular Budget. Additional staff who have been seconded from other parts of the Secretariat or have been supported by extrabudgetary resources now account for about a quarter of all staff working at the Laboratory. This trend is expected to continue.

2.4/3. A building programme has also been implemented mainly through extrabudgetary funding. The principal new buildings are a pilot plant for medfly production (500 m²) which contains a short section of the monorail fly production system which will be replicated in Egypt to produce 10 tons of sterile flies per week, an additional working area for the Safeguards Analytical Laboratory (SAL) (250 m²) and a tissue culture hardening-off facility (85 m²). Tissue culture is a technique in which whole plants are grown from individual parent cells: this is important in mutation plant breeding as it greatly speeds up the selection process. Sterile facilities and temperature-controlled rooms which have recently been installed will enhance the Laboratory's ability to contribute to this technique.

2.4/4. Both the renovation work and the new equipment that has been brought into the Laboratory reflect the growing importance of pollution and biotechnological problems. Better facilities have been installed for chromatography, microbiology, ultra low level analysis, centrifugation, freeze drying, and sterilization. New equipment for isotope-excited X-ray fluorescence has been set up, and two new mass spectrometers have been installed in SAL.

2.4/5. In the electronics workshop, work continued on a programme to design and make kits for building simple nuclear counting equipment. In 1984, some 300 kits of are being produced.

2.4/6. The results of the Laboratory's work in support of the various programmes of the Agency are described above under the relevant sub-programmes.

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2.4/7. The principal aim is to provide laboratory back-up for the Agency's programme in the field of nuclear applications: this includes the performance of analyses, the development of instruments and methods, accepting visiting scientists and organizing training courses.

2.4/8. The work of the Laboratory is divided among 12 technical sections, of which five are in agricultural biotechnology. An average size for a section is three professionals and five technicians. From two to five fellows can be taken into a section at any one time, the average length of stay being about four months. A typical training course accepts 20 students and lasts for six weeks.

2.4/9. The work of the Laboratory has been outlined above for each sub-programme. Work will continue in all these topics with main emphasis on: first, all agricultural biotechnology topics and tissue culture in particular, the application of the sterile insect technique (SIT) on a very large scale, soil physics, and the measurement of pollution caused by agrochemicals; secondly, the design and production of electronic kits as training aids; thirdly, the performance of trace element analysis for the WMO Background Air Pollution Monitoring Network, and training analysts in this work; and fourthly, enlarging the Analytical Quality Control Service and increasing the training component thereof.

2.4/10. Another important area is the application of advanced analytical methods for the assay of nuclear materials originating in the Agency's safeguards programme. SAL is responsible for this work. It maintains a close working relationship with the international network of safeguards laboratories which complements the Agency's resources in this area.

2.4/11. It is planned to expand the amount of training in all fields. For this purpose, better training facilities will be required, in particular a lecture theatre, a training laboratory, study rooms and equipment.

2.4/12. Research will be undertaken when this is required for the success of a major project (for example, the SIT project) but in many cases the main purpose is to perfect and demonstrate existing techniques which can usefully be applied in developing Member States.

PROGRAMME 2.5

INTERNATIONAL CENTRE FOR THEORETICAL PHYSICS

Table 16

Sub-programme	Man-years		1985 Cost estimates					Responsible Division
	P	GS	Staff	Meetings	Contracts	Other	Total	
2.5. International Centre for Theoretical Physics	7.0	21.0	-	-	-	1 189 000	1 189 000	Trieste Centre

RESULTS TO DATE (1980-84)

2.5/1. The Centre's activities have concentrated on six different areas: (1) physics and high technology; (2) physics and energy; (3) fundamental physics; (4) mathematics; (5) physics of the living state; (6) physics of the environment.

2.5/2. In the first area, extended courses on condensed matter physics (including semi-conductor devices, superconductors, surface phenomena, modern materials, amorphous solids, liquid state and crystalline semi-conducting materials and devices) were held in 1980, 1982 and 1984, and workshops (3-4 months) on the same subjects have been organized every year since 1980. Topical meetings were held each year within the framework of the workshops. Since 1980, about 1750 scientists have participated in these activities and approximately 290 preprints and the proceedings of several extended courses and topical meetings have been published. Extended courses on atomic, molecular and laser physics (laser principles and techniques, lasers in chemistry and biology, short laser pulses with applications in physics, chemistry and biology) were held in 1981 and 1983. In both courses, practical demonstrations with laser equipment were organized. These two courses were attended by a total of 273 lecturers and participants. Extended courses on microprocessors (hardware, software and applications in various fields of physics and technology) were organized in 1981 and 1983 at the Centre in collaboration with scientific staff from the European Organization for Nuclear Research (CERN). A workshop on the physics of communications was held in 1983.

2.5/3. With regard to the second area, extended courses on nuclear energy (nuclear theory for applications, operational physics of power reactors, nuclear physics at intermediate energies, heavy ion physics, molecular data for reactor applications, reactor physics aspects of safety analysis, nuclear

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model computer codes) were conducted in 1980, 1982 and 1984, while workshops have been organized annually. Seventy three preprints and the proceedings of extended courses and workshops have been published. In total, 832 scientists have taken part in these projects. The Centre organized extended courses on fusion energy and plasma physics in 1981 and 1983, with some 347 lecturers and participants attending. The fact that the majority of the participants were from developing countries demonstrates the growing interest of such countries in building small experimental plasma physics devices. Extended courses and workshops were held on solar, wind, geothermic and biomass energy sources in English in 1981 and in French in 1980, 1982 and 1984, with a total of 551 lecturers and participants. As a result of these projects, scientists from developing countries have established their own journal which publishes their research results.

2.5/4. Research on fundamental physics (high energy physics, general relativity, supergravity), has been performed continuously since 1980. In addition, a workshop and one or more conferences or topical meetings have been held each year with a total of 1844 scientists participating. Some proceedings have been published.

2.5/5. One or two extended courses or workshops (with 798 lecturers and participants in all) have been held each year on mathematics (non-linear, boundary value problems, complex analysis, variational methods, evolution equations, mathematical ecology and dynamic systems).

2.5/6. An extended course/workshop followed by a conference was organized in 1982 and 1983 on physics of the living state (biophysics, applications of physics to medicine and biology). A total of 683 lecturers and participants attended.

2.5/7. In the area of physics of the environment (deserts, soils, geomagnetism, ionosphere, seismicity), extended courses were held in 1980, 1982 and 1983 and workshops in 1980 and 1983. The total number of participants was 427.

2.5/8. A conference on physics for development is being organized at the Centre in 1984 in conjunction with the General Assembly of the International Union for Pure and Applied Physics (IUPAP).

PLANS FOR 1985-86

2.5/9. The overall aim is to foster, through research and training for research, the advancement of physics and - to a lesser extent - work in applicable mathematics, with special regard to the needs of developing countries so as to encourage scientists from those countries to continue and expand their research work.

2.5/10. With regard to physics and high technology, extended courses on lasers, atomic and molecular physics, on industrial physics and on microprocessors will be held in 1985 as will a workshop on condensed matter which will include two topical meetings and a working party on mechanical properties. Subject to the availability of extrabudgetary funds, an extended course on microprocessors will be held in Colombia. An extended course and a workshop on condensed matter physics are planned for 1986. Research on condensed matter physics will continue to be conducted.

2.5/11. In the physics and energy field, an extended course on plasma physics, a workshop followed by a conference on the physics of non-conventional energies and material science for energy, a workshop on nuclear physics and a conference on nuclear fluid dynamics and an extended course on nuclear physics will be held in 1985. An extended course on nuclear physics is planned for 1986. An extended course on solar energy will be conducted in French in 1986.

2.5/12. In mathematics, an extended course on the representation of Lie groups and a workshop on semi-groups and applications in physics will be held in 1985. An extended course is planned for 1986.

2.5/13. Research on fundamental physics will continue, and a workshop on high-energy physics and cosmology will be held in 1985. A further workshop is planned for 1986, and topical meetings will be held each year.

2.5/14. An extended course on physics of the living state is planned for 1986.

2.5/15. With respect to physics of the environment, an extended course on soil physics will be held in 1985 and, subject to the availability of extrabudgetary funds, a workshop on desertification is planned for the same year in Sudan. An extended course on the physics of the solid earth is to be organized in 1986.

PROGRAMME AREA 3

NUCLEAR SAFETY AND RADIATION PROTECTION

PROGRAMME AREA 3

NUCLEAR SAFETY AND RADIATION PROTECTION

LONG-TERM GOALS AND STRATEGIES

3/1. The long-term goals and strategies of this programme area will continue to be tailored to the Agency's statutory functions of establishing standards of safety for the protection of health and of providing for their application and to reflect the changing situation in the nuclear power and nuclear applications programmes of Member States.

3/2. In the radiation protection area, a universal system of dose limitation has been developed over the past few decades. In addition to stipulating specified limits, this system now requires that all practices involving exposure to ionizing radiation be justified and that radiation protection be optimized in order to reduce doses to levels deemed to be as low as reasonably achievable, taking into account social and economic factors. While these concepts have received world-wide acceptance, a significant amount of work is still required to develop methods for implementing them. Thus, the main long-term goals of the "Radiation Protection" programme are directed towards preparing guidelines on the implementation of the dose limitation system. These guidelines will have to take into account new data which are now appearing. Existing radiobiological data are being re-evaluated and new information is being examined, and these will undoubtedly affect future revisions of the Agency's Basic Safety Standards for Radiation Protection and their implementing documents. Other current issues where new developments are taking place and which will have to be reflected in the Agency's long-term strategy include: radiation protection criteria for sources of potential exposure which are probabilistic in nature (particularly radioactive waste repositories); a more uniform approach to emergency planning and preparedness, particularly with regard to intervention levels, remedial actions, and re-entry criteria; and radiation protection in evolving technologies such as the thorium fuel cycle and fusion.

3/3. In the area of nuclear safety, Member States are placing increasing emphasis on operational aspects as the number of nuclear power plants grows. Systems have been set up in many countries to collect, analyse and disseminate information on abnormal events at nuclear power plants so as to prevent the recurrence of similar events elsewhere. It has been recognized that better training of operators and improved operating instructions can raise the level of safety significantly. It is also accepted that similar improvements can be effected by paying more attention to the safety aspects of day-to-day plant operation, including maintenance and in-service inspection. The trend in safety research is also towards increasing the operational safety of plants rather than improving design. More realistic computer codes are being developed for analysing accidents and are also being used to produce "symptom-oriented" operating instructions. New devices are being developed to assist operators in identifying abnormal events and in deciding what action should be taken to cope with accidents. Increasing attention is also being given to the development of advanced methodologies such as probabilistic risk assessment which are being used to solve specific safety problems at plants. These new tools permit the development of a more systematic framework for overcoming safety problems.

3/4. The goal of the Agency's programme in the above context is both to enhance Member States' ability to assess nuclear power plant safety by providing them with direct assistance and to enable them to learn from the experience of others by collecting information on selected abnormal events at nuclear power plants throughout the world. The Agency will also provide a forum for the exchange of safety research results and will make available new methodologies. To achieve the first of these objectives, operational safety review teams (OSART) consisting of experts on various aspects of safety will visit operating nuclear power plants to assist regulatory bodies in reviewing safety. These missions will make available to countries which have limited experience in the operation of nuclear power plants the expertise of other

countries which have been running power reactors for a longer time. The second objective will be attained through the continued operation of the IAEA Incident Reporting System which collects worldwide information on events significant to safety and makes the lessons learned available to all Member States.

3/5. Under the NUSS programme, a comprehensive set of safety codes and guides for nuclear power plants has been drawn up on the basis of commonly accepted safety practices in Member States. The document preparation phase of the NUSS programme will be completed in the near future and increasing emphasis will be given to its implementation. Manuals will be produced to provide supplementary details on NUSS application. Advisory missions, seminars and training courses will be organized to encourage Member States to incorporate and use NUSS codes and guides in their national regulations and practices.

3/6. Following the recommendation of a group of experts, steps will be taken to establish an advisory group of prominent nuclear safety scientists. The objectives of this advisory group will be to provide a forum for the exchange of information on and the review and analysis of relevant safety issues and to strive towards the formulation of commonly shared safety concepts based on the conclusions reached on the different issues analysed. The aim here will again be to assist Member States in learning from the experience of others.

3/7. Probabilistic risk assessment methodology is now playing an increasingly important role in determining priority areas for improving safety and in providing the basis for safety-related decisions. The Agency's programme will concentrate on compiling the experience gained in Member States and on making techniques available to developing countries through seminars, training courses and manuals.

3/8. The exchange of information on safety research is becoming increasingly valuable as a means of improving the utilization of the resources expended on safety research and development since a large number of both developing and developed Member States are engaged in such work. The Agency will continue to promote this exchange through specialists' meetings and the compilation of a safety research index. The practical application of research results will also be promoted by providing increased assistance on advanced methodology for accident analysis mainly to Member States which are in the first stages of establishing nuclear power programmes.

3/9. Work in this programme area will continue to be carried out in consultation and, where appropriate, in collaboration with the competent organs of the United Nations and with the specialized agencies concerned. A large number of activities will be performed jointly with WHO, ILO, UNEP, UNSCEAR as well as with regional bodies such as OECD/NEA, CEC and CMEA. Co-operation will be maintained when appropriate with other specialized organizations such as ISO, IEC, WMO, ENS, ANS, ICRU, IRPA, BIPM, FAO, the International Road Transport Union, the Inter-American Nuclear Energy Commission of the OAS, IATA, ICAO, the International Cargo Handling Co-ordination Association, the International Federation of Airline Pilots Association, IMO, the Central Office for International Railway Transport, the International Union for Inland Navigation, UNESCO, UPU, UNDRO, ECE, UNIPED, IIASA and the Society for Risk Analysis. Furthermore, ICRP provides the recommendations which ensure the scientific excellence of the Agency's programme.

PROGRAMME AREA 3: NUCLEAR SAFETY AND RADIATION PROTECTION

Summary of resources by programmeTable 17

Programme	Man-years		Planned expenditure for the implementation of the programme in 1985				
	P	GS	Regular Budget estimates	Funds from other UN organizations	TC resources	Other extra-budgetary resources	TOTAL
3.1. Radiation Protection	10.4	5.7	2 288 000	-	2 100 000	65 000	4 453 000
3.2. Safety of Nuclear Installations	15.4	6.7	2 559 000	-	1 900 000	52 000	4 511 000
3.3. Risk Assessment	2.1	4.3	555 000	-	-	-	555 000
TOTAL	27.9	16.7	5 402 000	-	4 000 000	117 000	9 519 000

PROGRAMME 3.1

RADIATION PROTECTION

DESIRED IMPACT

3.1/1. To contribute to improved world-wide protection against the harmful effects of ionizing radiation by establishing or adopting safety standards for the protection of health and the minimization of danger to life and by providing for their application to activities in the field of atomic energy.

Summary of manpower and costs by sub-programmeTable 18

Sub-programme	Man-years		1985 Cost estimates					Responsible Division
	P	GS	Staff	Meetings	Contracts	Other	Total	
3.1.1. Basic criteria on radiation protection	1.4	1.2	143 000	40 000	31 000	93 000	307 000	Nuclear Safety
3.1.2. Occupational radiation protection	3.0	1.0	277 000	79 000	25 000	198 000	579 000	Nuclear Safety
3.1.3. Radiation protection of the general public and the environment	2.0	1.0	191 000	79 000	44 000	151 000	465 000	Nuclear Safety
3.1.4. Transport radiation safety	1.0	1.0	123 000	58 000	33 000	109 000	323 000	Nuclear Safety
3.1.5. Planning and preparedness for radiation emergencies	1.9	1.0	187 000	48 000	-	94 000	329 000	Nuclear Safety
3.1.6. Handling of radiation-exposed persons	1.0	0.5	98 000	18 000	68 000	93 000	277 000	Nuclear Safety
3.1.7. Physical protection of nuclear facilities and materials	0.1	-	8 000	-	-	-	8 000	Nuclear Safety
TOTAL	10.4	5.7	1 027 000	322 000	201 000	738 000	2 288 000	

Sub-programme 3.1.1

Basic criteria on radiation protection

RESULTS TO DATE (1980-84)

3.1.1/1. The latest edition of the Basic Safety Standards for Radiation Protection (BSS), jointly sponsored by the Agency, WHO, ILO and NEA (OECD), was issued in 1982. This edition is aimed mainly at the practical implementation of the new system of dose limitation recommended by the ICRP in 1977. The BSS fulfill the objectives of this system by establishing requirements for the justification of practices involving exposure to radiation, the optimization of radiation protection and the limitation of individual doses.

3.1.1/2. Since 1981, emphasis has been placed on providing direct assistance to Member States on radiation protection criteria principally through advisory missions and training programmes. A total of 74 safety and advisory missions to developing countries and 13 training courses have been arranged on various aspects of radiation protection practices. In addition, as part of its efforts to promote the implementation of the BSS, the Agency has recently embarked upon a comprehensive training programme intended to provide a basic level of understanding of its radiation protection policy. The Health Physics Research Abstracts Bulletin, which contains information on research activities relating to radiation protection, continued to be published annually.

PLANS FOR 1985-86

3.1.1/3. The overall aim is, by providing basic criteria for radiation protection, to assist national authorities concerned with radiation protection regulations to minimize the danger to life and property from the use of ionizing radiation and to promote and maintain a basic level of understanding of the principles of radiation protection.

3.1.1/4. Virtually all Member States use ionizing-radiation sources and therefore need to issue radiation protection regulations. The Agency's function in this area is to establish basic standards for radiation protection which can be used to satisfy its own requirements and to provide a uniform set of recommendations on which national regulations can be based. In preparing these, the Agency will continue to be guided by the recommendations of the ICRP.

3.1.1/5. On the basis of three years' experience with their use, the revised BSS, issued in 1982 as Safety Series No. 9, will be subjected to a limited review in 1986 in co-operation with all interested international and regional organizations. Recommendations on the principles for exempting radioactive substances, apparatuses and sources from the requirements of the BSS will also be prepared. Furthermore, it is planned to revise the Radiation Protection Rules and Procedures issued in 1980 and applicable to personnel for whose radiation protection the Agency is responsible, to ensure that they conform with the BSS.

3.1.1/6. Post-graduate level training courses on radiation protection will be organized in the four official languages of the Agency annually. It is also planned to hold annual 4-6 week training courses on specific subjects such as planning and preparedness for radiation emergencies, the Agency's transport regulations and radiation protection in the nuclear mining industry. During 1985 and 1986, new training materials in the form of handbooks, lecture materials, guides, slides, films and video tapes will be prepared and developed for the above courses. A motion picture on planning and preparedness for radiation emergencies will also be produced.

3.1.1/7. A review of experience on emergency planning and preparedness will be arranged through a symposium in 1985. Symposia on the optimization of radiation protection and on the packaging and transport of radioactive materials will be held in 1986.

Sub-programme 3.1.2

Occupational radiation protection

RESULTS TO DATE (1980-84)

3.1.2/1. Efforts have continued to assist Member States to further develop and to harmonize the protection of workers against the harmful effects of ionizing radiation resulting from the peaceful utilization of atomic energy.

3.1.2/2. Standards, guides and recommendations have been published on Basic Requirements for Personnel Monitoring (Safety Series No. 14); Safety Aspects of the Design and Equipment of Hot Laboratories (Safety Series No. 30); Dosimetry for Criticality Accidents (Technical Reports Series No. 211), which is a comprehensive manual that includes information on which an accurate and reliable nuclear accident dosimetry service can be based; and the Radiation Protection (of workers) in the Mining and Milling of Radioactive Ores (Safety Series No. 26), a joint IAEA/ILO/WHO publication.

PLANS FOR 1985-86

3.1.2/3. The broad aim is to assist national authorities concerned with radiation protection regulations as well as national authorities responsible for occupational health to implement the BSS in the area of occupational radiation protection, to facilitate the exchange of information in this area and to provide a common level of understanding of occupational radiation protection requirements.

3.1.2/4. At present, there are several hundred thousand radiation workers throughout the world and this figure is expected to grow continuously with the expansion of nuclear energy generation and the use of nuclear methods, techniques and by-products.

3.1.2/5. Efforts will concentrate on four areas: design of radiation protection systems, operational radiation protection, radiation protection in mining and milling and occupational monitoring.

3.1.2/6. In the first area, a safety guide on the principles and criteria for designing radiation protection systems will be prepared, as will supplementary recommendations on the application of this guide in nuclear power plants, nuclear fuel fabrication plants and nuclear fuel reprocessing plants.

3.1.2/7. With regard to the second area, a safety guide on the application of the BSS to operational radiation protection activities will be developed. This guide will be supplemented by specific recommendations for operational protection in nuclear research reactors and nuclear power plants, for the industrial use of radiation sources and for the safe handling of tritium.

3.1.2/8. In the area of radiation protection in the mining and milling of radioactive ores, work will concentrate on updating safety documents to bring them into line with the new requirements of the BSS. To that end, a safety guide will be drawn up on the application of the BSS system of dose limitation and will be supplemented by recommendations on radiation protection services in uranium and thorium mines and mills.

3.1.2/9. Finally, following the issuing of new ICRP recommendations on occupational monitoring, work in this area will be expanded with the preparation of a guide on basic principles for personnel monitoring. Recommendations in support of this guide will be drawn up on the assessment of occupational exposure to external irradiation and on internal dose assessment. In addition, Safety Series procedures and data will be issued for neutron spectra for application in radiation protection, the application of the dose-equivalent index quantity and the intercomparison of personnel dosimeters.

Sub-programme 3.1.3Radiation protection of the general public and the environment

RESULTS TO DATE (1980-84)

3.1.3/1. Recommendations were published on the Principles for Establishing Limits for the Release of Radioactive Materials into the Environment (Safety Series No. 45 and its Annex) and on the Monitoring of Airborne and Liquid Radioactive Releases from Nuclear Facilities to the Environment (Safety Series No. 46). Technical documents were issued on Environmental Monitoring for Radiological Safety in the South East Asian, Far East and Pacific Regions (TECDOC No. 228); on the Estimation of Environmental Transfer of Plutonium and the Dose to Man (TECDOC No. 255); and on the proceedings of a Workshop on Fusion Safety (TECDOC No. 277). Two additional technical documents are being prepared on the monitoring and control measurement of carbon-14 in nuclear facilities and on assessing the intake of radioactive materials through food chains, including water.

3.1.3/2. An intercalibration study on water and sediment samples containing known amounts of fission products was carried out under a CRP on the radioecology of the Danube catchment area completed in 1982. A similar programme on the Baltic Sea was started in 1981. Also in 1981, a CRP on carbon-14 from nuclear facilities was initiated in collaboration with the "Nuclear Fuel Cycle" programme.

3.1.3/3. An advisory group was convened, with the co-operation of WHO, to consider what principles and methodology could be used by Member States in assigning a value to trans-frontier collective exposures. A minimum value to be assigned to the unit collective dose for such exposures was recommended.

3.1.3/4. The activities constituting the programme on nuclear explosions for peaceful purposes (PNE) were initiated in 1968 when the Agency's responsibility and technical competence in connection with PNE, and its role under Article V of NPT, were recognized. The proceedings of a fifth technical meeting on the phenomenology and practical aspects of PNEs have been issued. A glossary of PNE terms in four languages and the second volume of a PNE bibliography were published in 1980.

PLANS FOR 1985-86

3.1.3/5. The aim is to assist national authorities concerned with radiation protection regulations and public health and environmental protection authorities in their efforts to improve the radiation protection of the general public and their environment.

3.1.3/6. The expansion of nuclear programmes throughout the world is expected to lead to increases in the amount of radioactive effluents released under normal operating conditions from nuclear and other installations holding radioactive materials. Furthermore, there is growing concern regarding the spatial and temporal distribution of the impact of these releases. Consequently, an international consensus on the principles for limiting and monitoring releases is desirable from the point of view of public protection.

3.1.3/7. It is planned to divide the work into three areas: the limitation of releases of radioactive materials into the environment, monitoring for the radiation protection of the public and radiation protection principles for potential exposures. Phenomenological and practical aspects of PNEs will also be considered.

3.1.3/8. As regards the first area, the Safety Series guide on the principles for limiting such releases (Safety Series No. 45) issued in 1978 and its Annex published in 1982 will be reviewed, taking into account the agreement reached on the value of unit collective dose to be used for assigning a value to transboundary exposure. As a supplement to this guide,

recommendations will be prepared on methodologies for both individual- and source-related assessments and on their application to the control of radioactive releases in the specific cases of mining and milling of radioactive ores, nuclear power plants and reprocessing plants. Furthermore, research will be co-ordinated on the assessment of the radiological impact of carbon-14 released from nuclear installations with a view to encouraging the introduction of methods for controlling such releases (CRP 1980-86).

3.1.3/9. With regard to the second area, a Safety Series guide on the principles of monitoring for the radiation protection of the general public will be prepared. Supplementary recommendations for monitoring the sources of exposure and the environment will also be published.

3.1.3/10. The third area relates to the radiation protection principles to be applied in cases of potential exposure. It is planned to examine the question of whether and how the basic principles laid down in the BSS' system of dose limitation can be extended to sources of potential exposure. An advisory group will discuss this problem and, if the outcome is positive, a Safety Series guide on the application of the basic radiation protection principles to sources of potential exposure will be prepared. It will be supplemented by recommendations on the application of the principles to the design of radioactive waste management repositories.

3.1.3/11. PNE activities will be performed at a level similar to that of recent years. Depending on the amount of new information available, the possibility of convening a technical committee on the phenomenology and practical aspects of PNEs will be considered. The Agency will continue to be prepared to respond to requests for PNE-related services.

Sub-programme 3.1.4

Transport radiation safety

RESULTS TO DATE (1980-84)

3.1.4/1. A revised edition of the Advisory Material for the Application of the IAEA Transport Regulations (Safety Series No. 37) was issued in 1982.

3.1.4/2. The INTERTRAN computer code, a methodological technique for assessing the radiological impact of the transport of radioactive materials, was developed with the assistance of Member States. In addition, in order to facilitate radiological impact assessment, data on the number and types of packages transported in, through or from individual countries were collected and compiled from 43 Member States.

3.1.4/3. An extensive data base of certificates of compliance from 16 Member States has been established. A catalogue of such data was issued periodically to Member States to assist them in regulating the international movement of radioactive materials.

3.1.4/4. Work has been initiated on guides for ensuring compliance with transport regulations and for applying both the individual dose limitation and the optimization requirements of the BSS to radioactive material transportation.

3.1.4/5. The revision of the Regulations for the Safe Transport of Radioactive Materials (Safety Series No. 6) has been completed and is being submitted to the Board of Governors for approval. A complete revision of Safety Series No. 37 is being initiated.

PLANS FOR 1985-86

3.1.4/6. In general, it is planned to assist international, multi-national, regional and governmental authorities responsible for controlling transport activities to regulate the safe transport of radioactive materials.

3.1.4/7. It is estimated that approximately ten million packages of radioactive materials are shipped each year. Despite the large volume of material moved, the transport safety record to date is excellent, and the aim is to maintain this record. Transport is by definition the only part of any nuclear fuel cycle or other nuclear-related activity where radioactive material crosses Member State boundaries. Furthermore, it is most often carried out in the public domain where unsupervised access to the materials or their packagings is possible.

3.1.4/8. Activities will focus on three areas, the first of which concerns the Regulations for the Safe Transport of Radioactive Materials. Through advisory missions to Member States and liaison with international organizations, efforts will be made to encourage and provide assistance with the introduction of new aspects of the revised Regulations which are expected to be issued early in 1985. In addition, the Regulations will be subjected to continuous review and updating.

3.1.4/9. The second area is concerned with facilitating the implementation of the above Regulations. In that connection, supplementary information will be prepared in the form of a technical document on guidance for the optimization of radiation protection in the transport of radioactive materials, advisory material on the application of the Regulations (revision of Safety Series No. 37), explanatory material on the background to the Regulations and a safety guide for package design review and approval procedures. In addition, the application of the computer code INTERTRAN will be encouraged.

3.1.4/10. With regard to the third area, it is planned to continue to collect data on transport operations, including a listing of Competent Authorities, Competent Authority Package Approval Certificates and radioactive material shipment data. It is intended to begin collecting data on radiation exposure and on accidents and incidents during transport.

3.1.4/11. The technical scope and content of the work under this sub-programme will be periodically reviewed by the Standing Advisory Group on the Safe Transport of Radioactive Materials (SAGSTRAM).

Sub-programme 3.1.5

Planning and preparedness for radiation emergencies

RESULTS TO DATE (1980-84)

3.1.5/1. Following a technical committee meeting in 1980 to examine the Agency's role in this area, it was decided to initiate in 1981 new programmes in emergency planning and preparedness comprising the development of additional technical guidance, the establishment of a training programme, the provision of technical assistance to requesting Member States, and the upgrading of the Agency's capability to respond to requests for assistance in the event of a serious nuclear accident.

3.1.5/2. Four guidance documents have been published - Planning for Off-Site Response to Radiation Accidents in a Nuclear Facility (Safety Series No. 55), Preparedness of the Operating Organization (Licensee) for Emergencies at Nuclear Power Plants (Safety Series No. 50-SG-06), Preparedness of Public Authorities for Emergencies at Nuclear Power Plants (Safety Series No. 50-SG-G6), and Emergency Response Planning for Transport Accidents Involving Radioactive Materials (TECDOC No. 262). Further technical guidance documents are being published in 1984 on the preparation, conduct and evaluation of emergency preparedness exercises to test emergency plans and on techniques and decision-making in the assessment of the off-site consequences of an accident at a nuclear facility.

3.1.5/3. Interregional training courses on planning, preparedness and response to radiological emergencies were conducted in 1982 and 1984.

3.1.5/4. Eight special assistance missions were sent to requesting Member States to assist in developing, improving and testing their emergency plans.

3.1.5/5. Work commenced on a number of recommendations put forward by an Expert Group in 1982, and in particular on the development of a single set of provisions setting forth the terms and conditions that could be applied to emergency assistance, and on the determination of "special" planning considerations applicable to cases where a nuclear accident in one State might have a significant radiological impact in other States. Guidelines concerning the first of these recommendations were published as an INFCIRC document in 1984.

PLANS FOR 1985-86

3.1.5/6. The principal aim is to assist national authorities concerned with radiation protection regulations, local, regional and national authorities responsible for planning and preparedness for radiation emergencies, and nuclear installations management and operators to develop and improve their emergency planning and preparedness capabilities.

3.1.5/7. The Agency is often requested to assist in reviewing and evaluating national and local radiation emergency planning and preparedness capabilities. The Agency's involvement in this area is expected to increase as a result of, inter alia, the interest of Member States in the potential transboundary consequences of a major accident at a nuclear installation.

3.1.5/8. Attention will centre on the principles of radiation protection in the event of accidents and emergencies, emergency planning and preparedness and mutual emergency assistance.

3.1.5/9. In the first area, Safety Series recommendations will be drawn up on radiation protection principles applicable to emergency planning and preparedness, specifically on intervention levels for controlling radiation doses to the public in the event of a nuclear accident or radiological emergency.

3.1.5/10. In the area of emergency planning and preparedness, recommendations will be prepared in the form of Safety Series publications to supplement Safety Series guides already issued on public authority preparedness, operator preparedness and off-site response planning. Safety Series recommendations or procedures and data will also be drawn up on the monitoring of the accident release source, the maintenance of on-site habitability during accidents, post-accident assessment and recovery operations and the requirements for emergency response facilities.

3.1.5/11. In the area of mutual emergency assistance, technical reports on the identification of mutual emergency assistance needs and potential assistance resources will be drawn up on the basis of information collected from Member States. The IAEA Radiation Emergency Assistance Plan will be maintained and updated.

3.1.5/12. Advisory missions to Member States to evaluate the status of emergency plans and preparedness will be arranged on request.

Sub-programme 3.1.6

Handling of radiation-exposed persons

RESULTS TO DATE (1980-84)

3.1.6/1. A biological dosimetry programme was established grouping existing work in this area (CRP on chromosomal aberration analysis) with new activities such as the study of other biological indicators of radiation damage and dose and the development and use of fast methods for dose assessment by evaluating activated products in tissues and organs.

3.1.6/2. An intercomparison exercise involving selected laboratories in Member States has been initiated under a CRP on the use of a realistic chest phantom for the assessment of plutonium deposition in the lungs.

3.1.6/3. Work on recommendations and guidelines for the assessment and treatment of over-exposures was started in 1982.

PLANS FOR 1985-86

3.1.6/4. Broadly, the aim is to assist Government health authorities, the medical services of nuclear installations and of industrial, health and research establishments where ionizing radiations are used, and physicians concerned with the handling of exposed persons to implement the medical surveillance requirements of the BSS and to improve their diagnostic, prognostic and therapeutic capabilities in respect of human radiation over-exposure.

3.1.6/5. Work will be carried out in three major areas: the medical surveillance of exposed persons, the assessment of human radiation exposure and medical criteria for the treatment of over-exposed persons.

3.1.6/6. In the first area, a guide will be prepared on the basis of Safety Series No. 25, Medical Supervision of Radiation Workers, which was issued in 1968.

3.1.6/7. With regard to the assessment of human exposure, Safety Series recommendations will be prepared on the use of chromosomal aberration analysis in biological dosimetry and on the use of other biological and biochemical indicators. A technical report on the deposition and clearance of radioactive material in human beings will also be published. In addition, research will be co-ordinated on the intake of transuranic elements by means of an intercalibration exercise with a view to improving the accuracy with which such intakes are assessed (CRP 1983-86).

3.1.6/8. In the area of medical criteria for the treatment of over-exposed persons, Safety Series recommendations will be drafted on the general principles of diagnosis, prognosis and treatment, and two technical reports will follow for cases of over-exposures by internal and external contamination and by external irradiation. A technical document will also be prepared on What the General Practitioner Should Know About the Medical Handling of Over-Exposed Persons. An inventory of international facilities available and qualified to treat over-exposed persons will be established and maintained.

3.1.6/9. The above activities will be performed in close co-operation with WHO.

Sub-programme 3.1.7

Physical protection of nuclear facilities and materials

RESULTS TO DATE (1980-84)

3.1.7/1. The Convention on the Physical Protection of Nuclear Material (INFCIRC/274/Rev.1) was established under the auspices of the IAEA. By the end of 1983, the Convention had been signed by 36 States and one international organization.

3.1.7/2. Technical management and supervision of this activity was transferred from the Legal Division to the Division of Nuclear Safety in 1983. Activities to date have consisted of periodically conducting, in co-operation with the United States Government, training courses on the physical protection of nuclear facilities and materials at about two year intervals. In 1984, a special course for Spanish-speaking students will be conducted in Spain in co-operation with that country's authorities.

PLANS FOR 1985-86

3.1.7/3. The aim is to assist appropriate Government agencies and services at nuclear installations responsible for physical protection to develop and improve the organizational and technical aspects of physical protection.

3.1.7/4. An international training course on the physical protection of nuclear facilities and materials will continue to be organized periodically.

PROGRAMME 3.2

SAFETY OF NUCLEAR INSTALLATIONS

DESIRED IMPACT

3.2/1. To contribute to a high safety level in the design and operation of nuclear installations world-wide.

Summary of manpower and costs by sub-programmeTable 19

Sub-programme	Man-years		1985 Cost estimates					Responsible Division
	P	GS	Staff	Meetings	Contracts	Other	Total	
3.2.1. Safety principles and regulatory activities	1.6	0.9	167 000	159 000	-	156 000	482 000	Nuclear Safety
3.2.2. Siting of nuclear installations	1.6	1.4	182 000	20 000	-	83 000	285 000	Nuclear Safety
3.2.3. Safe design and construction of nuclear installations	1.6	0.9	158 000	47 000	-	111 000	316 000	Nuclear Safety
3.2.4. Operational safety of nuclear installations	7.8	2.7	675 000	66 000	15 000	207 000	963 000	Nuclear Safety
3.2.5. Safety aspects of quality assurance	0.6	0.2	57 000	16 000	-	19 000	92 000	Nuclear Safety
3.2.6. Safety research and development	2.2	0.6	210 000	49 000	32 000	130 000	421 000	Nuclear Safety
TOTAL	15.4	6.7	1 449 000	357 000	47 000	706 000	2 559 000	

Sub-programme 3.2.1Safety principles and regulatory activities

RESULTS TO DATE (1980-84)

3.2.1/1. With the preparation of three additional safety guides, all the documents (one code of practice and seven safety guides) of the governmental organization area of the NUSS programme have been completed. The revision of

Safety Series No. 35 (Safe Operation of Critical Assemblies and Research Reactors) was completed in 1983. A technical document reviewing probabilistic methods in the safety analysis and risk assessment of nuclear power plants is being published in 1984. A major conference on Current Nuclear Power Plant Safety Issues was organized in 1980 to discuss the status of nuclear safety throughout the world in the aftermath of the Three Mile Island incident.

3.2.1/2. As part of the activities aimed at implementing the NUSS codes and guides, a seminar on the selection and implementation of safety standards for nuclear power plants was held in 1980 and another on the safety review and inspection of nuclear power plants in 1981. In addition, in 1983, an advisory group meeting of the users of the NUSS codes and guides discussed and gave recommendations on the implementation of these documents. Training courses on the inspection of and regulations for nuclear power plants were held in 1980.

PLANS FOR 1985-86

3.2.1/3. The general aim is to assist nuclear regulatory authorities, particularly in developing Member States, to improve their regulatory effectiveness, and to clarify generic safety issues with important consequences for licensing decisions.

3.2.1/4. Establishing and ensuring the proper functioning of a regulatory body in Member States, especially those just embarking on a nuclear power programme, is essential to the safety of nuclear facilities. In addition to giving assistance in that area, the Agency also provides a forum for the exchange of information on current important issues in nuclear safety.

3.2.1/5. It is planned to prepare a manual on the contribution of the probabilistic analysis of systems to regulatory decisions for nuclear installations. Also, manuals will be drawn up on the regulatory control of both the construction and the operation of nuclear power reactors as supplementary material to the relevant NUSS guides already issued. Depending on the experience reported with the use of NUSS documents, it is expected that one or two guides will be revised.

3.2.1/6. Missions will be sent to Member States on request to provide advice (on the basis of the appropriate NUSS documents) on the establishment of national regulatory organizations or on the performance of specific regulatory tasks.

3.2.1/7. The annual review of nuclear safety throughout the world, which includes a summary of the Agency's safety activities, will be submitted to the Board of Governors for consideration.

3.2.1/8. It is planned to initiate an annual meeting of NUSS liaison officers nominated by Member States to review experience in the use of NUSS documents and to provide input for the future revision and implementation of these documents.

3.2.1/9. An educational seminar on the recurrent safety evaluation of nuclear installations, which will cover regulatory, design and operational aspects, will be held in 1985. A further educational seminar on regulatory inspection during nuclear power plant construction, commissioning and operation will be conducted in 1986.

3.2.1/10. A review of the latest research on source term evaluation for accident conditions will be arranged through a symposium in 1985, and a technical document on the same subject will be issued in 1986.

3.2.1/11. Following the recommendation of an expert group convened in 1984, steps will be taken to establish an advisory group of recognized nuclear safety scientists. The objectives of this advisory group will be to provide a forum for an exchange of information, to review relevant safety issues and to formulate commonly shared safety concepts on the basis of the conclusions reached on the different issues analysed.

Sub-programme 3.2.2

Siting of nuclear installations

RESULTS TO DATE (1980-84)

3.2.2/1. A further seven safety guides in the siting area of the NUSS programme were prepared, bringing the number of completed documents to one code of practice and 12 safety guides out of a total of 13. A manual on Microearthquake Survey in Relation to Seismic Aspects of Nuclear Power Plant Siting to be published in 1984 will describe the latest developments in this technique as applied to the protection of nuclear power plants against earthquakes.

3.2.2/2. As part of efforts aimed at improving the implementation of the NUSS siting documents, a seminar on safety aspects of siting in developing countries and two training courses on the siting of nuclear power plants have been held. Also, a specialized training course on seismic aspects of nuclear power plant siting was organized in 1982.

PLANS FOR 1985-86

3.2.2/3. The overall aim is to assist national regulatory authorities and utilities in Member States with nuclear power programmes to develop the capacity to select plant sites which satisfy safety requirements and to prepare site-related input for the nuclear power plant design.

3.2.2/4. Good siting lessens the chance of nuclear power plant accidents by reducing the impact of external events (earthquakes, floods, aircraft crashes and so on) and minimizes the impact of the facility on the environment and the public.

3.2.2/5. With regard to the NUSS programme, the remaining Safety Series guide on the subject of siting (Safety Aspects of the Foundations of Nuclear Power Plants - SG-S8) will be completed. In addition, supplementary manuals will be elaborated on seismic aspects, radiation protection aspects and on plant/site interaction. On the basis of the experience reported with the use of NUSS documents, one or two guides will be considered for revision.

3.2.2/6. It is also planned to prepare a safety guide on the siting of research reactors.

3.2.2/7. Advisory missions on safety, both multidisciplinary and specialized, will be provided on request.

Sub-programme 3.2.3

Safe design and construction of nuclear installations

RESULTS TO DATE (1980-84)

3.2.3/1. By the end of 1984, an additional six safety guides in the design area of the NUSS programme will have been prepared, bringing the number of completed documents in this area to one code of practice and 11 safety guides out of a total of 14 planned.

PLANS FOR 1985-86

3.2.3/2. Broadly, it is planned to assist national regulatory authorities, particularly in developing Member States which purchase power plants and components from various suppliers with differing standards, to develop the capacity to assess the safety of proposed nuclear power plants.

3.2.3/3. The availability of internationally agreed codes and guides on design which provide an integrated approach to safety allows regulatory bodies to ensure that the designs proposed by suppliers are in compliance with internationally agreed design criteria.

3.2.3/4. Three Safety Series guides on General Design Safety Principles for Nuclear Power Plants (SG-D11), Reactor Cooling Systems in Nuclear Power Plants (SG-D13) and Design for Reactor Core Safety in Nuclear Power Plants (SG-D14) will be completed, thus concluding the development of the NUSS documents on design. Information and comments on users' experience with NUSS design documents will be collected in preparation for the future revision of some guides. Two manuals supplementing NUSS documents will be drawn up, one on instrumentation and control systems and the other on emergency power supply.

Sub-programme 3.2.4

Operational safety of nuclear installations

RESULTS TO DATE (1980-84)

3.2.4/1. An additional six safety guides in the operation area of the NUSS programme have been prepared, bringing the number of documents completed to one code of practice and 10 safety guides out of a planned total of 11. A manual on Developments in the Preparation of Operating Procedures for Abnormal and Emergency Conditions for Nuclear Power Plants was prepared in 1983.

3.2.4/2. In order to disseminate information on incidents in nuclear power plants and on lessons therefrom, a guide on national incident reporting systems has been drawn up and an international reporting system (the IAEA Incident Reporting System -IRS) was established.

3.2.4/3. OSART missions were initiated in 1983. These missions are performed for the responsible regulatory body in a requesting Member State and have the objective of determining whether an adequate level of safety has been maintained during the operation of a plant. Each mission consists of 6-8 specialists, who review the safety aspects of management and organization, personnel qualifications and training, operational performance, maintenance, technical support, chemistry, radiation protection and emergency planning. Guidelines on the conduct of the OSART missions have been prepared.

3.2.4/4. The growing importance attributed to human factors and to operational experience in safety was highlighted in a symposium on the operational safety of nuclear power plants in 1983. A seminar on the safety of nuclear power plant operation was also held in 1983, and two training courses on nuclear power plant operational safety were organized as part of activities designed to promote the implementation of the NUSS documents on operation.

PLANS FOR 1985-86

3.2.4/5. It is planned in general to assist national regulatory authorities, utilities, and manufacturers and operators of nuclear power plants and research reactors to enhance the operational safety of nuclear installations.

3.2.4/6. Operational safety is now recognized as one of the more important aspects of nuclear safety. It includes not only the development of standards aimed at preventing nuclear incidents but also the feedback of operating experience to improve design and operating procedures.

3.2.4/7. The NUSS documents on operation will be completed with the preparation of a safety series guide on Operational Management of Radioactive Effluents and Wastes Arising in Nuclear Power Plants (SG-011). On the basis

of experience reported by users, one or two NUSS guides will be revised. A manual supplementing the NUSS documents will be developed on the maintenance of systems and components important to safety.

3.2.4/8. A technical report on operational safety issues of particular relevance to developing countries will be issued annually.

3.2.4/9. The IAEA Incident Reporting System established in 1983 will continue to be operated and will be further developed with the aim of providing a world-wide data base (including input from the OECD, CMEA and developing countries) on reported incidents. Annual meetings will be held to discuss the most significant events. Relevant information on the evaluation of such events will be disseminated.

3.2.4/10. OSART services will continue to be provided on request at an expected rate of approximately five per year. A report on recurrent OSART findings will be issued in 1986.

3.2.4/11. Safety review missions to Member States will also be arranged for research reactors, as provided for in Project Agreements.

3.2.4/12. An educational seminar on operating procedures for abnormal conditions in nuclear power plants will be held in 1986.

Sub-programme 3.2.5

Safety aspects of quality assurance

RESULTS TO DATE (1980-84)

3.2.5/1. The quality assurance programme is carried out jointly by the Divisions of Nuclear Safety and Nuclear Power. Recommendations on safety aspects of quality assurance are drawn up under the NUSS programme within the Division of Nuclear Safety. Recommendations on other aspects of quality assurance are elaborated by the Division of Nuclear Power (see sub-programme 1.2.3).

3.2.5/2. With the preparation of a further seven safety guides, the development of the quality assurance documents of the NUSS programme was completed. A total of 10 safety guides and one code of practice have been issued.

3.2.5/3. A number of regional training courses and seminars have been held to promote NUSS implementation in the quality assurance area.

PLANS FOR 1985-86

3.2.5/4. The overall aim is to assist national regulatory authorities, manufacturers of nuclear power plants and utilities to set up and assess appropriate quality assurance programmes and to implement quality control.

3.2.5/5. Quality assurance designed to maintain the high quality of plant systems and components and related activities is an essential component of nuclear safety and helps management ensure that adequate safety standards are being maintained. The purpose of quality assurance codes and guides is to ensure that major efforts are directed towards keeping the quality level adequate for safety. These documents are particularly useful for countries that do not manufacture their own plants and components.

3.2.5/6. The existing set of quality assurance Safety Series guides will be supplemented in 1985 by a further guide on Quality Assurance During Commissioning and Start-up of Nuclear Power Plants (SG-QA9) or by revising an existing safety guide on quality assurance.

Sub-programme 3.2.6Safety research and development

RESULTS TO DATE (1980-84)

3.2.6/1. The programme for the exchange of information on safety research was initiated in 1980. Annual meetings have been held to exchange information on national safety research programmes and specific topics in thermal reactor safety research have been reviewed at meetings held once or twice a year. Two chapters of a safety research index are being prepared, one on blowdown and emergency core cooling and the other on material properties.

3.2.6/2. Since 1982, assistance has been given to developing countries in performing safety analysis with advanced methodology (including the use of sophisticated safety computer codes).

PLANS FOR 1985-86

3.2.6/3. Broadly, the aim is to provide national regulatory authorities, safety research establishments and nuclear power plant manufacturers with a forum for exchanging information and, to the extent possible, to stimulate co-ordination of reactor safety research among regional organizations such as the OECD/NEA, CEC and CMEA as well as the developing countries in order to avoid duplication of effort and to speed up the world-wide exchange of scientific information.

3.2.6/4. Through the mechanism of annual meetings of leading nuclear research scientists, priorities in research and specific topics for a more thorough review will be identified. These topics will be discussed in specialists' meetings which will draw conclusions and give recommendations on areas to be emphasized in future research. A research project index on specific subjects will be published annually starting from 1984. The eventual merger of this index with similar ones issued by the CEC and OECD/NEA will be considered.

3.2.6/5. Assistance will be provided to requesting developing countries in the performance of certain parts of accident analyses by making available to them appropriate computer codes and by providing them with training on the Agency's computer which will enable them subsequently to use these codes directly on their own computers. Two technical reports on the use of computer codes for accident analysis will be published.

PROGRAMME 3.3

RISK ASSESSMENT

DESIRED IMPACT

3.3/1. To promote the application of risk assessment techniques in evaluating the risks involved in the peaceful uses of nuclear energy.

Summary of manpower and costs by sub-programmeTable 20

Sub-programme	Man-years		1985 Cost estimates					Responsible Division
	P	GS	Staff	Meetings	Contracts	Other	Total	
3.3.1. Risk analysis techniques	0.9	1.8	131 000	57 000	63 000	52 000	303 000	Nuclear Safety
3.3.2. Comparative risk assessment	0.9	1.0	98 000	5 000	67 000	13 000	183 000	Nuclear Safety
3.3.3. Risk perception	0.3	1.5	55 000	-	-	14 000	69 000	Nuclear Safety
TOTAL	2.1	4.3	284 000	62 000	130 000	79 000	555 000	

Sub-programme 3.3.1Risk analysis techniques

RESULTS TO DATE (1980-84)

3.3.1/1. A CRP was initiated on the development of risk criteria for the nuclear fuel cycle.

3.3.1/2. A training course on probabilistic risk methods applied to safety analysis for nuclear power plants was held in 1983. On the basis of the experience gained from this course, a training manual on probabilistic risk analysis and its application in safety decisions is being prepared. The PREP & KITT computer code has been implemented and is available for training purposes. A workshop on risk analysis in developing countries is being organized in India in 1984 with the Agency's co-operation. Case studies on risk assessment of the nuclear fuel cycle will be examined at this meeting.

PLANS FOR 1985-86

3.3.1/3. Broadly, the aim is to assist licensing authorities, nuclear power plant designers and nuclear safety research establishments to exchange information on risk assessment methodology and on experience from existing and continuing studies.

3.3.1/4. Member States are showing increasing interest in, and expending greater effort on, the estimation of nuclear power risks and the identification of priority areas for cost-effective improvements in safety. There is a need both to attempt to harmonize developments in various countries and to promote the application of risk analysis techniques in developing countries.

3.3.1/5. It is planned to prepare two technical reports on the application of risk assessment techniques to engineered safety features and on combining operating experience with theoretical studies to obtain more reliable results in 1985. A technical document on advances in nuclear power plant risk analysis will be drawn up in 1986.

3.3.1/6. Preparation of further technical reports in this area will be considered.

3.3.1/7. Furthermore, research will be co-ordinated on the development of risk criteria for the nuclear fuel cycle with a view to exchanging experience and promoting the application of risk assessment techniques in developing countries (CRP 1983-87).

3.3.1/8. An interregional educational seminar on the implications of probabilistic risk assessment (PRA) for nuclear safety will be held in 1985.

3.3.1/9. A four-week training course on the application of PRA will be organized annually.

Sub-programme 3.3.2

Comparative risk assessment

RESULTS TO DATE (1980-84)

3.3.2/1. A symposium on the risks and benefits of energy systems is to be held in 1984 in co-operation with WHO and UNEP.

3.3.2/2. A CRP aimed at comparing the cost-effectiveness of risk reduction among different energy systems was initiated in 1982. A methodology handbook which will complement this CRP is being issued in 1984.

3.3.2/3. These activities have been closely co-ordinated with the work of WHO, UNEP and WEC.

PLANS FOR 1985-86

3.3.2/4. The overall aim is to assist national regulatory authorities and energy planning organizations in exchanging information on the risks and benefits of nuclear power and how these compare with non-nuclear energy technologies.

3.3.2/5. With that end in view, research will continue to be promoted on the comparison of the cost-effectiveness of risk reduction among different energy systems with a view to exchanging information on case studies performed in Member States and to transferring methodologies and data to developing countries (CRP 1982-87).

Sub-programme 3.3.3

Risk perception

RESULTS TO DATE (1980-84)

3.3.3/1. Assistance has been provided to several Member States in carrying out detailed studies of public attitudes towards nuclear power in their countries and in analysing the role of newspapers in transmitting information concerning nuclear power and other energy systems.

PLANS FOR 1985-86

3.3.3/2. In general, it is planned to assist nuclear regulatory authorities, energy planning organizations and utilities to exchange information on the perception of nuclear risk by the public with a view to developing safety criteria that are more easily understandable.

3.3.3/3. Assistance in the performance of field studies which analyse public attitudes will be provided to requesting Member States and will include the adaptation of existing methodologies and help in interpreting the survey data obtained.

PROGRAMME AREA 4

SAFEGUARDS

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PROGRAMME AREA 4

SAFEGUARDS

LONG-TERM GOALS AND STRATEGIES

4/1. The long-term goal of safeguards is to provide assurance that States are complying with their voluntary commitments concerning the peaceful use of nuclear energy and thus to build international confidence in the peaceful nature of States' nuclear programmes. The immediate goal is to achieve, with a convincing level of confidence and in a timely manner, the detection of the diversion of significant quantities of nuclear material from peaceful nuclear activities to military purposes as defined in the commitments freely entered into by States. This objective is achieved by applying various technical measures through which the information provided by States with respect to the amount, composition, location and movement of nuclear material under safeguards is verified.

4/2. Three factors determine the volume and thus the cost of safeguards work: first, the scope of the nuclear activities covered by safeguards; secondly, the scope of the technical verification measures to be implemented in order to provide the credibility that Member States require of the safeguards system; and thirdly, the effectiveness and efficiency of safeguards approaches for all types of facility, of equipment for identifying and measuring safeguarded material and for containment and surveillance, and of safeguards staff.

4/3. As a result of the current slowdown in nuclear power programme growth and consequently in nuclear fuel cycle growth in Member States, the planned increase in the number of facilities to be covered by safeguards will be relatively small in 1985 and 1986, and this trend is expected to continue during the period 1987 to 1990. However, the required inspection effort, which is based on the anticipated operational status of facilities as well as on the type and number of facilities under safeguards, is expected to continue to increase significantly in 1985 and not begin to level off until 1986.

4/4. It is foreseen that, for 1984, about 67% of the required inspection effort will be achieved. In spite of the expected significant increase in required inspection effort in 1985, it will be possible to maintain the same level of coverage without having to increase the number of inspectors because a relatively large number of those recruited in 1984 will become fully available for inspection duties only in 1985. However, in order to maintain the credibility of the safeguards system, an effort should be made to gradually increase the coverage in such a way as to narrow the gap between the inspection effort agreed with Member States and the extent to which this effort is actually implemented. The period 1986-87, during which the required inspection effort is not expected to increase at a significant rate, would seem to be an opportune time in which to achieve this objective, and a modest increase in the size of the inspectorate is therefore foreseen.

4/5. In the development area, one of the major tasks for the future will be the definition of safeguards approaches and inspection methods for large bulk-handling nuclear facilities and for multiple facility nuclear fuel cycles. It is hoped that the Standing Advisory Group for Safeguards Implementation (SAGSI) will make a contribution in these areas. In addition, work will continue on the development of safeguards equipment, techniques and procedures in areas where they are not yet available or where they do not yet meet the necessary standards for effective use in the field. Further emphasis will be placed on performance monitoring and preventive maintenance of safeguards equipment.

4/6. The monitoring and evaluation of the effectiveness of safeguards activities will continue with the aim of ensuring that the credibility that Member States require is provided and, where possible, of identifying improvements which can be made in effectiveness and efficiency.

4/7. It is expected that Member States will continue their voluntary programme of assistance to the Agency in the development, testing and acquisition of safeguards instruments and in the development and implementation of safeguards approaches and techniques. National support programmes are maintained by Australia, Belgium, Canada, France, the Federal Republic of Germany, Japan, the Soviet Union, the United Kingdom and the United States, and there is also a co-operative support programme between the CEC and the Agency.

4/8. In the period 1985-86, the first steps will be taken in the implementation of a long-term data processing strategy which is aimed at meeting safeguards electronic data processing requirements with greater effectiveness and at lower cost. It should thus be possible to process the increasing volume of data without a corresponding increase in the number of staff.

PROGRAMME AREA 4: SAFEGUARDS
Summary of resources by programme

Table 21

Programme	Man-years		Planned expenditure for the implementation of the programme in 1985				
	P	GS	Regular Budget estimates	Funds from other UN organizations	TC resources	Other extra-budgetary resources	TOTAL
4.1. Safeguards Implementation	197	114	21 906 000	-	-	-	21 906 000
4.2. Safeguards Development and Support	68	56	14 449 000	-	-	3 350 000	17 799 000
TOTAL	265	170	36 355 000	-	-	3 350 000	39 705 000

PROGRAMME 4.1

SAFEGUARDS IMPLEMENTATION

DESIRED IMPACT

4.1/1. To enhance the confidence of the international community in Member States' compliance with their non-proliferation and other undertakings regarding the peaceful use of nuclear energy and, in so doing, to foster the use of nuclear technology.

Summary of manpower and costs by sub-programme

Table 22

Sub-programme	Man-years		1985 Cost estimates					Responsible Division
	P	GS	Staff	Meetings	Contracts	Other	Total	
4.1.1. Nuclear material accountancy system	27	34	2 498 000	-	21 000	2 096 000	4 615 000	Information Treatment
4.1.2. Safeguards operations	170	80	13 188 000	-	-	4 103 000	17 291 000	Safeguards Operations A, B, C
TOTAL	197	114	15 686 000	-	21 000	6 199 000	21 906 000	

Sub-programme 4.1.1Nuclear material accountancy system

RESULTS TO DATE (1980-84)

4.1.1/1. The development of the Agency's International Safeguards Information System (ISIS) was completed in 1980 and the transition from the previous system was finalized early in 1981. The system architecture provides for the development and operation of sub-systems integrated over the many functions of safeguards (accountancy, inspection, equipment and so on). In order to make data available on a more timely and useful basis, provision was made through ISIS for a large number of Department personnel to have direct access to computerized data via interactive terminals. Security procedures have been developed to ensure that access to data is restricted to those staff who require it.

4.1.1/2. A sub-system of ISIS which monitors nuclear material in transit and its subsequent confirmation by the recipient was put into operation in 1982 and now produces the Semi-Annual Statement of Material in Transit sent to Member States.

4.1.1/3. Software and quality control for a computerized inspection report (CIR) sub-system were developed, tested and put into operation for item facilities and steps were taken to decentralize ISIS utilization further. Work continued on extending this sub-system to include the processing of inspection data from bulk handling facilities.

4.1.1/4. An internal review of ISIS based on the experience from three years' operation was carried out. The aim was to establish short- and long-term plans for its further development taking into account the development of safeguards implementation.

4.1.1/5. Advice was provided to five Member States which were attempting to computerize reporting procedures. Automation of these procedures led to more timely and improved reporting.

4.1.1/6. Assistance was provided to two Member States in connection with the installation of the Nuclear Material Information System (NUMIS) for nuclear material accountancy for water-cooled, water-moderated (WWER) reactors.

4.1.1/7. A safeguards workshop on accounting data has been held annually and has provided the opportunity for valuable exchanges of information between the Agency and Member States on the more efficient reporting and processing of data.

4.1.1/8. The number of records contained in the ISIS data base grew from about 1 million in 1980 to approximately 2.8 million at the end of 1983.

PLANS FOR 1985-86

4.1.1/9. The broad aim is to maintain an up-to-date record of the location and movement of nuclear material subject to safeguards through the operation of a system of nuclear material accountancy.

4.1.1/10. The full capabilities of the present ISIS design will be realized with the introduction in 1984/85 of a fully computerized sub-system for the accounting of nuclear material in international transit, with the completion of the CIR sub-system and with the development of seal and equipment inventory sub-systems. As a result, a high level of data processing and information services will be maintained with regard to timeliness, quality and user-orientation in all major areas of safeguards information treatment, thus meeting the growing needs of safeguards development and implementation. Data processing strategy will be aimed at meeting safeguards data processing needs

with greater effectiveness and at a lower cost. Despite further growth in the volume of data and the number of records stored in the ISIS data base and increased data processing needs, no major changes in the computer requirements of ISIS are expected in 1985-86.

4.1.1/11. An international workshop seminar on safeguards data accounting will be held in 1986.

Sub-programme 4.1.2

Safeguards operations

RESULTS TO DATE (1980-84)

4.1.2/1. At the beginning of 1984, a total of 159 safeguards agreements were in force in 92 States. Safeguards are currently being applied in 54 States, the nuclear activities of the remainder not yet having reached the stage at which reports and verification activities are required under the relevant agreements. Table 23 gives information on the number of nuclear installations subject to safeguards or containing safeguarded nuclear material in 1983, with projections for the period 1984 to 1987. Table 24 shows the amounts of nuclear material under Agency safeguards at the end of 1983, with forecasts for 1985 and 1990.

4.1.2/2. The amount of inspection work performed has increased considerably. In 1980, about 4200 man-days of inspection were recorded (a man-day is defined as being a day during which a single inspector has access to a facility at any time for a total of not more than eight hours). In 1983, the corresponding figure was 6600 man-days. This rise is accounted for by the increase in the number of inspector posts (from 116 in 1980 to 167 in 1983) and by improved productivity on the part of the inspectors. In 1980, a fully trained inspector produced an average of 47 man-days of inspection, while the average for all inspection staff, including newly recruited inspectors, was 40 man-days. By 1983, these average figures had increased to 50 and 42 man-days respectively.

4.1.2/3. A regional office was established in Toronto, Canada, in 1980, and since 1981 a number of inspectors have been resident in Japan. These arrangements have led to an increase in the effectiveness of safeguards by making it possible to carry out certain types of inspection which cannot be performed by inspectors based at Headquarters. It is now possible, for example, to respond to an on-call status at a facility.

4.1.2/4. In the latter part of 1982 and early in 1983, the structure of the Divisions of Operations was reorganized in order to reduce the size of the organizational units, which had become too large, and to spread the burden of supervision. At the same time, the first steps have been taken to move away from a strictly geographical structure towards a more functional approach.

PLANS FOR 1985-86

4.1.2/5. The aim is, by carrying out inspections in States, to enable the Agency to verify that there is consistency between the Agency's records based on States' reports, the records kept by States or on their behalf and the quantity of nuclear material on inventory or associated with inventory changes.

4.1.2/6. Agency inspectors audit the accounting records maintained at facilities to ensure that they are in agreement with the reports submitted for those facilities and verify that the nuclear material balances and inventory changes shown in the records are correct. This verification is accomplished by counting and identification, measurements and destructive and non-destructive analysis and is complemented by the use of containment and surveillance (C/S) measures and devices. Such verification requires for its

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effective performance the availability and use of varied and highly specialized items of equipment (see sub-programme 4.2.1). The information gathered during inspections is then processed at Headquarters.

4.1.2/7. The level of required inspection effort is expected to rise from 9900 man-days in 1984 to 11 500 in 1985 and 11 600 in 1986, as new facilities come under safeguards for the first time or because of anticipated changes in the operational status of facilities already under safeguards. Inspectors recruited in 1984 will become fully available for inspection duties during 1985 and, together with a modest increase in the inspectorate planned for 1986, will enable the same level of coverage to be maintained as is expected to be achieved in 1984 (about 67%).

Installations in non-nuclear-weapon States subject to safeguards or containing safeguarded material
(1983 to 1987)

Table 23

Type of installation	1983		1984		1985		1986		1987	
	NPT and/or Tlatelolco agreements	INFCIRC/66-type agreements	NPT and/or Tlatelolco agreements	INFCIRC/66-type agreements	NPT and/or Tlatelolco agreements	INFCIRC/66-type agreements	NPT and/or Tlatelolco agreements	INFCIRC/66-type agreements	NPT and/or Tlatelolco agreements	INFCIRC/66-type agreements
Power reactors	121	26	136	26	147	28	159	30	164	32
Research reactors and critical assemblies	151	26	155	27	156	27	161	28	161	28
Conversion plants	5	2	5	2	5	2	5	3	5	3
Fuel fabrication plants	32	8	31	9	31	9	32	9	32	9
Reprocessing plants	4	2	4	2	4	2	4	2	4	2
Enrichment plants	4	0	4	0	5	0	6	0	6	0
Separate storage facilities	26	2	27	2	29	2	32	2	33	2
Other facilities (> 1 ekg)	45	1	45	1	45	1	45	1	45	1
Other locations (< 1 ekg)	398	27	399	27	399	27	399	27	399	27
Non-nuclear installations	0	1	0	1	0	1	0	1	0	1
TOTAL	786	95	806	97	821	99	843	103	849	105

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Amounts of nuclear material under Agency safeguards
(excluding nuclear material to be safeguarded under agreements
concluded pursuant to voluntary offers made by nuclear-weapon States)
Status as of 31 December 1983 and forecast for 1985 and 1990

Table 24

Material	Amounts (tonnes)					
	1983		1985		1990	
	NPT and/or Tlatelolco agreements	INFCIRC/66-type agreements	NPT and/or Tlatelolco agreements	INFCIRC/66-type agreements	NPT and/or Tlatelolco agreements	INFCIRC/66-type agreements
Plutonium	83.8	15.9	120-125	20-22	260-285	40-50
Uranium enriched to 20% or more	10.8	0.2	10.8	0.2	10.8	0.2
Uranium enriched to less than 20%	16 580	2 010	21 000-23 000	2 700-3 000	32 000-40 000	5 000-6 300
Source material	26 685	1 315	28 000-31 000	1 500-1 700	37 000-46 000	2 600-3 200

PROGRAMME 4.2

SAFEGUARDS DEVELOPMENT AND SUPPORT

DESIRED IMPACT

4.2/1. To enhance the effectiveness and efficiency of safeguards by providing the necessary level of support to the "Safeguards Implementation" programme in the areas of effectiveness evaluation, quality assurance, data evaluation, the development of equipment, techniques and procedures, standardization, training, administrative support and executive management.

Summary of manpower and costs by sub-programme

Table 25

Sub-programme	Man-years		1985 Cost estimates					Responsible Division
	P	GS	Staff	Meetings	Contracts	Other	Total	
4.2.1. Development of safeguards equipment, techniques and procedures	34	27	3 116 000	49 000	577 000	6 951 000	10 693 000	Development and Technical Support
4.2.2. Safeguards evaluation	21	14	1 780 000	36 000	-	27 000	1 843 000	Safeguards Evaluation
4.2.3. Safeguards management	13	15	1 466 000	132 000	-	315 000	1 913 000	DDG's Office and Division of Standar- dization, Training and Administra- tive Support
TOTAL	68	56	6 362 000	217 000	577 000	7 293 000	14 449 000	

Sub-programme 4.2.1Development of safeguards equipment, techniques and procedures

RESULTS TO DATE (1980-84)

4.2.1/1. CANDU 600 MW safeguards equipment has been installed and commissioned at four reactor locations and will be utilized on a trial basis to gather safeguards and quality control information. Some defects have been identified and are being corrected.

4.2.1/2. An in situ UF₆ enrichment measurement system for gas-phase sample bottles from a gas centrifuge enrichment plant has been the subject of extended demonstrations to inspectors and is undergoing a long-term trial at an enrichment plant.

4.2.1/3. Two instruments developed under the TASTEX programme (K-edge densitometer and electromanometer) have been put into routine operation and used for authentication and other purposes.

4.2.1/4. Portable units for the in-plant analysis of the isotopic composition of plutonium-bearing materials have been successfully field-tested.

4.2.1/5. Neutron coincidence collars for measuring the enrichment of complete light-water reactor (LWR) fresh fuel assemblies have been authorized for routine implementation and special detector heads for the high-level neutron coincidence counter (HLNCC) used to determine plutonium in specific types of materials by spontaneous fission counting have been developed specifically for fast-breeder reactor (FBR) fuel assemblies and plutonium nitrate bottles.

4.2.1/6. Field tests of advanced film camera surveillance systems have been continued. These units combine improved low light surveillance capability with time-date annotation (behind-the-lens) and have double the present frame capacity.

4.2.1/7. The acquisition and maintenance of an adequate inventory of equipment for NDA and containment and surveillance and the provision of training in equipment usage have remained a major part of the technical services supplied. The performance and availability of equipment has continued to improve.

4.2.1/8. A large number of samples (900-1200 samples per year) were received and analysed at the Safeguards Analytical Laboratory (SAL) and the Safeguards Network of Analytical Laboratories (NWAL). The data from the routine measurement of the element and isotope concentrations of these samples were evaluated and compared with the corresponding data of the operators. Improved computer codes for evaluation were brought into use for estimating the precision and accuracy of inspection and operator measurements.

4.2.1/9. Measurement quality was improved through the exchange of control samples between the safeguards and facility laboratories, through the recommendation of improved sampling and sample handling procedures and through the calibration of installed instruments (K-edge densitometer).

4.2.1/10. The Safeguards Instrument Laboratory (SIL) has continued to serve as an important facility for inspector training in the use of NDA equipment and for the maintenance and calibration of such equipment.

4.2.1/11. In the field of safeguards system studies, a comprehensive examination of safeguards approaches has been completed for the main types of nuclear facility. In particular, significant progress has been achieved in the development of a safeguards approach for heavy-water production plants in non-NPT States.

SAFEGUARDS

4.2.1/12. Practical guidelines for inspection activities for bulk-handling facilities continued to be prepared. Special attention was given to developing and improving safeguards approaches for "sensitive" facilities such as reprocessing, high enriched uranium and mixed-oxide fuel fabrication and uranium-235 enrichment plants.

4.2.1/13. Work continued on detailed guidelines for the implementation and maintenance of State systems of accounting and control (SSACs) for specific facility types and on guidelines for designing facilities in such a way as to make safeguards implementation easier and more effective.

4.2.1/14. Practical inspection experience gained in specific areas of safeguards implementation was summarized and documented and studies concerning the optimization and improvement of safeguards criteria, concepts and approaches, taking into account the influence of national fuel cycle characteristics, were initiated in co-operation with SAGSI.

PLANS FOR 1985-86

4.2.1/15. The aims are to provide the operational Divisions with equipment, techniques and procedures required for the effective implementation of safeguards, to improve such equipment, techniques and procedures in order to increase the effectiveness and/or reduce the cost of safeguards, and to ensure that properly serviced equipment is available as required.

4.2.1/16. A significant part of the safeguards development function is carried out by Member States through their support programmes for safeguards. It is expected that in 1985 the total value of such support will be in the region of US \$12 million.

4.2.1/17. Work will be divided into three main areas: technical services, the development of instruments, methods and techniques, and systems studies.

4.2.1/18. With regard to technical services, safeguards inspectors will continue to be provided with the equipment they need, properly maintained and calibrated, and with the necessary information on its operation. In addition, services such as developing photo surveillance film and assistance relating to the taking and shipping of destructive analysis samples for SAL will be provided. It is estimated that in 1985 there will be about 200 shipments of destructive analysis samples containing about 1800 samples for analysis at either SAL or NWAL. These figures will rise to 220 and 1900 respectively in 1986.

4.2.1/19. Efforts will be made to convince Member States of the need to license air transport containers for the shipment of inspection samples and to rationalize air transport regulations relating to such shipments. It is hoped that this will reduce the inordinately long delays currently being encountered.

4.2.1/20. In-field repair of NDA equipment will be initiated utilizing the newly created category of inspection assistants. The trend towards assigning NDA equipment to specific facilities or field offices is expected to continue.

4.2.1/21. The present gamma ray spectroscopy data analysis service provided at Headquarters will be discontinued, such analyses being performed instead in the field by mini-computers or specially designed microprocessors.

4.2.1/22. A computerized system for controlling the safeguards equipment inventory will become operational and will cover not only major equipment items but also the spare parts needed to maintain them. Also, it will indicate the time at which preventive maintenance is due.

4.2.1/23. Virtually all existing photo surveillance equipment will be replaced, probably by some form of video equipment (possibly digitized). The present problem of inadequate frame capacity will be solved, but difficulties are likely to be experienced in reviewing the much larger number of frames taken.

4.2.1/24. As far as the development of instruments, methods and techniques is concerned, more reliable, simple-to-operate, microprocessor-controlled NDA instrumentation will continue to be developed and tested. The aim is to provide in situ analysis in terms of the quantity of interest to the inspector (enrichment, isotopic composition, mass of material) and to improve data analysis algorithms. A further objective is to provide built-in measurement quality control by leading inspectors through the necessary procedures using interactive software routines. These capabilities are being incorporated in the battery-powered mini-multichannel analyser (MCA) and will be developed for high-resolution MCAs (e.g. CICERO), the spent fuel measurement system, neutron coincidence counters and containment and surveillance video and other systems.

4.2.1/25. A performance monitoring and control programme will be developed and tested for all instruments and techniques routinely deployed in the field.

4.2.1/26. Efforts will continue to be made to improve quality control and resource utilization by including a standardized data link in all Agency NDA instrumentation (portable, transportable and installed) for connection to larger, general purpose computers.

4.2.1/27. Facility-type operating and measurement procedures for NDA instruments will continue to be developed to optimize deployment, improve effectiveness and facilitate standardization.

4.2.1/28. Authentication techniques will continue to be developed as Agency utilization of in-plant instrumentation to obtain safeguards information increases. These will cover the instruments themselves, physical standards and control and data analysis software and will require extensive interaction between the facility operators who control such instruments and the Agency.

4.2.1/29. New optical surveillance systems will continue to be developed to keep pace with advances in technology. It is expected that this will result in the gradual replacement of photographic surveillance units with television units. The systematic evaluation of criteria for the emplacement, operational use and review of optical surveillance equipment will continue.

4.2.1/30. Non-optical surveillance systems (based, for example, on the use of lasers or ultrasonic transmitters) will be studied in order to assess their potential for safeguarding spent fuel storage ponds.

4.2.1/31. The investigation of new sealing systems will continue (electronic, underwater, fuel assembly types) as they become available. Emphasis will be placed on in situ verifiable types. Field-testable versions will be evaluated for optimum cost-effectiveness and minimum intrusion into facility operation before being installed for routine use.

4.2.1/32. Field-usable, non-destructive measurement methods for the determination of deuterium enrichment in heavy water will be developed and tested.

4.2.1/33. As a continuation of a review of the RECOVER system trials, the remote monitoring of installed safeguards devices will be assessed and the potential of such systems for inspection use will be evaluated.

4.2.1/34. In the systems studies area, safeguards approaches based on advanced concepts and on methods aimed at increasing the efficiency of safeguards will be defined. Models for the safeguarding of different types of nuclear facility will be continuously updated. Guidance for the practical application of updated safeguards approaches and advanced safeguards methods will be developed.

4.2.1/35. The methodology for evaluating safeguards effectiveness, including C/S quantification, will be further developed and implemented.

4.2.1/36. Nuclear facility design guidelines to facilitate safeguards implementation (by minimizing intrusiveness and increasing cost-effectiveness) will be formulated.

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4.2.1/37. Detailed guidelines for the implementation and maintenance of safeguards for specific types of facility will be prepared in order to assist SSACs.

4.2.1/38. Forecasts of future Agency manpower requirements and of amounts of nuclear material and numbers of facilities likely to be subject to safeguards will be prepared periodically.

4.2.1/39. A symposium on nuclear material safeguards will be held in 1986.

Sub-programme 4.2.2

Safeguards evaluation

RESULTS TO DATE (1980-84)

4.2.2/1. A Safeguards Implementation Report (SIR) was compiled for each of the years 1980-83.

4.2.2/2. A comprehensive set of inspection goal attainment criteria used for SIR evaluations has been established. Combined with the computerization of SIR data evaluation, this has brought about a steady improvement in the clarity and credibility of the SIR.

4.2.2/3. A programme aimed at enabling computerized inspection reports to be used directly for SIR evaluations was initiated with the objective of making it possible to carry out such evaluations more frequently during each year.

4.2.2/4. From 1980 to 1983, in the course of the quality assurance programme for inspection documentation, the following number of inspection reports and statements or letters were processed:

	<u>1980</u>	<u>1981</u>	<u>1982</u>	<u>1983^{a/}</u>	<u>(1984) estimate</u>
Inspection reports	1097	1119	1640	1315	(2000)
NPT statements relevant to					
para. 90(a) of INFCIRC/153	853	874	1279	1022	(1500)
para. 90(b) of INFCIRC/153	131	141	306	276	(350)
Conclusion letters relevant to					
INFCIRC/66-type agreements	80	81	159	104	(180)

4.2.2/5. A quality assurance programme was established and applied for in-depth internal reviews of safeguards implementation in randomly selected facilities and for the examination and evaluation of specific safeguards techniques such as the application of seals and optical surveillance devices.

4.2.2/6. Numerous data evaluation services were provided for operations relating to inspection working papers, inspection sample plans, test criteria for inspection measurements, the characterization of physical standards, the evaluation of the quality of destructive analytical and non-destructive measurements, tank calibrations, NDA instrument calibrations and the post-inspection evaluation of physical inventory verification data, shipper-receiver differences and material unaccounted for (MUF).

^{a/} The procedures were modified in 1983 and the figures for that year are therefore not directly comparable with those for earlier years.

4.2.2/7. With a view to automating inspection data processing and providing summary results for inclusion in inspection reports, improved computer programs were made available and drafts of two users' manuals describing evaluation software for fuel fabrication and reprocessing plants were issued internally for comment. Six training courses for inspectors were held between 1980 and 1984 on the use of inspection data evaluation methods and software.

4.2.2/8. Data evaluation services were provided to the Division of Development in connection with numerous tests and calibrations of NDA equipment and the automatic transfer of data from instruments to field and Headquarters' computers.

4.2.2/9. A revised version of the Safeguards Technical Manual, Part F, Statistical Concepts and Techniques, was published in 1980. Volume 3 of this series was completed and published in 1982.

4.2.2/10. Reviews were made of isotope correlation methods and the evaluation of the quality of analytical laboratory measurements and non-destructive field measurements in order to develop a uniform approach to the evaluation of inspection measurement data and to monitor, and improve the quality of, verification and facility measurement systems.

PLANS FOR 1985-86

4.2.2/11. The overall aim is to ensure the effectiveness of safeguards by evaluating the extent to which the results of the application of safeguards to equipment, materials and facilities are consistent with safeguards objectives and goals and to evaluate the adequacy of the procedures used in implementing safeguards.

4.2.2/12. To ensure uniform, systematic and reproducible evaluations, there is a need for the effectiveness of safeguards activities to be assessed by an independent unit in the Department of Safeguards.

4.2.2/13. A major part of the workload is roughly proportionate to the level of verification activities. It is therefore expected that there will be an increase in workload in 1985 in line with the rise in the number of man-days of inspection, which will be met partly by an increase in the level of computer processing. In addition, the number of factors evaluated will be increased and more systematic methods of evaluation will be developed.

4.2.2/14. The SIR will be prepared annually. For its preparation, as much data as possible will be retrieved directly from computerized inspection reports (CIRs). The corresponding evaluation program will be improved annually.

4.2.2/15. Frequent monitoring of SIR-related CIR data will be carried out and necessary action taken to ensure the reliability of inspection data relating to those facilities for which safeguards are evaluated individually for the SIR.

4.2.2/16. Evaluation criteria for inspection goal attainment will be further developed and updated to provide more uniform and detailed evaluation of safeguards effectiveness.

4.2.2/17. Procedures will be improved to provide more systematic evaluation of the effectiveness of safeguards implementation, including the feedback of centralized evaluation results to other safeguards Divisions.

4.2.2/18. Quality assurance activities will be further developed in two major areas, namely inspection activity assessments and internal reviews. Quality assurance will continue to be provided in respect of reports, NPT statements and INFCIRC/66-type letters dispatched to States. Further evaluations will be carried out to assess the adequacy of inspection activities planned and implemented.

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4.2.2/19. Detailed appraisals of selected safeguards activities will be performed in the areas of optical surveillance applications (movie and television cameras), the application of seals and their evaluation at Headquarters following use in the field, and non-destructive assessments of nuclear materials in nuclear facilities. The appraisals will concentrate on the basic technical and safeguards-oriented features of these techniques. Schemes for proper documentation and retrieval of the requisite information will be designed.

4.2.2/20. In addition to the routine review of inspection data for the SIR and other purposes, periodic in-depth reviews of safeguards implementation in randomly selected facilities will continue to be performed with the aim of highlighting areas deserving attention from the point of view of the Agency's safeguards responsibilities.

4.2.2/21. Data evaluation services will continue to be provided to operations and development Divisions and will include among other things the evaluation of the quality of analytical laboratory and NDA measurements.

4.2.2/22. The accuracy of isotope correlation methods (ICMs) for the verification of spent fuel reprocessing plant input will be determined by application to actual inspection data and the data evaluation procedures incorporated in the reprocessing plant evaluation software library for both field and Headquarters computers.

4.2.2/23. A series of studies will be made on the accuracy requirements needed to achieve verification goals for destructive and non-destructive measurements of important nuclear materials.

4.2.2/24. Internal reports will be prepared on specific data evaluation and material sampling problems.

4.2.2/25. A technical document will be prepared in 1986 on the evaluation of the quality of safeguards non-destructive assay measurement data which will focus on accuracy requirements, implementation progress and the implementation of a data collection and quality assurance programme for NDA measurements and equipment performance.

4.2.2/26. The Safeguards Technical Manual, Part F, Statistical Concepts and Techniques, will be updated in 1986 on the basis of the experience gained to date.

4.2.2/27. Data evaluation software and computer files for NDA inspection data will be established.

4.2.2/28. Data evaluation software for application in connection with fabrication and reprocessing plants will be improved.

4.2.2/29. The training course on the evaluation of fuel fabrication plant inspection data will be completely revised and the emphasis shifted to data evaluation exercises. Material will be prepared for a new training course on the evaluation of reprocessing plant inspection data.

Sub-programme 4.2.3

Safeguards management

RESULTS TO DATE (1980-84)

4.2.3/1. Support has been given to the negotiation of safeguards agreements and subsidiary arrangements through the provision of members of negotiating teams.

4.2.3/2. Five items have been published in a series of safeguards information documents designed to promote a better understanding within the Agency and in Member States of certain important aspects of safeguards.

4.2.3/3. A standardized format for reporting the results of inspections has been developed and tested extensively. It is already used for item facilities and is being extended to cover other types of facility.

4.2.3/4. A computer-based management information system containing data on managerial and administrative aspects of inspections, personnel and finance for the entire Department was introduced in 1980. The system has enabled a variety of statistics to be produced regularly on such topics as the utilization of inspectors, manpower availability and actual expenditure compared with budget forecasts.

4.2.3/5. A standardized method has been developed which enables inspection effort to be allocated in detail within the Department for the coming year. With this method, equal coverage of the required inspection effort in all regional areas is ensured and the number of inspection staff required can also be projected for budgetary purposes.

4.2.3/6. The Safeguards Training Unit, which was established in 1980, became a separate section in 1981. During the first four years of operation, approximately 1790 participants (inspectors, other safeguards staff and staff from other Agency Departments and from Member States) attended 120 different courses. Considerable progress has been made in the quality of the training given to safeguards inspectors. In-house training is now supplemented by courses in certain Member States which provide the inspector with the equivalent of an in-field environment for training in equipment use and safeguards procedures.

4.2.3/7. Support was provided for the development of structures and procedures in connection with the reorganization of the Department of Safeguards.

4.2.3/8. A number of significant innovations have been made in personnel management. The concept of using GS staff for complementary inspection purposes was developed and approved by the Board in 1983. A traineeship scheme for young professionals from developing countries was devised in 1983 to enable the Agency to recruit more safeguards inspectors from such countries. A scheme for the rotation of inspectors within the operational sections has been established in order to make better use of the experience gained by inspectors and to provide staff with more interesting working conditions.

PLANS FOR 1985-86

4.2.3/9. The aim is to provide management support to the Department of Safeguards. This includes policy guidance, the co-ordination of the programme, the standardization of procedures, assistance in the negotiation of safeguards agreements and subsidiary arrangements, the provision of training services, and administrative support in the areas of personnel, organization, finance and the processing of travel documentation.

4.2.3/10. Safeguards agreements and subsidiary arrangements (including Facility Attachments) will continue to be negotiated as necessary.

4.2.3/11. Administrative and technical practices and procedures contained in the Safeguards Manual will continue to be reviewed and updated to provide a clear and complete set of operational procedures for safeguards implementation.

4.2.3/12. Departmental security procedures will be improved in the light of experience.

SAFEGUARDS

4.2.3/13. Various training courses at different levels, including workshop seminars, will be held for safeguards inspectors, other staff of the Department and personnel from Member States working in safeguards-related areas. The purpose of these courses is to develop entry-level skills in appropriate safeguards areas, to develop specific skills needed on the job, and to update skills as technological procedures and safeguards activities change. Individual training will be given to inspectors through the use of videotapes which constitute the major medium for such training. Training results will continue to be systematically evaluated.

PROGRAMME AREA S

DIRECTION AND SUPPORT

DIRECTION AND SUPPORT

PROGRAMME AREA S: DIRECTION AND SUPPORT

Summary of resources by programme

Table 26

Programme	Man-years		Planned expenditure for the implementation of the programme in 1985				
	P	GS	Regular Budget estimates	Funds from other UN organizations	TC resources	Other extra-budgetary resources	TOTAL
S.1. Executive Management and Secretariat of the Policy-making Organs	19	15	5 954 000	-	-	-	5 954 000
S.2. Administration	53	89	7 814 000	-	-	-	7 814 000
S.3. Technical Co-operation Servicing and Co-ordination	38	48	5 169 000	-	-	-	5 169 000
S.4. General Services	9	69 27 M&O	11 410 000	-	-	-	11 410 000
S.5. Specialized Service Activities	23.6	37.3	5 416 000	-	-	-	5 416 000
S.6. Shared Support Services ^{a/}	113	230 22 M&O	991 000 [17 025 000]	-	-	-	991 000 [17 025 000]
TOTAL	255.6	537.3	36 754 000	-	-	-	36 754 000

^{a/} All costs except those of the Library have been allocated to the user programmes. Contracts administration services, Conference services, Translation and records services, Data processing services and Printing and publishing services are shared by the user programmes. Interpretation is allocated to meetings; Medical services are allocated to Personnel services. Only the Library has not been allocated to any other programme, the cost is therefore shown under this programme.

Executive Management and Technical Programme Planning and

Secretariat of the Policy-making Organs

Summary of manpower and costs by sub-programme

Table 27

Sub-programme	Man-years		1985 Cost estimates					Responsible Division
	P	GS	Staff	Meetings	Contracts	Other	Total	
S.1.1. Executive management	16	13	1 902 000	48 000	-	192 000	2 142 000	Director General's Office and Offices of DDGs for Technical Co-operation, Nuclear Energy and Safety, Research and Isotopes and Administration
S.1.2. Secretariat of the Policy-making Organs	3	2	328 000	259 000	-	3 225 000	3 812 000	Secretariat of the Policy-making Organs
TOTAL	19	15	2 230 000	307 000	-	3 417 000	5 954 000	

Sub-programme S.1.1Executive management

PLANS FOR 1985-86

S.1.1/1. The aim of the Office of the Director General is to propose and implement programmes within the scope of the Agency's statutory objectives pursuant to decisions of the Board and the General Conference and on the advice of the Scientific Advisory Committee; it is also responsible for the efficient conduct and co-ordination of the Agency's work.

S.1.1/2. The aim of the Office of the Deputy Director General for Administration is to ensure the effective functioning of the Agency's administrative activities. It is responsible for the overall direction and supervision of the internal audit and management, budget and finance, personnel, legal and external relations services, in addition to the linguistic services and the "General Services" programme. Certain matters related to internal administration in respect of the Secretariat of the Policy-making Organs will be co-ordinated with the Department of Administration.

S.1.1/3. The aim of the Offices of the Deputy Directors General for Research and Isotopes, for Technical Co-operation and for Nuclear Energy and Safety is to advise and assist the Director General in matters concerning the planning and implementation of the Agency's scientific programmes; they are also responsible for the effective execution of approved programmes within their respective Departments.

Sub-programme S.1.2Secretariat of the Policy-making Organs

PLANS FOR 1985-86

S.1.2/1. The aim is to provide the organizational and administrative services required by the Policy-making Organs of the Agency, namely the General Conference and the Board of Governors.

PROGRAMME S.2

ADMINISTRATION

Summary of manpower and costs by sub-programmeTable 28

Sub-programme	Man-years		1985 Cost estimates					Responsible Division
	P	GS	Staff	Meetings	Contracts	Other	Total	
S.2.1. External relations	9	13	1 090 000	-	-	132 000	1 222 000	External Relations
S.2.2. Legal advice	7	4	679 000	22 000	-	(178 000)	523 000	Legal Division
S.2.3. Internal audit and management	6	5	486 000	-	-	55 000	541 000	Internal Audit
S.2.4. Personnel services	11	22	1 308 000	-	-	1 228 000	2 536 000	Personnel
S.2.5. Budget and finance	20	45	2 450 000	-	-	542 000	2 992 000	Budget and Finance
TOTAL	53	89	6 013 000	22 000	-	1 779 000	7 814 000	

Sub-programme S.2.1

External relations

PLANS FOR 1985-86

S.2.1/1. The aims are to provide the Agency with the appropriate services for maintaining and promoting good relations with Member States and international organizations, to follow and assess on a continuous basis developments in the United Nations and in Member States that are of relevance to the Agency's activities, to negotiate agreements with Member States and international organizations and to provide the Agency and the Permanent Missions with protocol services.

S.2.1/2. Particular efforts will be required in 1985 in connection with the arrangements for the NPT Review Conference.

Sub-programme S.2.2

Legal advice

PLANS FOR 1985-86

S.2.2/1. The aim is to provide the Agency with legal advice concerning all its activities and to assist Member States in nuclear regulatory matters.

S.2.2/2. As in the past, advisory services will be provided to developing Member States upon request to assist in the elaboration and implementation of nuclear legislation. In addition, training within the Legal Division will be provided to a limited number of officials from Member States upon request.

S.2.2/3. A regional seminar on nuclear law and safety regulations will be organized in 1985 as a further means of helping developing Member States keep pace with nuclear regulatory developments.

S.2.2/4. It may be necessary to hold a conference on the revision of the Vienna Convention on Civil Liability for Nuclear Damage, if requested by the contracting parties.

S.2.2/5. It is planned to develop legal frameworks concerning trans-boundary aspects of nuclear energy and mutual emergency assistance in connection with nuclear accidents or radiological emergencies.

Sub-programme S.2.3

Internal audit and management

PLANS FOR 1985-86

S.2.3/1. The aim is mainly to provide the Agency's management with independent appraisal services to assist them in discharging their responsibilities. These services include internal audit, management services, co-ordination of evaluation activities and certain administrative tasks.

S.2.3/2. It is planned to place more emphasis on economy and efficiency reviews of the Agency's activities.

Sub-programme S.2.4Personnel services

PLANS FOR 1985-86

S.2.4/1. The aim is to provide the Agency with personnel services in order to ensure that sufficient high-quality staff are available to meet the needs of the Agency's programmes, to maintain the proper geographical balance among staff and to create suitable working conditions for all staff to perform optimally.

S.2.4/2. It is intended to improve recruitment procedures in order to reach a wider number of suitable candidates and to obtain more applications from qualified women. Further, as part of efforts to increase substantially the number of staff members drawn from developing areas, a traineeship programme for young graduates (about 15 per year) from developing Member States will continue in 1985.

S.2.4/3. The system of performance appraisal introduced provisionally in 1983 is expected to become fully operational. A system of career planning will be introduced in 1985.

S.2.4/4. It is planned to increase the amount of in-service training organized for staff from some 15 weeks in 1983 to about 18 weeks in 1985.

Sub-programme S.2.5Budget and finance

PLANS FOR 1985-86

S.2.5/1. The aim is to develop and implement programme, budgetary and financial procedures to ensure effective financial control and the attainment of programme objectives with the most economical use of available resources.

S.2.5/2. The process initiated in 1983 of adapting the preparation and presentation of the programme budget to a more results-oriented approach should be completed by the end of 1985.

S.2.5/3. It is planned to complete in 1985 the implementation of a computerized financial management system which will enable information to be provided in terms of either funds, programmes or organizational structure and allow for consistent reporting and control in these three formats. It is planned to take advantage of this information system in order to reorganize financial operations by type of operation (travel claims, payroll, commercial claims and so on) rather than by type of account. The resulting productivity improvement should permit both the growth in operations and additional requirements to be met without an increase in staff.

PROGRAMME S.3

Technical Co-operation Servicing and Co-ordination
Summary of manpower and costs by sub-programme

Table 29

Sub-programme	Man-years		1985 Cost estimates					Responsible Department
	P	GS	Staff	Meetings	Contracts	Other	Total	
S.3.1. Co-ordination and supporting activities	7	5	756 000	-	-	444 000	1 200 000	Technical Co-operation
S.3.2. Operations	31	43	3 370 000	-	-	599 000	3 969 000	As Above
TOTAL	38	48	4 126 000	-	-	1 043 000	5 169 000	

Sub-programme S.3.1Co-ordination and supporting activities

RESULTS TO DATE (1980-84)

S.3.1/1. Through technical co-operation projects administered by the Agency, recipient countries have been able to introduce nuclear technology, ranging from basic to advanced, in a wide variety of fields. A summary and an analysis of significant developments and results are to be found in the annual reports on the provision of technical assistance by the Agency submitted to the Board and subsequently communicated to the General Conference.

S.3.1/2. Implementation of the Agency's technical co-operation programme increased at an average annual rate of 12.8% in the period 1980-83. An estimated increase of 11-12% in programme delivery is expected in 1984 as compared with the 1983 level. The volume of extrabudgetary resources raised for technical co-operation activities increased from US \$2.7 million in 1980 to some US \$9 million in 1983.

S.3.1/3. The first module of the computerized programme monitoring system became operational in 1981. By 1983, the system had been expanded to provide complete data on the fellowship programme in addition to information on projects under the regular and the special programmes, including those financed from an increasing number of extrabudgetary funds.

S.3.1/4. In 1983, the Technical Co-operation Evaluation Unit was established, an Agency evaluation methodology was defined and evaluation procedures were introduced.

PLANS FOR 1985-86

S.3.1/5. The aim is to assist all Agency divisions involved in technical co-operation activities as well as national development agencies and atomic energy institutions in Member States by planning, monitoring and evaluating the utilization of the resources available for technical co-operation projects and programmes and by providing policy support.

S.3.1/6. The computerized management information system used to support the management and monitoring of projects will be completed so that, by the end of 1985, it will cover all technical co-operation funds and activities, including training courses.

S.3.1/7. It is planned that in 1985 the Evaluation Unit will carry out some 50 desk evaluation reviews, 12 full field evaluations and one or two large process evaluations. Approximately five training courses on evaluation and project design will be held both at Agency headquarters and in various regions.

Sub-programme S.3.2

Operations

RESULTS TO DATE (1980-84)

S.3.2/1. In 1980, a total of 545 on-going projects were administered by the Agency. At the end of 1983, this number had increased to 650 and it is expected that more than 700 projects will be in operation by the end of 1984. Expert assignments doubled between 1980 and 1983 and it is anticipated that more than 800 assignments will be processed in 1984. Equipment purchases increased from US \$8.2 million in 1980 to more than US \$12 million in 1983. In 1980, training was provided for 1172 specialists from developing countries; by 1983, the number of trainees had reached 1300 and is expected to climb further in 1984 to 1400. The number of training courses administered by the Agency rose from 23 in 1980 to 40 in 1983 and 1984.

PLANS FOR 1985-86

S.3.2/2. The aim is to ensure that requests for technical assistance from developing Member States are properly appraised and prepared for approval, to organize the smooth implementation of technical co-operation projects and to procure goods and services for projects and programmes.

S.3.2/3. It is expected that the 1985 programme will show an overall growth of some 12% in comparison with 1984 and that the number of expert assignments will rise at an even faster rate (some 15%).

S.3.2/4. In line with the policy guidelines established in 1983, more than 10 programming missions and pre-project support assignments will be sent to Member States requiring assistance in the programming and planning of projects.

PROGRAMME S.4

GENERAL SERVICES

Summary of manpower and costs by sub-programme

Table 30

Sub-programme	Man-years		1985 Cost estimates					Responsible Division
	P	GS	Staff	Meetings	Contracts	Other	Total	
S.4.1. VIC maintenance and operation	-	-	-	-	-	6 924 000	6 924 000	General Services
S.4.2. Other general services	9	69 27 M&O	3 048 000	-	-	1 438 000	4 486 000	General Services
TOTAL	9	69 27 M&O	3 048 000	-	-	8 362 000	11 410 000	

Sub-programme S.4.1VIC maintenance and operation

S.4.1/1. The responsibility for the maintenance and operation of the VIC rests with the UNIDO Buildings Management Services and the UN Security and Safety Services. The cost of these services are shared among the users, namely UN/UNIDO and the IAEA, the Agency's share amounting to 45.5%. The main items of expenditure are shown in Table 189.

S.4.1/2. Efforts will continue to be made - in close co-operation with other users of the VIC complex - to reduce energy consumption and the various VIC operating costs.

S.4.1/3. No Agency manning table is given for this sub-programme since all the personnel concerned are UNIDO or UN staff members.

Sub-programme S.4.2Other general services

PLANS FOR 1985-86

S.4.2/1. The aim is to provide purchase and supply services, engineering and technical services (at Headquarters, the laboratories in Seibersdorf and Monaco, and the Trieste Centre), telecommunications and transport services, archive services, registry, mailing and mail distribution services and electronics services for Agency meetings; to carry out inventory checks on Agency property; to provide various staff services (including the operation of the VIC Commissary and the VIC Housing Service); to participate in the technical and financial management of the VIC; and to verify the Agency's financial share in VIC operating costs.

PROGRAMME S.5

SPECIALIZED SERVICE ACTIVITIES

Specialized Service Activities
Summary of manpower and costs by sub-programme

Table 31

Sub-programme	Man-years		1985 Cost estimates					Responsible Division
	P	GS	Staff	Meetings	Contracts	Other	Total	
S.5.1. Public information	5	8	619 000	-	-	778 000	1 397 000	Public Information
S.5.2. International Nuclear Information System	15	24	1 612 000	91 000	12 000	1 852 000	3 567 000	Scientific and Technical Information
S.5.3. Radiation protection services	3.1	5.3	395 000	-	-	57 000	452 000	Nuclear Safety
TOTAL	23.1	37.3	2 626 000	91 000	12 000	2 687 000	5 416 000	

Sub-programme S.5.1Public information

RESULTS TO DATE (1980-84)

S.5.1/1. Activities aimed at informing the public of the Agency's work concentrated on the following areas:

- (a) Nuclear safety and IAEA safeguards in 1980, in connection with the completion of the International Nuclear Fuel Cycle Evaluation (INFCE), the Second Review Conference on the Treaty on the Non-Proliferation of Nuclear Weapons (NPT), and the International Conference on Current Nuclear Power Plant Safety Issues;
- (b) Safeguards and IAEA structure in 1981;
- (c) Nuclear power and nuclear energy in 1982, in connection with the Agency's 25th anniversary and the International Conference on Nuclear Power Experience;
- (d) Radioactive waste management in 1983, in connection with the International Conference on Radioactive Waste Management.

S.5.1/2. In addition to daily press briefings at large conferences, a number of press briefings have been organized in Vienna since 1982. The number of journalists attending sessions of the General Conference has more than doubled since 1980.

S.5.1/3. About 2000 written requests from the public or journalists for general or specific information have been received annually. In order to distribute more widely information on the subjects in which the public showed most interest, an increasing number of leaflets and brochures have been issued. Frequent requests to reprint and translate these publications have been received from Member States. The most successful publication was a leaflet on Radiation - a Fact of Life, which seventeen Member States or national institutions have requested permission to reprint. Two booklets were published jointly with WHO and FAO.

S.5.1/4. The IAEA Bulletin continued to be published quarterly. A survey carried out in 1983 and 1984 showed that the readership is in excess of 36 000.

S.5.1/5. In 1982, a 30-minute film on safeguards was produced as part of a United Nations programme for wide television distribution in the United States. In 1983, a 30-minute film on the medfly eradication programmes in Mexico and Egypt was produced.

PLANS FOR 1985-86

S.5.1/6. The aim is to provide appropriate national organizations, public media and other bodies and persons that influence public opinion with factual, non-technical information on nuclear questions of a sensitive nature and on the Agency and its activities.

S.5.1/7. The use of nuclear power and nuclear techniques in national economies is a relatively new phenomenon which has given rise to concern among the general public in some countries. There is therefore a need to provide the public with objective information.

S.5.1/8. The objective described above is achieved mainly through publications and contacts with journalists from all branches of the media and with members of the public. The main effort with regard to publications will continue to be devoted to the quarterly publication in the four official languages of the Agency's Bulletin, a multidisciplinary review of selected aspects of nuclear programmes in Member States and of the Agency's

activities. In addition, brochures and leaflets providing information for non-specialists on specific Agency programmes will continue to be produced. Press releases on important aspects of the Agency's programme will also be published as appropriate.

S.5.1/9. In connection with the NPT Review Conference to be held in 1985, it is planned to publish one major brochure and several pamphlets explaining the Agency's work in the field of safeguards as well as a series of articles for the popular media. It is also intended to organize before the Review Conference a journalists' information tour which will include a safeguards inspection. Two films will be produced, one for television and a more detailed one for training purposes.

S.5.1/10. Senior staff of the Agency and missions in Vienna will continue to be provided with a daily press review of nuclear-related information, and information will be collected systematically on important nuclear events in Member States.

S.5.1/11. Public information activities in 1986 will focus on questions of nuclear safety and radioactive waste management.

Sub-programme S.5.2

International Nuclear Information System

RESULTS TO DATE (1980-84)

S.5.2/1. The Agency's International Nuclear Information System (INIS) is the only comprehensive bibliographic service in the world in the nuclear field. Seventy Member States and 14 international organizations now participate in its activities. By 1984, input to the system was approaching 80 000 records per year. The data base has grown from 500 000 records in 1980 to an estimated 880 000 in 1984.

S.5.2/2. Participation in INIS has encouraged countries to develop their own capabilities for collecting and disseminating the national literature and to build up national information structures in accordance with local conditions and needs. To assist Member States in developing the specialized manpower required, the Agency has conducted annual training seminars, made available opportunities for training at its Headquarters and provided a technical advisory service for national information centres. The INIS Input Training Kit, which is designed for self-teaching, was put on sale in 1983. Over 450 people, many of them from developing countries, have undergone some form of INIS training since 1980. With the support of technical co-operation funds, Agency staff have helped to install at national centres the computer software necessary for local machine searches to be made on the INIS file.

S.5.2/3. A multilingual dictionary for use with the INIS Thesaurus (English, French, Russian and German) has been compiled and published in co-operation with Member States to assist those with non-English mother tongue to prepare input and make searches on the data base.

S.5.2/4. At the request of the liaison officers, a project was organized to provide direct access to the INIS data base at Vienna (fees are charged to cover the incremental cost of the service). By early 1984, 29 INIS members had been given such access.

PLANS FOR 1985-86

S.5.2/5. The aim is to operate, in co-operation with Member States, a comprehensive computer-readable bibliographic data base covering the entire substantive literature on nuclear science and its peaceful applications with the overall objective of assisting Member States in gaining rapid access to world-wide nuclear information sources.

S.5.2/6. Bibliographic data from INIS members will continue to be collected, converted to machine-readable form where necessary and checked for accuracy and conformance to format and other standards. Data from all sources will be merged by computer, copied and redistributed to all Member States twice monthly. In addition, INIS output will be prepared, published and distributed bi-weekly in the form of magnetic tapes, microfiches and hard copies. On-line access to the INIS data base on the Agency's computer in Vienna will be provided to INIS members on request.

S.5.2/7. The INIS Reference Series documents, which ensure compatibility and consistency of input from INIS members, will continue to be updated and revised in line with changes in international standards in information treatment and new developments in computer and information technology (approximately five revisions are issued each year).

S.5.2/8. Technical reports, theses and other documents not normally available from commercial sources will be microfilmed and made available for sale to users of the system (approximately 15 000 such documents are processed each year).

S.5.2/9. Intermediary services will be offered to those IAEA Member States which are not members of OECD to give them access to the file of computer codes available in the NEA computer bank.

S.5.2/10. Training will be provided to staff from INIS members on the preparation of input and the use of INIS output products through the organization of international and regional seminars (in alternate years) and of national seminars (at the request of Member States). Individual on-the-job training will also be provided on request.

Sub-programme S.5.3

Radiation protection services

RESULTS TO DATE (1980-84)

S.5.3/1. Since 1980, the number of radiation workers covered by the Agency's physical surveillance programme has risen from about 300 to some 400. This trend is expected to continue with the need for more safeguards inspectors and technical assistance experts.

S.5.3/2. Personnel monitoring services for external irradiation and bioassay and whole-body monitoring services for internal irradiation have been arranged for staff of the laboratories at Seibersdorf, Monaco and Headquarters, for safeguards inspectors and for other staff for whose radiation protection the Agency is responsible.

S.5.3/3. Radiation area surveillance has been provided on a continuous basis at the Agency's Laboratory at Seibersdorf. An automatic sample changer unit developed by the Agency in 1982 is used for about 30 000 smear tests each year in order to determine if working areas have been contaminated.

S.5.3/4. In 1982, the Agency's personnel monitoring service was extended to local staff working on Agency-assisted operations and now covers projects in five African Member States.

PLANS FOR 1985-86

S.5.3/5. The aim is to provide a radiation protection service for, and specialized assistance and guidance to, all individuals for whose radiation protection the Agency is responsible, to provide personnel monitoring services to Member States when necessary in connection with Agency-assisted operations, and to assist developing Member States to establish or improve national radiation protection services.

DIRECTION AND SUPPORT

S.5.3/6. Four training programmes for Agency radiation workers will be organized in 1985.

S.5.3/7. Advisory missions will be sent to developing countries to assist with the establishment or improvement of national radiation protection services.

S.5.3/8. Approximately 10 fellows from developing Member States will receive six months' training on radiation protection at the health physics laboratories at the VIC, at the Agency's Laboratory at Seibersdorf, at the Austrian Atomic Energy Research Centre and at a Viennese hospital.

S.5.3/9. A quality assurance service will be provided to national radiation protection services in developing Member States through the Agency's health physics laboratories, which will serve as a secondary standard personnel dosimetry laboratory. About five laboratories in Member States will be involved in this calibration exercise which will take place four times a year.

PROGRAMME S.6

SHARED SUPPORT SERVICES

Summary of manpower and costs by sub-programme

Table 32

Sub-programme	Man-years		1985 Cost estimates					Responsible Division
	P	GS	Staff	Meetings	Contracts	Other	Total	
S.6.1. Contracts administration services	2	4	[276 000]	-	-	[54 000]	[330 000]	DDG Research and Isotopes
S.6.2. Conference services and interpretation	5	7	[500 000]	-	-	[59 000]	[559 000]	External Relations
	8	1	[919 000]	-	-	-	[919 000]	
S.6.3. Translation and records services	39	35 1 M&O	[3 977 000]	-	[50 000]	[102 000]	[4 129 000]	Languages
S.6.4. Medical services	3	13 3 M&O	[300 000]	-	-	[90 000]	[390 000]	Personnel
S.6.5. Library ^{a/}	5	10	539 000	-	-	452 000	991 000	Scientific and Technical Information
S.6.6. Computer services	35	26	[2 396 000]	-	[89 000]	[2 846 000]	[5 331 000]	As Above
S.6.7. Printing and publishing	16	108 18 M&O	[3 609 000]	-	[5 000]	[1 753 000]	[5 367 000]	Publications
Non-allocated cost			539 000	-	-	452 000	991 000	
TOTAL	113	204 22 M&O						
Allocated cost			[11 917 000]		[144 000]	[4 904 000]	[17 025 000]	

^{a/} All costs except those of the Library have been allocated to the user programmes. Contracts administration services, Conference services, Translation and records services, Data processing services and Printing and publishing services are shared by the user programmes. Interpretation is allocated to meetings; Medical services are allocated to Personnel services. Only the Library has not been allocated to any other programme, the cost is therefore shown under this programme.

Sub-programme S.6.1

Contract administration services

RESULTS TO DATE (1980-84)

S.6.1/1. Approximately 1000 contracts are administered annually in connection with the Agency's scientific programmes.

PLANS FOR 1985-86

S.6.1/2. The aim is to provide administrative services and support to the staff of the technical departments of the Agency in implementing the research contract programme and to maintain a uniform system for the administration of all such contracts, agreements and co-ordinated research programmes.

Sub-programme S.6.2

Conference services and interpretation

RESULTS TO DATE (1980-84)

S.6.2/1. On average, about 200 meetings have been serviced and some 2000 man-days of interpretation provided each year.

PLANS FOR 1985-86

S.6.2/2. The aim is to provide organizational and administrative services to ensure the smooth running of Agency meetings and to provide participants at meetings with interpretation services essential for the effective exchange of information.

S.6.2/3. From 1985, interpretation from and into Chinese will be provided at sessions of the General Conference.

Sub-programme S.6.3

Translation and records services

RESULTS TO DATE (1980-84)

S.6.3/1. The bulk of the translation work in the Secretariat is from and into English, French, Russian and Spanish. Translation services for Arabic were provided for the first time in 1982, following the adoption of that language as an official and working language of the General Conference.

S.6.3/2. The number of pages translated (some 25 000 in 1980) has grown at an overall annual rate of about 2%, and this trend is expected to continue.

PLANS FOR 1985-86

S.6.3/3. The aim is to provide translation and records services for the Policy-making Organs and scientific and technical divisions of the Agency.

S.6.3/4. It is intended to improve efficiency and thus to meet the expected increase in the volume of work by continuing to restructure the translation sections according to the model applied by the United Nations Secretariat, extending the practice of self-revision by senior translators as a basic mode of operation, strengthening reference and terminology aids by enlarging the terminology unit and by co-operating with international organizations having computerized terminology systems, and extending the use of word processing to all languages.

S.6.3/5. Translation from and into Chinese will be provided at sessions of the General Conference starting in 1985.

Sub-programme S.6.4

Medical services

RESULTS TO DATE (1980-84)

S.6.4/1. In an average year, there are over 25 000 consultations with nurses and doctors, more than 4000 vaccinations are administered and some 5000 urine and blood tests, 1500 X-ray examinations and 1000 ECGs are performed for the staff of the VIC organizations.

PLANS FOR 1985-86

S.6.4/2. The aim is to operate (on a reimbursable basis) a joint medical service for the staff of all the international organizations at the VIC.

Sub-programme S.6.5

Library

RESULTS TO DATE (1980-84)

S.6.5/1. The loan system was computerized, thus permitting more effective and efficient control of the collections.

S.6.5/2. Zero-growth policies in the contributing organizations combined with increasing prices of library materials have resulted in a reduction in acquisitions.

S.6.5/3. In 1983, the Library had 36 600 visitors, answered 7600 reference questions, performed 900 computer searches, lent 14 000 books and 300 films and routed 21 400 issues of journals and magazines to staff in the VIC.

PLANS FOR 1985-86

S.6.5/4. The aim is to give support to the programmes of the VIC organizations and to the Permanent Missions through the provision of a full range of library and information services.

S.6.5/5. Increasing emphasis will be placed on searches of external computerized bibliographic data bases to locate information in the published literature, which is growing at an annual rate of 8%. The use of computer searching enables an improved service to be provided with the same resources.

Sub-programme S.6.6Computer services

RESULTS TO DATE (1980-84)

S.6.6/1. Increasing demand for data processing services led to the installation in 1982 of a larger mainframe computer (IBM 3081).

S.6.6/2. There was a change of emphasis in the data processing support provided to other programmes, with relatively more attention being given to nuclear safety, technical co-operation and safeguards as well as to Member States through the INIS and EEDB data bases and computer-aided safety analysis projects.

S.6.6/3. In addition, increased resources were devoted to supporting word processing activities within the Agency, especially to ascertaining the feasibility of particular applications and to staff training. The central co-ordination of these activities was of considerable assistance in ensuring compatibility and the efficient use of equipment and in formulating policy.

PLANS FOR 1985-86

S.6.6/4. The aim is to provide timely and effective data and word processing support to the Agency and to the various United Nations organizations at the Vienna International Centre.

S.6.6/5. Estimates by users indicate a 10% annual increase in computer utilization, which it is expected can be absorbed by the installed capacity. However, it is anticipated that the computer used for safeguards work will be unable to satisfy completely the requirements estimated by that Department for 1986 and it is likely that some upgrading will be necessary. A technical study in 1984 will determine the most appropriate way of achieving this.

S.6.6/6. Efforts to reduce the backlog in the development of applications will be made by examining the increased use of software packages.

S.6.6/7. Advice and assistance will be given to all Divisions of the Agency on the applications and benefits of professional computers and office automation equipment.

Sub-programme S.6.7Printing and publishing

RESULTS TO DATE (1980-84)

S.6.7/1. 1980 was the first full year of operation of the VIC Printing Service. The number of page impressions has increased from about 200 million in that year to some 270 million in 1983. Productivity per working hour has improved by 63%, from 2242 impressions in 1980 to 3557 in 1983.

S.6.7/2. An average of some 50 000 pages of priced publications have been issued each year, 40% of these being in the form of fully edited books (some 90 different titles per year), and the remainder appearing mainly as computer-derived output for INIS and CINDA. In addition, between 5000 and 6000 pages of unpriced documents were produced annually. The yearly income from sales of priced publications amounted to about US \$1.1 million. The sales value of publications issued free of charge to Member States was of the order of US \$1 million per year.

DIRECTION AND SUPPORT

PLANS FOR 1985-86

S.6.7/3. The overall aim is to produce and distribute publications with a view to disseminating information on the results of the Agency's scientific and technical work, to provide reproduction facilities to meet the requirements of the General Conference, the Board of Governors and the Secretariat and to operate (on a reimbursable basis) a common printing service for all the United Nations organizations at the VIC.

A N N E X E S I - III

A N N E X I

SYMPOSIA AND SEMINARS IN 1985

Within the limits of the appropriation and subject to the requirements of the individual programmes as outlined for 1985, it is planned to hold the meetings listed below. All meetings were considered by the Scientific Advisory Committee. The reference following each meeting is to the relevant paragraph in the programme.

NUCLEAR POWER AND THE FUEL CYCLE

- | | | |
|----|---|----------|
| 1. | Symposium on fast breeder reactors - experience and future trends*/ | 1.5.2/7 |
| 2. | Symposium on advances in nuclear power plant availability, maintainability and operation (review) | 1.2.1/11 |
| 3. | Seminar on costs and financing of nuclear power programmes in developing countries | 1.2.2/7 |
| 4. | Seminar on management options for low- and intermediate-level wastes | 1.4.1/11 |

NUCLEAR APPLICATIONS

- | | | |
|-----|--|----------|
| 5. | FAO/IAEA symposium on use of nuclear techniques in the production of improved plants | 2.1.2/11 |
| 6. | FAO/IAEA symposium on food irradiation processing*/ | 2.1.6/8 |
| 7. | Symposium on medical applications of nuclear techniques in developing countries | 2.2.1/4 |
| 8. | Seminar on research and development of controlled-release technology for pesticides using isotopes | 2.1.5/7 |
| 9. | Seminar for Africa and the Middle East on research using nuclear techniques and aimed at improving meat, milk and wool production from ruminant animals | 2.1.3/10 |
| 10. | Seminar on practices for radiation sterilization of medical supplies suited to the upgrading of local health care services in Africa and the Middle East | 2.2.3/8 |
| 11. | Seminar on quality control in radioimmunoassay in Latin America | 2.2.1/5 |
| 12. | Seminar on the application of isotope and nuclear techniques in hydrology in arid and semi-arid lands | 2.3.3/9 |
| 13. | Seminar on applied research and service activities for research reactor operation | 2.3.1/12 |

NUCLEAR SAFETY AND RADIATION PROTECTION

- | | | |
|-----|---|----------|
| 14. | Symposium on emergency planning and preparedness for nuclear facilities | 3.1.1/7 |
| 15. | Symposium on source term evaluation for accident conditions | 3.2.1/10 |
| 16. | Seminar on implications of probabilistic risk analysis | 3.3.1/8 |
| 17. | Seminar on recurrent safety evaluation of nuclear facilities | 3.2.1/9 |

DIRECTION AND SUPPORT

- | | | |
|-----|---|----------|
| 18. | INIS training seminar | S.5.2/10 |
| 19. | Seminar on nuclear law and safety regulations | S.2.2/3 |

*/ Postponed from 1984.

A N N E X I I

CONFERENCES, SYMPOSIA AND SEMINARS IN 1986

A list of scientific meetings considered by the Scientific Advisory Committee is presented for the second year of the biennium 1985-86. The reference following each meeting is to the relevant paragraph in the programme.

NUCLEAR POWER AND THE FUEL CYCLE

- | | | |
|----|--|--------------------|
| 1. | Symposium on the technical and economic performance of nuclear power plants | 1.2.1/11 |
| 2. | Symposium on improvements in water reactor fuel utilization | 1.2.2/9
1.3.3/8 |
| 3. | Symposium on the siting, design and construction of underground repositories*/ | 1.4.3/7 |
| 4. | Seminar on supporting industrial infrastructure requirements and development for nuclear power | 1.1.2/10 |
| 5. | Seminar for Asia and the Pacific on quality assurance for nuclear power plants | 1.2.3/8 |
| 6. | Conference on plasma physics and controlled nuclear fusion research | 1.5.3/10 |

NUCLEAR APPLICATIONS

- | | | |
|-----|--|----------|
| 7. | Symposium on radiotherapy in developing countries - present status and future trends | 2.2.2/8 |
| 8. | Symposium on the significance and impact of nuclear research in developing countries | 2.3.1/12 |
| 9. | Symposium on the use of nuclear techniques in studies of animal production in different environments | 2.1.3/11 |
| 10. | Seminar for Africa and the Middle East on quality control of nuclear medicine instruments | 2.2.1/5 |
| 11. | Seminar for Africa, Asia and the Pacific on stable isotopes in medicine | 2.2.4/10 |
| 12. | Seminar for Asia and the Pacific on the practical application of food irradiation | 2.1.6/9 |
| 13. | Seminar for Asia and the Pacific on isotope hydrology techniques | 2.3.3/9 |
| 14. | Seminar on radionuclide generator technology | 2.3.2/13 |

NUCLEAR SAFETY AND RADIATION PROTECTION

- | | | |
|-----|---|----------|
| 15. | Symposium on the transportation of radioactive materials | 3.1.1/7 |
| 16. | Symposium on the optimization of radiation protection | 3.1.1/7 |
| 17. | Seminar on regulatory inspection during nuclear power plant construction, commissioning and operation | 3.2.1/9 |
| 18. | Seminar on operations procedure for abnormal conditions in nuclear power plants | 3.2.4/12 |

SAFEGUARDS

- | | | |
|-----|--|----------|
| 19. | Symposium on nuclear material safeguards | 4.2.1/39 |
| 20. | Seminar on safeguards data accounting | 4.1.1/11 |

DIRECTION AND SUPPORT

- | | | |
|-----|-----------------------|----------|
| 21. | INIS training seminar | S.5.2/10 |
|-----|-----------------------|----------|

*/ Postponed from 1985.

ANNEX III

Draft resolutions

A. REGULAR BUDGET APPROPRIATIONS FOR 1985

The General Conference,

Accepting the recommendations of the Board of Governors relating to the Regular Budget of the Agency for 1985 [1],

1. Appropriates an amount of \$106 805 000 for the Regular Budget expenses of the Agency in 1985 as follows:

<u>Section</u>	<u>United States dollars</u>
1. Technical Assistance and Co-operation	5 169 000
2. Nuclear Energy and Safety [2]	17 899 000
3. Research and Isotopes [3]	14 585 000
4. Operational Facilities [4]	2 370 000
5. Safeguards	36 355 000
6. Policy-making Organs	3 813 000
7. Executive Management and Administration [5]	11 353 000
8. General Services	11 410 000
9. Shared Support Services(Cost of Work for Others)	3 851 000
TOTAL	106 805 000

2. Decides that the foregoing appropriation shall be financed as follows:

- (a) \$3 851 000 from income from work for others;
- (b) \$4 810 000 from other miscellaneous income; and
- (c) \$98 144 000 from contributions by Member States on the basis of the scale of assessment fixed by the General Conference in Resolution GC(XXVIII)/RES/ ; and

3. Authorizes the Director General:

- (a) To incur expenditures additional to those for which provision is made in the Regular Budget for 1985, provided that the relevant emoluments of any staff involved and all other costs are entirely financed from revenues arising out of sales, work performed for Member States or international organizations, research grants, special contributions or other sources extraneous to the Regular Budget for 1985; and
- (b) With the prior approval of the Board of Governors, to make transfers between any of the Sections listed in paragraph 1 above.

[1] See document GC(XXVIII)/

[2] For the financing of Nuclear Power, Nuclear Fuel Cycle, Nuclear Safety and Scientific and Technical Information.

[3] For the financing of Food and Agriculture, Life Sciences and Research and Laboratories.

[4] For the financing of the International Centre for Theoretical Physics (in part) and the International Laboratory of Marine Radioactivity (in part).

[5] For the financing of Executive Management and Administration.

B. TECHNICAL ASSISTANCE AND CO-OPERATION FUND ALLOCATION FOR 1985

The General Conference,

Accepting the recommendations of the Board of Governors relating to the Agency's technical assistance and co-operation programme for 1985;

1. Decides that for 1985 the target for voluntary contributions to the Technical Assistance and Co-operation Fund shall be \$26 000 000;
2. Notes that funds from other sources, estimated at \$1 million, are expected to be available for that programme;
3. Allocates the amount of \$27 000 000 for the Agency's technical assistance and co-operation programme for 1985; and
4. Urges all Member States to make voluntary contributions for 1985 in accordance with Article XIV.F of the Statute, with paragraph 2 of its Resolution GC(V)/RES/100 as amended by Resolution GC(XV)/RES/286 or with paragraph 3 of the former Resolution, as appropriate.

.C. THE WORKING CAPITAL FUND IN 1985

The General Conference,

Accepting the recommendations of the Board of Governors relating to the Agency's Working Capital Fund in 1985 [1],

1. Approves a level of \$2 million for the Agency's Working Capital Fund in 1985;
2. Decides that the Fund shall be financed, administered and used in 1985 in accordance with the relevant provisions of the Agency's Financial Regulations [2];
3. Authorizes the Director General to make advances from the Fund:
 - (a) Not exceeding \$25 000 at any time, to finance temporarily projects or activities of a strictly self-liquidating character which will not necessitate an increase in the Fund in future years; and
 - (b) With the prior approval of the Board of Governors, unless in his opinion the situation requires immediate action before such approval can be obtained, to meet the cost incurred by the Agency in organizing and rendering emergency assistance to Member States in connection with radiation accidents, up to \$50 000 in each case; and
4. Requests the Director General to submit to the Board statements of advances made from the Fund under the authority given in paragraph 3 above.

[1] See document GC(XXVIII) para of the Introduction.

[2] INFCIRC/8/Rev.1 and Mod.1.

P A R T I I

M A N A G E M E N T P L A N

THE REGULAR BUDGET
By appropriation section
Table 33

Division	1983 Actual obligations	1984 Budget	Programme increase (decrease) %		1985 at 1984 price	Price increase %	1985 Estimate AS 16.60=1US\$	1986 Preliminary estimate
1. Technical Assistance and Co-operation	3 666 155	4 642 000	230 000	5.0	4 872 000	6.1	5 169 000	5 789 000
2. Nuclear Power	2 781 105	3 225 000	-	-	3 225 000	5.8	3 412 000	3 754 000
Nuclear Fuel Cycle	2 704 945	3 237 000	-	-	3 237 000	6.0	3 431 000	3 775 000
Nuclear Safety	4 628 084	5 525 000	-	-	5 525 000	6.0	5 854 000	6 442 000
Scientific and Technical Information	4 144 726	4 925 000	-	-	4 925 000	5.6	5 202 000	5 722 000
Nuclear Energy and Safety	14 258 860	16 912 000	-	-	16 912 000	5.8	17 899 000	19 693 000
3. Food and Agriculture	2 594 871	2 987 000	17 000	0.6	3 004 000	5.7	3 174 000	3 428 000
Life Sciences	2 143 583	2 424 000	120 000	5.0	2 544 000	5.8	2 692 000	3 014 000
Research and Laboratories	3 388 712	3 945 000	9 000	0.2	3 954 000	5.9	4 186 000	4 522 000
Laboratory	3 986 001	4 281 000	-	-	4 281 000	5.9	4 533 000	5 077 000
Research and Isotopes	12 113 167	13 637 000	146 000	1.1	13 783 000	5.8	14 585 000	16 041 000
4. International Centre for Theoretical Physics	1 153 130	1 179 000	-	-	1 179 000	0.8	1 189 000	1 308 000
International Laboratory of Marine Radioactivity	1 050 114	1 115 000	-	-	1 115 000	5.9	1 181 000	1 299 000
Operational Facilities	2 203 244	2 294 000	-	-	2 294 000	3.3	2 370 000	2 607 000
5. Safeguards	27 389 083	33 777 000	544 000	1.6	34 321 000	5.9	36 355 000	40 571 000
6. Policy-making Organs	2 677 920	3 581 000	17 000	0.5	3 598 000	5.9	3 813 000	4 197 000
7. Executive Management and Technical Programme Planning	1 717 454	2 021 000	(3 000)	(0.1)	2 018 000	6.1	2 142 000	2 293 000
Administration	7 366 733	8 954 000	(260 000)	(2.9)	8 694 000	5.9	9 211 000	9 859 000
Executive Management and Administration	9 084 187	10 975 000	(263 000)	(2.4)	10 712 000	6.0	11 353 000	12 152 000
8. General Services	9 260 851	11 275 000	(473 000)	(4.2)	10 802 000	5.6	11 410 000	12 209 000
9. Shared Support Services (Cost of work for others)	3 517 170	3 676 000	-	-	3 676 000	4.8	3 851 000	4 052 000
TOTAL	84 170 637	100 769 000	201 000	0.2	100 970 000	5.8	106 805 000	117 311 000

THE REGULAR BUDGET

By Department

Table 34

Department	1983 Actual obligations	1984 Budget	Programme increase (decrease) %		1985 at 1984 price	Price increase %	1985 Estimate AS 16.60=1US\$	1986 Preliminary estimate
1. Director General and Secretariat of the Policy-making Organs	3 368 494	4 458 000	17 000	0.3	4 475 000	6.0	4 744 000	5 207 000
2. Department of Technical Co-operation	3 870 627	4 888 000	230 000	4.7	5 118 000	6.0	5 430 000	6 066 000
3. Department of Nuclear Energy and Safety	14 478 248	17 189 000	-	-	17 189 000	5.8	18 192 000	20 003 000
4. Department of Research and Isotopes	14 643 335	16 210 000	146 000	0.9	16 356 000	5.4	17 251 000	18 962 000
5. Department of Safeguards	27 389 083	33 777 000	544 000	1.6	34 321 000	5.9	36 355 000	40 571 000
6. Department of Administration	16 903 680	20 571 000	(736 000)	(3.5)	19 835 000	5.7	20 982 000	22 450 000
Total Agency Programmes	80 653 467	97 093 000	201 000	0.2	97 294 000	5.8	102 954 000	113 259 000
7. Shared Support Services including cost of work for others	17 975 899	21 092 000	(296 000)	(1.4)	20 796 000	5.2	21 867 000	23 226 000
Less: Amount of services charged to Agency programmes	(14 458 729)	(17 416 000)	296 000	(1.7)	(17 120 000)	5.2	(18 016 000)	(19 174 000)
Cost of work for others	3 517 170	3 676 000	-	-	3 676 000	4.8	3 851 000	4 052 000
Total Regular Budget	84 170 637	100 769 000	201 000	0.2	100 970 000	5.8	106 805 000	117 311 000

NOTE: The above Departmental figures include the costs of their respective Deputy Directors General.

THE REGULAR BUDGET
By item of expenditure

Table 35

Programme	1983 Actual obligations	1984 Budget	Programme increase (decrease) %		1985 at 1984 price	Price increase %	1985 Estimate	1986 Preliminary estimate
Salaries for established posts	32 202 930	39 755 000	(25 000)	(0.1)	39 730 000	5.5	41 912 000	45 889 000
Consultants	620 802	833 300	59 000	7.0	892 300	5.0	936 800	999 000
Overtime	88 759	115 100	3 500	3.0	118 600	5.0	124 700	134 000
Temporary assistance	495 042	442 400	55 100	12.5	497 500	5.0	521 800	481 900
Common staff costs	11 278 067	13 108 900	6 100	-	13 115 000	8.7	14 249 600	15 602 600
Scientific equipment	3 155 151	4 184 300	89 700	2.1	4 274 000	5.0	4 487 100	5 071 000
Common equipment	535 957	350 600	48 500	13.8	399 100	4.0	415 800	435 700
Scientific supplies	967 597	1 349 900	(36 400)	(2.7)	1 313 500	4.0	1 365 800	1 607 000
Common supplies	931 215	859 700	(3 500)	(0.4)	856 200	4.0	895 300	982 600
Scientific and technical contracts	3 291 545	3 284 300	21 700	0.7	3 306 000	5.0	3 470 300	3 879 000
Training	101 991	636 800	(306 300)	(48.1)	330 500	5.5	347 900	55 000
Conferences, symposia, seminars	667 370	983 000	(125 000)	(12.7)	858 000	6.5	911 000	1 165 000
Technical committees, advisory groups	1 191 056	1 317 000	152 000	11.5	1 469 000	6.5	1 564 000	2 099 000
Hospitality	66 787	104 700	2 000	1.9	106 700	5.0	111 900	120 100
Representation allowance	30 000	30 000	-	-	30 000	-	30 000	30 000
Travel	3 010 837	3 742 000	452 700	12.1	4 194 700	7.0	4 488 500	4 993 500
Common services	7 758 147	9 035 000	(312 100)	(3.5)	8 722 900	5.5	9 201 500	9 969 600
Non-shared transferred costs	-	0	-	-	-	-	-	-
Other	1 084 995	1 090 000	283 000	26.0	1 373 000	1.3	1 393 000	2 052 000
Sub-total: Direct costs	67 478 248	81 222 000	365 000	0.4	81 587 000	5.9	86 427 000	95 566 000
Contracts administration services	171 982	330 000	(20 000)	(6.0)	310 000	6.4	330 000	350 000
Conference services	336 391	478 000	48 000	10.0	526 000	6.3	559 000	593 000
Translation and records services	3 267 182	3 989 000	(133 000)	(3.3)	3 856 000	6.1	4 090 000	4 485 000
Medical services	331 670	364 000	6 000	1.6	370 000	5.4	390 000	418 000
Library	800 338	940 000	-	-	940 000	5.4	991 000	1 050 000
Data processing services	4 001 726	4 721 000	17 000	0.4	4 738 000	4.0	4 927 000	5 251 000
Printing and publishing services	4 265 930	5 049 000	(82 000)	1.6	4 967 000	5.5	5 240 000	5 546 000
Sub-total: Shared costs	13 175 219	15 871 000	(164 000)	(1.0)	15 707 000	5.2	16 527 000	17 693 000
Agency programmes	80 653 467	97 093 000	201 000	0.2	97 294 000	5.8	102 954 000	113 259 000
Cost of work for others	3 517 170	3 676 000	-	-	3 676 000	4.8	3 851 000	4 052 000
Total Regular Budget	84 170 637	100 769 000	201 000	0.2	100 970 000	5.8	106 805 000	117 311 000

Shared Support Services

Table 36

Item of expenditure	1983	1984	Programme		1985	Price	1985	1986
	Actual obligations	Budget	increase (decrease)	%	at 1984 price	increase %	Estimate AS 16.60=1US\$	Preliminary estimate
Salaries for established posts	8 151 748	9 941 000	(247 000)	(2.5)	9 694 000	5.5	10 227 000	10 841 000
Consultants	28 619	9 500	-	-	9 500	5.0	10 000	10 500
Overtime	107 754	118 400	(42 000)	(35.5)	76 400	5.0	80 400	85 100
Temporary assistance	726 412	922 400	(216 200)	(23.4)	706 200	5.0	737 400	946 100
Common staff costs	2 748 890	3 276 900	(72 300)	(2.2)	3 204 600	8.7	3 477 000	3 686 800
Common equipment	1 364 047	1 415 000	51 500	3.6	1 466 500	4.0	1 484 900	1 528 000
Scientific supplies	606	-	-	-	-	-	-	-
Common supplies	1 576 173	1 567 200	264 400	16.9	1 831 600	4.0	1 909 800	2 024 600
Scientific and technical contracts	104 600	189 500	(27 200)	(14.4)	162 300	5.0	170 300	180 300
Training	41 024	66 200	(2 400)	(3.6)	63 800	5.5	67 200	71 100
Hospitality	475	1 800	(100)	(5.6)	1 700	5.0	1 800	1 900
Travel	22 483	35 100	1 800	5.1	36 900	7.0	39 500	41 900
Common services	2 573 944	2 952 000	17 500	0.6	2 969 500	5.0	3 062 700	3 185 700
Other	9 983	1 000	27 000	-	28 000	3.4	29 000	130 000
Sub-total: Direct costs	17 456 758	20 496 000	(245 000)	(1.2)	20 251 000	5.2	21 297 000	22 733 000
Translation and records services	19 630	33 000	4 000	12.1	37 000	6.1	39 000	42 000
Data processing services	412 750	482 000	(94 000)	(19.5)	388 000	4.1	404 000	317 000
Printing and publishing services	86 761	81 000	39 000	48.1	120 000	5.5	127 000	134 000
Sub-total: Shared costs (Cross-charged to other Shared Support Services)	519 141	596 000	(51 000)	(8.6)	545 000	4.6	570 000	493 000
TOTAL	17 975 899	21 092 000	(296 000)	(1.4)	20 796 000	5.2	21 867 000	23 226 000
Less: Cross-charge to other Shared Support Services	519 141	596 000	(51 000)	(8.6)	545 000	4.6	570 000	493 000
Cost of work for others	3 517 170	3 676 000	-	-	3 676 000	4.8	3 851 000	4 052 000
Charge to Agency meetings	764 369	949 000	(81 000)	(3.6)	868 000	(5.9)	919 000	988 000
Sub-total	4 800 680	5 221 000	(132 000)	(2.5)	5 089 000	4.9	5 340 000	5 533 000
Total paid by Agency under Shared Support Services ^{a/}	13 175 219	15 871 000	(164 000)	(1.0)	15 707 000	5.2	16 527 000	17 693 000

^{a/} See Table 35.

Manning Table for 1985

Table 37

	DG	DDG	D	P-5	P-4	P-3	P-2	P-1	Sub-total	GS	M&O	Total
Office of the Director General	1	-	1	1	1	-	1	-	5	4	-	9
Secretariat of the Policy-making Organs	-	-	1	1	-	1	-	-	3	2	-	5
Sub-total	1	-	2	2	1	1	1	-	8	6	-	14
Department of Technical Co-operation a/	-	1	-	-	-	-	1	-	2	2	-	4
Division of Technical Assistance and Co-operation	-	-	1	10	9	12	6	-	38	48	-	86
Sub-total	-	1	1	10	9	12	7	-	40	50	-	90
Department of Nuclear Energy and Safety	-	1	-	-	-	1	-	1	3	2	-	5
Division of Nuclear Power	-	-	1	10	6	5	1	-	23	12	-	35
Division of Nuclear Fuel Cycle	-	-	1	7	13	1	-	-	22	13	-	35
Division of Nuclear Safety	-	-	1	15	12	3	-	-	31	22	-	53
Division of Scientific and Technical Information	-	-	1	3	5	8	-	-	17	30	-	47
Sub-total	-	1	4	35	36	18	1	1	96	79	-	175
Department of Research and Isotopes	-	1	-	1	-	1	-	-	3	3	-	6
Division of Food and Agriculture b/	-	-	-	6	6	2	2	-	16	8	-	24
Division of Life Sciences	-	-	1	4	6	2	-	-	13	9	-	22
Division of Research and Labs	-	-	1	7	11	4	4	-	27	18	-	45
The Agency's Laboratory	-	-	1	3	11	8	6	1	30	55	27	112
The Monaco Laboratory	-	-	1	1	3	1	3	1	10	13	-	23
International Centre for Theoretical Physics	-	-	-	4	1	2	-	-	7	21	-	28
Sub-total	-	1	4	26	38	20	15	2	106	127	27	260
Department of Safeguards	-	1	-	-	-	-	-	-	1	1	-	2
Division of Operations A	-	-	1	9	24	33	-	-	67	31	-	98
Division of Operations B	-	-	1	7	16	10	-	-	34	17	-	51
Division of Operations C	-	-	1	8	30	30	-	-	69	32	-	101
Division of Development c/	-	-	1	11	19	3	-	-	34	27	-	61
Division of Information Treatment d/	-	-	1	5	9	2	1	9	27	34	-	61
Division of Evaluation e/	-	-	1	5	13	2	-	-	21	14	-	35
Division of Standardization f/	-	-	1	5	3	2	1	-	12	14	-	26
Sub-total	-	1	7	50	114	82	2	9	265	170	-	435
Department of Administration	-	1	-	1	-	1	-	-	3	2	-	5
Office of Internal Audit and Management	-	-	-	1	2	2	1	-	6	5	-	11
Division of Budget and Finance	-	-	1	4	5	6	4	-	20	45	-	65
Division of General Services	-	-	1	2	1	2	2	1	9	70	26	105
Division of External Relations	-	-	2	3	2	1	1	-	9	13	-	22
Division of Public Information	-	-	1	1	1	1	1	-	5	8	-	13
Legal Division	-	-	1	3	2	1	-	-	7	4	-	11
Division of Personnel	-	-	1	2	2	4	2	-	11	22	-	33
Sub-total	-	1	7	17	15	18	11	1	70	169	26	265
Shared Support Services	-	-	1	-	1	-	-	-	2	4	-	6
Contracts administration services	-	-	-	1	-	1	3	-	5	7	-	12
Conference services	-	-	1	4	12	22	-	-	39	35	1	75
Translation and records services	-	-	-	1	4	3	-	-	8	1	-	9
Interpretation	-	-	1	-	2	-	-	-	3	13	3	19
Medical services	-	-	-	1	-	1	2	1	5	10	-	15
Library	-	-	-	3	9	11	6	5	34	27	-	61
Data processing services	-	-	1	1	1	5	8	-	16	108	18	142
Printing and publishing services	-	-	4	11	29	43	19	6	112	205	22	339
Sub-total	-	-	4	11	29	43	19	6	112	205	22	339
TOTAL	1	5	29	151	242	194	56	19	697	806	75	1 578

a/ The Programme Co-ordination Section which reports to the Deputy Director General is shown together with the Division of Technical Assistance and Co-operation.

Full titles of the respective Divisions are:

b/ Joint FAO/IAEA Division of Isotope and Radiation Applications of Atomic Energy for Food and Agricultural Development

c/ Division of Development and Technical Support

d/ Division of Safeguards Information Treatment

e/ Division of Safeguards Evaluation

f/ Division of Standardization, Training and Administrative Support

Summary of manpower by grade of post and by Department

Table 38

Grade of post	Number of established posts					
	1983 Adjusted	1984	1984 Adjusted	Change		1985
				New Posts	Reclassi- fications	
DG	1	1	1	-	-	1
DDG	5	5	5	-	-	5
D	25	26	26	-	3	29
P-5	148	151	151	2	(2)	151
P-4	234	242	242	1	(1)	242
P-3	171	186	186	-	8	194
P-2	47	59	59	1	(4)	56
P-1	19	19	19	-	-	19
Sub-total	650	689	689	4	4	697
GS	796	804	804	9	(7)	806
M&O	76	76	76	-	(1)	75
TOTAL	1 522	1 569	1 569	13	(4)	1 578

				Change			
				P	GS	M&O	
Department:							
Office of the Director General	15	15	14	-	-	-	14
Department of Technical Co-operation	228	231	89	-	1	-	90
Department of Nuclear Energy and Safety	245	249	173	1	1	-	175
Department of Research and Isotopes	257	261	255	3	2	-	260
Department of Safeguards	398	434	434	5	(4)	-	435
Department of Administration	379	379	265	-	1	(1)	265
Shared Support Services (Agency posts)	-	-	339	(1)	1	-	339
TOTAL	1 522	1 569	1 569	8	2	(1)	1 578

Extrabudgetary posts:							
Common printing services	9	9	9	-	-	-	9
Library	14	14	14	-	-	-	14
TOTAL	23	23	23	-	-	-	23

New posts for 1985

Table 39

	DG	DDG	D	P-5	P-4	P-3	P-2	P-1	Sub- total	GS	M&O	Total
Department of Technical Co-operation ^{a/}												
Division of Technical Assistance and Co-operation	-	-	-	-	-	-	-	-	-	1	-	1
Department of Nuclear Energy and Safety												
Division of Nuclear Safety	-	-	-	-	1	-	-	-	1	-	-	1
Division of Scientific and Technical Information	-	-	-	-	-	-	-	-	-	1	-	1
Department of Research and Isotopes												
Food and Agriculture	-	-	-	-	-	-	1	-	1	-	-	1
International Centre for Theoretical Physics	-	-	-	2	-	-	-	-	2	2	-	4
Department of Safeguards												
Division of Operations A,B,C	-	-	-	-	-	-	-	-	-	4	-	4
Division of Development and Technical Support	-	-	-	-	-	-	-	-	-	1	-	1
TOTAL	-	-	-	2	1	-	1	-	4	9	-	13

^{a/} The Programme Co-ordination Section, which reports to the Deputy Director General, is shown together with the Division of Technical Assistance and Co-operation.

ADDITIONAL PROFESSIONAL POSTS IN 1985

Department of Nuclear Energy and Safety

Division of Nuclear Safety (1 P-4)

A professional risk assessment officer is needed to promote the application of risk assessment techniques for peaceful uses of nuclear energy.

Department of Research and Isotopes

Joint FAO/IAEA Division of Isotope and Radiation Applications
of Atomic Energy for Food and Agricultural Development (1 P-2)

A professional officer is required to meet the increasing number of requests from developing Member States for assistance in the field of animal production and health.

International Centre for Theoretical Physics (2 P-5)

Following a recommendation of the Ad Hoc Review Committee on future activities at the Centre, two P-5 scientific officers are required to form a nucleus of permanent scientific staff, to be responsible for maintaining a stable research basis and to provide the necessary scientific supervision of the Centre's activities. The Agency's overall contribution to the Centre will not be affected.

TOTAL 4

ADDITIONAL GS POSTS IN 1985

Department of Technical Co-operation

Division of Technical Assistance and Co-operation (1 GS)

An additional GS post is required because of the increase in the technical co-operation procurement workload.

Department of Nuclear Energy and Safety

Division of Scientific and Technical Information (1 GS)

An additional GS clearing house clerk is required for the INIS microfiche operation which is growing in scope and is financially self-supporting.

Department of Research and Isotopes

International Centre for Theoretical Physics (2 GS)

Two additional GS posts are required to carry out secretarial work that has been performed regularly for several years with the help of temporary assistance. The Agency's overall contribution to the Centre will not be affected.

Department of Safeguards

Divisions of Operations A, B and C (4 GS)

Four additional data clerk posts are being requested for 1985 to provide necessary support for safeguards operational work.

Division of Development and Technical Support (1 GS)

The inventory of safeguards equipment is constantly increasing. An additional electronic engineering technician is required in order to provide an adequate level of maintenance and repair and thus to ensure that maximum benefit is derived from this equipment.

TOTAL 9

Reclassification of existing posts

Table 40

	DG	DDG	D	P-5	P-4	P-3	P-2	P-1	Sub- total	GS	M&O	Total
Department of Technical Co-operation												
Division of Technical Assistance and Co-operation	-	-	-	-	-	1	(1)	-	-	-	-	-
Department of Research and Isotopes												
The Agency's Laboratory	-	-	1	(1)	-	-	-	-	-	-	-	-
The Monaco Laboratory	-	-	1	(1)	-	-	-	-	-	-	-	-
Department of Safeguards Operations A, B, C	-	-	-	-	-	5	-	-	5	(9)	-	(4)
Department of Administration	-	-	-	-	-	1	(1)	-	-	-	-	-
Office of Internal Audit and Management	-	-	-	-	-	1	(1)	-	-	-	-	-
Division of Public Information	-	-	-	1	(1)	-	-	-	-	-	-	-
Division of General Services	-	-	-	-	-	-	-	-	-	1	(1)	-
Shared Support Services												
Contracts administration services	-	-	1	(1)	-	-	-	-	-	-	-	-
Data processing services	-	-	-	-	-	-	(1)	-	(1)	1	-	-
TOTAL	-	-	3	(2)	(1)	8	(4)	-	4	(7)	(1)	(4)

RECLASSIFICATION OF POSTS IN 1985

Department of Technical Co-operation

Division of Technical Assistance and Co-operation

One P-2 to P-3 (Field Procurement Officer) (1 P-3)

The incumbent has procurement responsibility for large-scale multi-year projects and highly technical and complex instruments. In accordance with the ICSC Master Standard for the Classification of Professional Posts, such responsibilities are properly classified at the P-3 level.

Department of Research and Isotopes

The Agency's Laboratory

One P-5 to D-1 (Laboratory Head) (1 D-1)

The managerial responsibilities of this post have increased in line with the expanding scope of the Laboratory's work. In addition, the incumbent has become more closely involved in policy development within the Agency. Under the ICSC Master Standard, these responsibilities are properly graded at the D-1 level.

The Monaco Laboratory

One P-5 to D-1 (Head, Monaco Laboratory)

(1 D-1)

The incumbent is responsible for directing the scientific programme and for the administration of the Monaco Laboratory. This involves participation in policy-making activities and maintaining relations with local authorities, Member States and other international organizations. Such responsibilities are appropriate to the D-1 level under the ICSC Master Standard.

Department of Safeguards

Divisions of Operations A, B and C

9 GS to 5 P-3

(5 P-3)

In May 1982, a proposal was submitted to the Board that the annual increase of 10 professional inspector posts be replaced by annual increases of 17 GS inspection assistant posts. Difficulties are being experienced in recruiting candidates with the necessary qualifications to carry out inspection assistant duties and, although the basic objectives of the inspection assistance programme are still believed to be valid, a reduction in the rate of implementation of this programme is now being proposed. Accordingly, it is proposed in 1985 to revert partially to the original scheme and replace nine of the GS inspection assistant posts by five professional inspector posts at the P-3 level. This exchange would have no effect on the total safeguards budget for 1985.

Department of Administration

One P-2 to P-3 (Administrative Officer)

(1 P-3)

In addition to the normal functions of an Administrative Officer, the incumbent is responsible for preparing substantive background information and recommendations on matters submitted for action or clearance by the Deputy Director General for Administration. According to the ICSC Master Standard, such duties and responsibilities are appropriate to the P-3 level.

Office of Internal Audit and Management

One P-2 to P-3 (Evaluation Officer)

(1 P-3)

This post involves responsibility for co-ordinating evaluation functions throughout the Agency, liaising with the United Nations Joint Inspection Unit and participating in management service activities. Under the ICSC Master Standard, such responsibilities are properly classified at the P-3 level.

Division of General Services

One M&O to GS (Messenger Service)

(1 GS)

A review showed that the duties of this post have changed so that clerical aspects are preponderant and the post should now be classified at the GS grade.

Division of Public Information

One P-4 to P-5 (Public Information Officer)

(1 P-5)

This post involves participation in long-term programme planning for the Division and extensive day-to-day supervisory responsibilities. Such duties and responsibilities are properly classified at the P-5 level according to the ICSC Master Standard.

Shared Support Services

Contract Administration Services^{a/}

One P-5 to D-1 (RCA Co-ordinator)

(1 D-1)

The incumbent is responsible for co-ordinating the development and implementation of co-operative research and technical assistance projects among the 13 Member States participating in the RCA programme for Asia and the Pacific. Under the ICSC Master Standard, such responsibilities should be classified at the D-1 level.

Data Processing Services^{b/}

One P-2 to GS (Office Automation Assistant)

(1 GS)

This post involves providing assistance to users concerning the design and modification of their office automation systems and helping them to solve practical problems in the use of such systems. Such responsibilities are properly classified at the GS level.

^{a/} In the Agency's organizational structure, this service falls within the Department of Research and Isotopes.

^{b/} In the Agency's organizational structure, the Division of Scientific and Technical Information is responsible for this service.

Adjusted Manning Table for 1984

Table 41

	DG	DDG	D	P-5	P-4	P-3	P-2	P-1	Sub-total	GS	M&O	Total
Office of the Director General	1	-	1	1	1	-	1	-	5	4	-	9
Secretariat of the Policy-making Organs	-	-	1	1	-	1	-	-	3	2	-	5
Sub-total	1	-	2	2	1	1	1	-	8	6	-	14
Department of Technical Co-operation ^{a/}	-	1	-	-	-	-	1	-	2	2	-	4
Division of Technical Assistance and Co-operation	-	-	1	10	9	11	7	-	38	47	-	85
Sub-total	-	1	1	10	9	11	8	-	40	49	-	89
Department of Nuclear Energy and Safety	-	1	-	-	-	1	-	1	3	2	-	5
Division of Nuclear Power	-	-	1	10	6	5	1	-	23	12	-	35
Division of Nuclear Fuel Cycle	-	-	1	7	13	1	-	-	22	13	-	35
Division of Nuclear Safety	-	-	1	15	11	3	-	-	30	22	-	52
Division of Scientific and Technical Information	-	-	1	3	5	8	-	-	17	29	-	46
Sub-total	-	1	4	35	35	18	1	1	95	78	-	173
Department of Research and Isotopes	-	1	-	1	-	1	-	-	3	3	-	6
Division of Food and Agriculture ^{b/}	-	-	-	6	6	2	1	-	15	8	-	23
Division of Life Sciences	-	-	1	4	6	2	-	-	13	9	-	22
Division of Research and Labs	-	-	1	7	11	4	4	-	27	18	-	45
The Agency's Laboratory	-	-	-	4	11	8	6	1	30	55	27	112
The Monaco Laboratory	-	-	-	2	3	1	3	1	10	13	-	23
International Centre for Theoretical Physics	-	-	-	2	1	2	-	-	5	19	-	24
Sub-total	-	1	2	26	38	20	14	2	103	125	27	255
Department of Safeguards	-	1	-	-	-	-	-	-	1	1	-	2
Division of Operations A	-	-	1	9	24	31	-	-	65	33	-	98
Division of Operations B	-	-	1	7	16	10	-	-	34	17	-	51
Division of Operations C	-	-	1	8	30	27	-	-	66	35	-	101
Division of Development ^{c/}	-	-	1	11	19	3	-	-	34	26	-	60
Division of Information Treatment ^{d/}	-	-	1	5	9	2	1	9	27	34	-	61
Division of Evaluation ^{e/}	-	-	1	5	13	2	-	-	21	14	-	35
Division of Standardization ^{f/}	-	-	1	5	3	2	1	-	12	14	-	26
Sub-total	-	1	7	50	114	77	2	9	260	174	-	434
Department of Administration	-	1	-	1	-	-	1	-	3	2	-	5
Office of Internal Audit and Management	-	-	-	1	2	1	2	-	6	5	-	11
Division of Budget and Finance	-	-	1	4	5	6	4	-	20	45	-	65
Division of General Services	-	-	1	2	1	2	2	1	9	69	27	105
Division of External Relations	-	-	2	3	2	1	1	-	9	13	-	22
Division of Public Information	-	-	1	-	2	1	1	-	5	8	-	13
Legal Division	-	-	1	3	2	1	-	-	7	4	-	11
Division of Personnel	-	-	1	2	2	4	2	-	11	22	-	33
Sub-total	-	1	7	16	16	16	13	1	70	168	27	265
Shared support services	-	-	-	-	-	-	-	-	-	-	-	-
Contracts administration services	-	-	-	1	1	-	-	-	2	4	-	6
Conference services	-	-	-	1	-	1	3	-	5	7	-	12
Translation and records services	-	-	1	4	12	22	-	-	39	35	1	75
Interpretation	-	-	-	1	4	3	-	-	8	1	-	9
Medical services	-	-	1	-	2	-	-	-	3	13	3	19
Library	-	-	-	1	-	1	2	1	5	10	-	15
Data processing services	-	-	-	3	9	11	7	5	35	26	-	61
Printing and publishing services	-	-	1	1	1	5	8	-	16	108	18	142
Sub-total	-	-	3	12	29	43	20	6	113	204	22	339
TOTAL	1	5	26	151	242	186	59	19	689	804	76	1 569

^{a/}, ^{b/}, ^{c/}, ^{d/}, ^{e/} and ^{f/}: See footnotes on Table 37.

Change in the presentation of the manpower of Shared Support Services

Table 42 (a)

	DG	DDG	D	P-5	P-4	P-3	P-2	P-1	Sub- total	GS	M&O	Total
Department of Technical Co-operation												
Division of Publications ^{a/}	-	-	(1)	(1)	(1)	(5)	(8)	-	(16)	(108)	(18)	(142)
Department of Nuclear Energy and Safety												
Division of Scientific and Technical Information ^{b/}	-	-	-	(4)	(9)	(13)	(10)	(6)	(42)	(34)	-	(76)
Department of Research and Isotopes ^{c/}	-	-	-	-	(1)	-	-	-	(1)	(4)	-	(5)
Department of Administration												
Division of External Relations ^{d/}	-	-	-	(2)	(4)	(4)	(3)	-	(13)	(7)	-	(20)
Division of Languages ^{e/}	-	-	(1)	(4)	(12)	(22)	-	-	(39)	(35)	(1)	(75)
Division of Personnel ^{f/}	-	-	(1)	-	(2)	-	-	-	(3)	(13)	(3)	(19)
Shared Support Services												
Contracts administration services	-	-	-	-	1	-	-	-	1	4	-	5
Conference services	-	-	-	1	-	1	3	-	5	6	-	11
Translation and records services	-	-	1	4	12	22	-	-	39	35	1	75
Interpretation	-	-	-	1	4	3	-	-	8	1	-	9
Medical services	-	-	1	-	2	-	-	-	3	13	3	19
Library	-	-	-	1	-	1	2	-	4	11	-	15
Data processing services	-	-	-	3	9	12	8	6	38	23	-	61
Printing and publishing services	-	-	1	1	1	5	8	-	16	108	18	142
TOTAL	-	-	-	-	-	-	-	-	-	-	-	-

^{a/} Total Division

^{b/} Library and Data processing services

^{c/} Contracts administration services

^{d/} Conference services and Interpretation

^{e/} Total Division

^{f/} Medical services

Proposed transfer of posts in 1984

Table 42 (b)

	DG	DDG	D	P-5	P-4	P-3	P-2	P-1	Sub- total	GS	M&O	Total
Office of the Director General	-	-	-	-	-	-	-	-	-	(1)	-	(1)
Department of Research and Isotopes	-	-	-	-	-	1	(1)	-	-	-	-	-
Division of Food and Agriculture ^{a/}	-	-	-	-	(1)	1	-	-	-	-	-	-
Division of Life Sciences	-	-	-	(1)	1	-	-	-	-	-	-	-
Division of Research and Labs	-	-	-	-	-	(2)	1	-	(1)	-	-	(1)
Department of Safeguards	-	-	-	-	-	-	-	-	-	(1)	-	(1)
Division of Operations A	-	-	-	-	(2)	1	-	-	(1)	1	-	-
Division of Operations B	-	-	-	1	(1)	(3)	-	-	(3)	(2)	-	(5)
Division of Operations C	-	-	-	(1)	2	2	-	-	3	-	-	3
Division of Development ^{b/}	-	-	-	(1)	1	-	-	-	-	-	-	-
Division of Information Treatment ^{c/}	-	-	-	(1)	1	-	-	-	-	-	-	-
Division of Evaluation ^{d/}	-	-	-	-	-	-	-	-	-	1	-	1
Division of Standardization ^{e/}	-	-	-	2	(1)	-	-	-	1	1	-	2
Department of Administration												
Office of Internal Audit and Management	-	-	-	-	1	(1)	-	-	-	1	-	1
Division of Budget and Finance	-	-	-	-	-	-	2	-	2	(2)	-	-
Division of General Services	-	-	-	-	-	-	-	-	-	(1)	-	(1)
Division of External Relations	-	-	-	-	-	1	(1)	-	-	-	-	-
Legal Division	-	-	-	-	(1)	1	-	-	-	-	-	-
Shared Support Services												
Contracts administration services	-	-	-	1	-	-	-	-	1	-	-	1
Conference services	-	-	-	-	-	-	-	-	-	1	-	1
Library	-	-	-	-	-	-	-	1	1	(1)	-	-
Data processing services	-	-	-	-	-	(1)	(1)	(1)	(3)	3	-	-
TOTAL	-	-	-	-	-	-	-	-	-	-	-	-

^{a/} Joint FAO/IAEA Division of Isotope and Radiation Applications of Atomic Energy
for Food and Agricultural Development

^{b/} Division of Development and Technical Support

^{c/} Division of Safeguards Information Treatment

^{d/} Division of Safeguards Evaluation

^{e/} Division of Standardization, Training and Administrative Support

In Tables 37 to 42(b), the Shared Support Services are shown separately from the Departments to which they belong in order to indicate the total manpower of these services. Table 42(a) shows the transition from the old to the new presentation of the Manning Table. The new presentation does not affect the organizational structure of the Departments and Divisions concerned.

Table 42(b) shows transfers of posts within the Secretariat which the Director General has approved in order to make use of available Manning Table posts following the annual survey of manpower requirements. The explanations are given below.

- One P-5 post is transferred from the Division of Life Sciences to Contract Administration Services^{a/} to create a post for an RCA Co-ordinator. One P-4 post is transferred from the Division of Food and Agriculture to the Division of Life Sciences, and one P-3 post is transferred from the Division of Research and Laboratories to the Division of Food and Agriculture.
- One P-3 post from the Division of Research and Laboratories is exchanged with a P-2 post in the Department of Research and Isotopes to accommodate the upgrading of the Departmental Administrative Officer from the P-2 to the P-3 level.
- One GS post is transferred from the Office of the Director General to the Office of Internal Audit and Management Services in order to strengthen financial audit.
- One P-4 post from the Legal Division is exchanged with a P-3 post in the Office of Internal Audit and Management Services to accommodate the upgrading of an Auditor from the P-3 to the P-4 level.
- Two P-2 posts in Data Processing Services^{b/} are exchanged with two GS posts in the Division of Budget and Finance in order to accommodate organizational changes.
- One P-3 post in Data Processing Services^{b/} is exchanged with a P-2 post in the Division of External Relations to accommodate the upgrading of a Relations and Liaison Specialist from the P-2 to the P-3 level.
- One GS post in the Division of General Services is transferred to Conference Services in connection with the reorganization of the Information Desk Service.
- One P-1 post in Data Processing Services^{b/} is exchanged with a GS post from the Library.
- Several posts are transferred within the Department of Safeguards in order to take into account changes in workload projections.

^{a/} See footnote ^{a/} on page 148

^{b/} See footnote ^{b/} on page 148

APPROPRIATION SECTION 1

TECHNICAL ASSISTANCE AND CO-OPERATION

APPROPRIATION SECTION 1: TECHNICAL ASSISTANCE AND CO-OPERATION

Summary of costTable 43

Item of expenditure	1983 Actual obligations	1984 Budget	Programme increase (decrease) %		1985 at 1984 price	Price increase %	1985 Estimate	1986 Preliminary estimate
Salaries for established posts	2 183 583	2 793 000	20 000	0.7	2 813 000	5.5	2 968 000	3 354 000
Consultants	13 648	-	52 600	-	52 600	5.0	55 200	62 000
Overtime	1 838	2 500	200	8.0	2 700	5.0	2 800	3 000
Temporary assistance	77 435	35 800	50 700	141.6	86 500	5.0	90 800	103 000
Common staff costs	764 974	921 800	7 000	0.7	928 800	8.7	1 008 900	1 140 600
Common supplies	3 759	-	-	-	-	-	-	-
Hospitality	756	1 200	-	-	1 200	5.0	1 300	1 400
Travel	52 426	115 600	(15 600)	(13.5)	100 000	7.0	107 000	120 000
Common services	17 202	14 100	100	0.7	14 200	5.5	15 000	17 000
Other	-	-	84 000	-	84 000	7.1	90 000	112 000
Sub-total: Direct costs	3 115 621	3 884 000	199 000	5.1	4 083 000	6.3	4 339 000	4 913 000
Translation and records services	255 576	348 000	-	-	348 000	6.1	369 000	391 000
Data processing services	169 324	273 000	41 000	15.0	314 000	4.0	327 000	343 000
Printing and publishing services	125 634	137 000	(10 000)	(7.3)	127 000	5.5	134 000	142 000
Sub-total: Shared costs	550 534	758 000	31 000	4.1	789 000	5.2	830 000	876 000
TOTAL	3 666 155	4 642 000	230 000	5.0	4 872 000	6.1	5 169 000	5 789 000

APPROPRIATION SECTION 1 : TECHNICAL ASSISTANCE AND CO-OPERATION

Summary of manpowerTable 44

Grade of post	Number of established posts					1985
	1983 Adjusted	1984	1984 Adjusted	Change		
				New Posts	Reclassi- fications	
D	1	1	1	-	-	1
P-5	10	10	10	-	-	10
P-4	9	9	9	-	-	9
P-3	9	11	11	-	1	12
P-2	7	7	7	-	(1)	6
Sub-total	36	38	38	-	-	38
GS	46	47	47	1	-	48
TOTAL	82	85	85	1	-	86

APPROPRIATION SECTION 2

NUCLEAR ENERGY AND SAFETY

APPROPRIATION SECTION 2 : NUCLEAR ENERGY AND SAFETY

Summary of costTable 45

Item of expenditure	1983 Actual obligations	1984 Budget	Programme increase (decrease) %		1985 at 1984 price	Price increase %	1985 Estimate	1986 Preliminary estimate
Salaries for established posts	5 028 857	6 278 000	(71 000)	(1.1)	6 207 000	5.5	6 549 000	7 047 000
Consultants	326 392	320 800	69 000	21.5	389 800	5.0	409 300	445 000
Overtime	11 821	13 500	(1 800)	(13.5)	11 700	5.0	12 400	13 500
Temporary assistance	79 605	75 200	8 200	10.9	83 400	5.0	87 600	93 800
Common staff costs	1 761 759	2 069 300	(18 900)	(0.9)	2 050 400	8.7	2 227 000	2 395 500
Scientific equipment	46 938	39 000	(5 000)	(12.8)	34 000	5.0	35 700	38 000
Common equipment	2 389	54 800	(10 500)	(19.2)	44 300	4.0	46 100	56 200
Scientific supplies	21 834	10 100	(100)	(0.1)	10 000	4.0	10 400	11 000
Common supplies	32 425	36 700	200	0.5	36 900	4.0	38 200	41 500
Scientific and technical contracts	640 819	703 300	80 700	11.5	784 000	5.0	823 300	920 000
Training	-	17 300	700	4.0	18 000	5.5	18 900	20 000
Conferences, symposia, seminars	298 064	333 000	(58 000)	(17.4)	275 000	6.5	293 000	407 000
Technical committees, advisory groups	817 576	889 000	145 000	16.3	1 034 000	6.5	1 101 000	1 446 000
Hospitality	27 358	35 300	2 100	5.9	37 400	5.0	39 200	42 500
Travel	242 640	295 500	34 900	11.8	330 400	7.0	353 400	380 000
Common services	247 092	204 200	51 500	25.2	255 700	5.0	269 500	297 000
Other	16 582	-	112 000	-	112 000	5.4	118 000	266 000
Sub-total: Direct costs	9 602 151	11 375 000	339 000	3.0	11 714 000	6.1	12 432 000	13 920 000
Contracts administration services	42 682	75 000	(14 000)	(18.7)	61 000	6.4	65 000	69 000
Conference services	127 132	172 000	25 000	14.5	197 000	6.3	209 000	220 000
Translation and records services	632 747	645 000	(152 000)	(23.6)	493 000	6.1	522 000	554 000
Library	800 338	940 000	-	-	940 000	5.4	991 000	1 050 000
Data processing services	1 097 813	1 559 000	(294 000)	(18.9)	1 265 000	4.0	1 315 000	1 378 000
Printing and publishing services	1 955 997	2 146 000	96 000	4.5	2 242 000	5.5	2 365 000	2 502 000
Sub-total: Shared costs	4 656 709	5 537 000	(339 000)	(6.1)	5 198 000	5.2	5 467 000	5 773 000
TOTAL	14 258 860	16 912 000	-	-	16 912 000	5.8	17 899 000	19 693 000

APPROPRIATION SECTION 2 : NUCLEAR ENERGY AND SAFETY

Expenditure by Division

Table 46

Division	1983 Actual obligations	1984 Budget	Programme increase (decrease) %	1985 at 1984 price	Price increase %	1985 Estimate	1986 Preliminary estimate
Nuclear Power	2 781 105	3 225 000	- -	3 225 000	5.8	3 412 000	3 754 000
Nuclear Fuel Cycle	2 704 945	3 237 000	- -	3 237 000	6.0	3 431 000	3 775 000
Nuclear Safety	4 628 084	5 525 000	- -	5 525 000	6.0	5 854 000	6 442 000
Scientific and Technical Information	4 144 726	4 925 000	- -	4 925 000	5.6	5 202 000	5 722 000
Total Appropriation Section	14 258 860	16 912 000	- -	16 912 000	5.8	17 899 000	19 693 000

APPROPRIATION SECTION 2 : NUCLEAR ENERGY AND SAFETY

Manpower by Division

Table 47

Division	1984			1985		
	P	GS	Total	P	GS	Total
Nuclear Power	23	12	35	23	12	35
Nuclear Fuel Cycle	22	13	35	22	13	35
Nuclear Safety	30	22	52	31	22	53
Scientific and Technical Information	17	29	46	17	30	47
Total Appropriation Section	92	76	168	93	77	170

D I V I S I O N O F N U C L E A R P O W E R

ACTIONS PLANNED FOR 1985-86

Table 48Sub-programme 1.1.1 Energy, electricity and nuclear power planning

PROJECT: NUCLEAR POWER PLANNING STUDIES IN DEVELOPING COUNTRIES

Task	Beneficiary	Action or source	Services needed	Year of completion ^{a/}
1. Improvement and testing of computer model for projecting electricity demand in developing countries (Aachen-EDE model)	Electricity supply planners in developing Member States	Energy and nuclear power planning (ENPP) studies	Data processing	User's manual, 1985
2. Technical report ^{b/} - Guidebook on electricity demand forecasting	As above	AG 85/2 AG 86/2		1986
3. WASP computer model improvements (reduce running time and adapt to small computers)	As above	AG 85/1 AG 86/1	Data processing	User's manual, 1986
4. Technical document on experience with electricity and nuclear power planning in developing countries	As above	AG 86/4		1987
5. Advisory missions to about 12 Member States per year	As above	Technical co-operation, IBRD	As above	

PROJECT: ANALYSIS OF DEMAND FOR ENERGY, ELECTRICITY AND NUCLEAR POWER

Task	Beneficiary	Action or source	Services needed	Year of completion
6. Technical report - Energy, Electricity and Nuclear Power Estimates for the Period up to 2000 (RDS No. 1)	Energy, electricity and nuclear power planning ministries in all Member States	TC 85/3 TC 86/3	Data processing	Annually
7. Updating Energy and Economic Data Bank (EEDB)	As above	Annual data tapes from UN Statistical Office, IBRD	Data processing	
8. Annual training courses on energy planning and on electric system expansion planning	Electricity supply planners in developing Member States	Technical co-operation		

^{a/} The date given is that by which the manuscript of documents is due to be completed.

^{b/} Throughout these Tables, the term "Technical document" is used to denote an unpriced publication while the terms "Technical report" and "Safety Series" indicate priced publications.

Table 49

Sub-programme 1.1.2 Manpower and infrastructure requirements and development

PROJECT: MANPOWER AND INFRASTRUCTURE REQUIREMENTS AND DEVELOPMENT				
Task	Beneficiary	Action or source	Services needed	Year of completion
1. Technical report - Guidebook on the training of technicians for nuclear power programmes	Planning and educational organizations, nuclear power plant owners	TC 85/4 AG 85/5 TC 86/6		1986
2. Technical report - Guidebook on continuing engineering education for nuclear engineers	As above	TC 86/5		1987
3. Technical report - Guidebook on the assessment of electric power grids for nuclear power	As above	AG 85/6		1985
4. Technical report - Guidebook on the assessment and development of supporting industrial infrastructures	As above	AG 85/7		1985
5. Technical report - Guidebook on research and development and development support for nuclear power	As above, and nuclear and industrial research institutes	AG 86/7		1987
6. Technical report on experience in nuclear technology transfer	As above	AG 86/8		1987
7. Advisory missions to about 8 Member States per year	As above	Technical co-operation		
8. Seminar on supporting industrial infrastructure requirements and development for nuclear power plants (1986)	As above			Summary report, 1986

Table 50

Sub-programme 1.1.3 Small and medium power reactors (SMPRs)

PROJECT: SMALL AND MEDIUM POWER REACTORS				
Task	Beneficiary	Action or source	Services needed	Year of completion
1. Technical report on SMPR evaluation at specific site(s)	Prospective SMPR buyers in developing countries	AG 85/8 (one or more), Cost-free experts		1986
2. Technical report on new SMPR designs and their status	As above	AG 86/9 Information from potential suppliers		1986

Table 51

Sub-programme 1.2.1 Technical performance of nuclear power

PROJECT: SURVEY OF NUCLEAR POWER OPERATING EXPERIENCE				
Task	Beneficiary	Action or source	Services needed	Year of completion
1. Technical report on operating experience with nuclear power reactors in Member States	NPP owners, operators and planners in all Member States	TC 85/9 New annual questionnaire developed with CEC, UNIPED, WEC	Data processing	Annually
2. Technical report on operating experience performance analysis	As above	TC 85/9 (format review)	Data processing	Annually
3. Technical report - Power Reactors in the World (RDS No. 2)	As above	Annual questionnaire	Data processing	Annually
4. Symposium on advances in nuclear power plant availability, maintainability and operation (1985)	As above			Proceedings, 1985
PROJECT: NUCLEAR POWER PLANT SYSTEM PERFORMANCE				
Task	Beneficiary	Action or source	Services needed	Year of completion
5. Technical document - Annual review of nuclear power plant reliability	NPP owners, planning organizations, designers, manufacturers and inspection organizations	AG 85/10, AG 86/10 IWG 85/11, IWG 86/11	PRIS analyses, data processing	First report 1986, later annually
6. Technical documents on specific reliability problem areas (subjects to be decided after IWG meetings in mid-1984)	As above	SPs 85/12 SPs 86/12		3 reports annually
7. Technical report on optimization of steel surveillance programmes and their analyses	As above, and regulatory bodies	CRP 84-87	Steel specimens from major producers	1987
8. Technical report on advanced modelling and uses for nuclear power plant simulators	As above	CRP 85-88		1988
9. Symposium on the technical and economic performance of nuclear power plants (1986) (jointly with sub-programme 1.2.2)	As above	AG 86/13		Proceedings, 1986

Table 52

Sub-programme 1.2.2 Economic performance of nuclear power

PROJECT: ECONOMIC PERFORMANCE OF NUCLEAR POWER				
Task	Beneficiary	Action or source	Services needed	Year of completion
1. Technical report - Revision of Guidebook on Economic Evaluation of Bids for Nuclear Power Plants (TRS No. 175)	NP planners and operators in all Member States	AG 84		1985
2. Technical report on the costs and benefits of improving nuclear power plant availability	NPP owners, operators and planners in all Member States	AG 85/13 Information from Member States		1986
3. Technical report on the economic implications of nuclear power programmes in developing countries	NP and energy system planners in developing Member States	CRP 84-87		1988
4. Development of normalized nuclear power cost data for EEDB	As above	AG 86/14	Data processing	1986
5. Seminar on the costs and financing of nuclear power programmes in developing countries (1985)	NP planning and operating organizations in developing Member States	AG 85/14		Summary report, 1986
6. Symposium on the technical and economic performance of nuclear power plants (1986) (jointly with sub-programme 1.2.1)	NPP owners, planning organizations, designers, manufacturers and inspection organizations	AG 86/13		Proceedings, 1986

Table 53Sub-programme 1.2.3 Quality assurance and control

PROJECT: QUALITY ASSURANCE AND CONTROL				
Task	Beneficiary	Action or source	Services needed	Year of completion
1. Technical report - Manual on QA in site selection	NPP planners and owners, regulatory bodies	AG 85/15		1985
2. Technical report - Manual on QA for software in control and instrumentation systems	As above, and designers, manufacturers and inspection organizations	AG 86/16		1986
3. Technical report - Manual on non-conformance control and corrective actions	As above	AG 85/16 AG 86/15		1986 or 1987
4. Technical report on the effectiveness of QA	As above	AG 84 AG 85/17		1986
5. Internal report on interface control in NUSS QA guides and manuals	Secretariat	AG 86/17		1986
6. One interregional training course and 1-2 national training courses on QA (annual)	NPP planners and owners, regulatory bodies		Technical co-operation	
7. Seminar on quality assurance for nuclear power plants (1986)	As above			Summary report, 1986

Table 54Sub-programme 1.5.1 Low-temperature nuclear heat applications

PROJECT: LOW-TEMPERATURE NUCLEAR HEAT APPLICATIONS				
Task	Beneficiary	Action or source	Services needed	Year of completion
1. Technical report on the potential of low-temperature nuclear heat applications	NP planning organizations	AG 85/18		1986
2. Technical report on nuclear power plants for district heating	As above	AG 86/18		1987

Table 55

Sub-programme 1.5.2 Advanced fission reactor systems

PROJECT: FAST BREEDER REACTORS				
Task	Beneficiary	Action or source	Services needed	Year of completion
1. Technical document - Annual review of liquid metal fast breeder reactor national development programmes	FBR programme planners in Member States	IWG 85/19 IWG 86/19	Status reports presented by individual Member States	Annually
2. Technical documents (6) on fast breeder reactor technology development (topics to be selected by IWG)	FBR programme planners, owners, operators and specialists in development programmes in Member States	SPs 85/20 SPs 86/20		1985 1986
3. Technical report on signal processing techniques for sodium boiling noise detection	As above	CRP 84-87		1987
4. Symposium on fast breeder reactor experience and future trends (1985)	As above			Proceedings, 1985
PROJECT: HIGH TEMPERATURE REACTORS AND THEIR APPLICATIONS				
Task	Beneficiary	Action or source	Services needed	Year of completion
5. Technical document - Review of GCR national development programmes	GCR programme planners in Member States	IWG 86/21		1986
6. Technical documents (4) on GCR technology development (topics to be selected by IWG)	GCR programme planners, owners, operators and specialists in development programmes in Member States	SPs 85/21 SPs 86/22		1985 1986
7. Technical report on high-temperature metallic materials	As above	CRP 84-88	Development and supporting analysis	
PROJECT: POTENTIAL OF ADVANCED SYSTEMS				
Task	Beneficiary	Action or source	Services needed	Year of completion
8. Technical report on the potential contribution of advanced reactors to future world energy supply	Planners of advanced development programmes in Member States	CRP 84-87	Data processing	1987
9. Technical document on advanced LWR/HWR technology	As above	SP 85/22		1985
10. Technical report on advanced LWR technology	As above	TC 86/23		1986

Table 56Sub-programme 1.5.3 Nuclear fusion

PROJECT: NUCLEAR FUSION ENGINEERING				
Task	Beneficiary	Action or source	Services needed	Year of completion
1. Technical report on fusion reactor design and technology	Programme planners, engineers and scientists for fusion reactor development programmes in Member States	TC 85/23		1986
2. Technical reports (3) on fusion reactor engineering and development	As above	TC 85/24 TCs 86/24		1985 1986
3. Technical report on fusion reactor technology	As above	CRP 86-88	Development and supporting analysis	
4. Technical report on the status of fusion reactor engineering	As above	Status reports provided by individual Member States and consultants		1986

TECHNICAL COMMITTEES, ADVISORY GROUPS AND SPECIALISTS' MEETINGS IN 1985-86

Within the limits of the appropriation and subject to the requirements of the programme as outlined for 1985-86, it is planned to hold the meetings listed below. The reference following each meeting is to the relevant table of planned actions given above.

1985Table

- | | | |
|----|---|--------------|
| 1. | Advisory Group to review experience with WASP for nuclear power planning in developing countries | 48, No. 3 |
| 2. | Advisory Group on electricity demand forecasting in nuclear power planning | 48, No. 2 |
| 3. | Technical Committee on energy and nuclear power planning in the UN system and other international organizations | 48, No. 6 |
| 4. | Technical Committee on technician training practices | 49, No. 1 |
| 5. | Advisory Group on technician training guidelines | 49, No. 1 |
| 6. | Advisory Group on grid rigidity requirements | 49, No. 3 |
| 7. | Advisory Group on industrial infrastructures | 49, No. 4 |
| 8. | Advisory Group on SMPR evaluation at specific site(s) | 50, No. 1 |
| 9. | Technical Committee on the evaluation of nuclear power plant operating experience | 51, Nos 1, 2 |

<u>1985 (cont.)</u>	<u>Table</u>
10. Senior Advisory Group on nuclear power plant reliability	51, No. 5
11. Technical Committee (IWG) on reliability of reactor pressure components	51, No. 5
12. Three Specialists' Meetings on subjects which will be decided in 1984	51, No. 6
13. Advisory Group on the costs and benefits of improving nuclear power plant availability	52, No. 2
14. Advisory Group to assist with preparations for the seminar on the costs and financing of nuclear power programmes in developing countries	52, No. 5
15. Advisory Group on QA in site selection	53, No. 1
16. Advisory Group on non-conformance and corrective action	53, No. 3
17. Advisory Group on the effectiveness of QA	53, No. 4
18. Advisory Group on the potential of low-temperature heat application	54, No. 1
19. Technical Committee (IWG) on fast breeder reactor development	55, No. 1
20. Three Specialists' Meetings on fast breeder reactors	55, No. 2
21. Two Specialists' Meetings on gas-cooled reactors	55, No. 6
22. Specialists' Meeting on advanced light and/or heavy water reactors	55, No. 9
23. Technical Committee on fusion reactor design and technology	56, No. 1
24. Technical Committee on fusion reactor engineering	56, No. 2
<u>1986</u>	<u>Table</u>
1. Advisory Group to review progress in improving the WASP computer model	48, No. 3
2. Advisory Group on electricity demand forecasting in nuclear power planning	48, No. 2
3. Technical Committee on energy and nuclear power planning in the UN system and other international organizations	48, No. 6
4. Advisory Group on improving the effectiveness of electricity and nuclear power planning in developing countries	48, No. 4
5. Technical Committee on continuing engineering education	49, No. 2
6. Advisory Group on the training of technicians for nuclear power programmes	49, No. 1
7. Advisory Group on research and development support for nuclear power programmes	49, No. 5

<u>1986 (cont.)</u>	<u>Table</u>
8. Advisory Group on nuclear technology transfer experience	49, No. 6
9. Technical Committee on new SMPR designs	50, No. 2
10. Senior Advisory Group on nuclear power plant reliability	51, No. 5
11. Technical Committee (IWG) on nuclear power plant control and instrumentation	51, No. 5
12. Three Specialists' Meetings on subjects to be proposed mid-1984	51, No. 5
13. Advisory Group to assist with preparations for the symposium on the technical and economic performance of nuclear power plants	51, No. 9 52, No. 6
14. Advisory Group on EEDB nuclear power cost data, as input for nuclear power planning studies in developing countries	52, No. 4
15. Advisory Group on non-conformance and corrective action	53, No. 3
16. Advisory Group on QA for software for control and instrumentation	53, No. 2
17. Advisory Group on interface control in NUSS QA guides and manuals	53, No. 5
18. Advisory Group on nuclear power plant designs for district heating	54, No. 2
19. Technical Committee (IWG) on fast breeder reactor development	55, No. 1
20. Three Specialists' Meetings on fast breeder reactors	55, No. 21
21. Technical Committee (IWG) on gas-cooled reactor development	55, No. 5
22. Two Specialists' Meetings on gas-cooled reactors	55, No. 6
23. Technical Committee on advanced light- and heavy-water reactors	55, No. 10
24. Two Technical Committees on fusion reactor engineering	56, No. 2

Division of Nuclear Power

Summary of costTable 57

Item of expenditure	1983 Actual obligations	1984 Budget	Programme increase (decrease) %		1985 at 1984 price	Price increase %	1985 Estimate	1986 Preliminary estimate
Salaries for established posts	1 220 914	1 465 000	(47 000)	(3.2)	1 418 000	5.5	1 496 000	1 660 000
Consultants	78 849	84 600	16 400	19.4	101 000	5.0	106 000	118 000
Temporary assistance	16 287	7 200	17 300	240.3	24 500	5.0	25 700	28 000
Common staff costs	427 723	482 200	(13 300)	(2.8)	468 900	8.7	508 200	564 300
Common equipment	-	2 200	(200)	(9.1)	2 000	4.0	2 100	2 200
Common supplies	2 820	1 100	2 000	181.8	3 100	4.0	3 200	3 500
Scientific and technical contracts	101 231	128 000	19 000	14.8	147 000	5.0	154 000	182 000
Conferences, symposia, seminars	42 830	68 000	8 000	11.8	76 000	6.5	81 000	67 000
Technical committees, advisory groups	102 497	95 000	46 000	48.4	141 000	6.5	150 000	190 000
Hospitality	5 936	8 000	3 000	37.5	11 000	5.0	11 500	13 000
Travel	42 305	53 500	(4 000)	(7.5)	49 500	7.0	53 000	59 000
Common services	6 841	5 200	800	15.4	6 000	5.5	6 300	7 000
Sub-total: Direct costs	2 048 233	2 400 000	48 000	2.0	2 448 000	6.1	2 597 000	2 894 000
Contracts administration services	8 787	15 000	(3 000)	(20.0)	12 000	6.4	13 000	14 000
Conference services	30 006	45 000	19 000	42.2	64 000	6.3	68 000	72 000
Translation and records services	73 348	87 000	(14 000)	(16.1)	73 000	6.1	77 000	82 000
Data processing services	267 941	390 000	(35 000)	(9.0)	355 000	4.0	369 000	387 000
Printing and publishing services	352 790	288 000	(15 000)	(5.2)	273 000	5.5	288 000	305 000
Sub-total: Shared costs	732 872	825 000	(48 000)	(5.8)	777 000	4.9	815 000	860 000
TOTAL	2 781 105	3 225 000	-	-	3 225 000	5.8	3 412 000	3 754 000

Division of Nuclear Power

Summary of manpowerTable 58

Grade of post	Number of established posts					1985
	1983 Adjusted	1984	1984 Adjusted	Change		
				New Posts	Reclassi- fications	
D	1	1	1	-	-	1
P-5	10	10	10	-	-	10
P-4	6	6	6	-	-	6
P-3	5	5	5	-	-	5
P-2	-	1	1	-	-	1
Sub-total	22	23	23	-	-	23
GS	12	12	12	-	-	12
TOTAL	34	35	35	-	-	35

Division of Nuclear Power

Summary of manpower and costs by SectionTable 59

Section	1984 Estimate			1985 Estimate		
	P	GS	Costs	P	GS	Costs
Energy forecasts and the economic assessment of nuclear power and its fuel cycle	8.4	3.8	1 028 000	8.4	3.8	1 174 000
Power reactors of proven types - Nuclear power programmes and technology	10.4	5.8	1 651 000	10.4	5.8	1 602 000
Advanced nuclear power technology	4.2	2.4	546 000	4.2	2.4	636 000
Total	23.0	12.0	3 225 000	23.0	12.0	3 412 000

D I V I S I O N O F N U C L E A R F U E L C Y C L E

ACTIONS PLANNED FOR 1985-86

Table 60Sub-programme 1.3.1 Resources and supply of uranium and thorium

PROJECT: RESOURCE EVALUATION				
Task	Beneficiary	Action or source	Services needed	Year of completion
1. Technical report on uranium resources	Uranium producers and consumers, Ministries of energy and mines, Atomic Energy Commissions	AG 85/2 AG 86/1		1985
2. Technical document on the assessment of the long-term uranium supply outlook	As above	Consultants		1985
3. Technical report on uranium resources and supply in Africa	As above	TC 84		1985
4. Technical report on uranium resources and supply in Latin America	As above	TC 86/5		1986
5. Technical document - Manual on resource evaluation procedures	As above	Consultants		1986
PROJECT: GEOLOGY, EXPLORATION AND PRODUCTION				
Task	Beneficiary	Action or source	Services needed	Year of completion
6. Technical document on the uranium geology and resources of Asia and the Pacific region	Governments and organizations concerned with uranium exploration	TC 85/4		1986
7. Technical report on uranium mining, technology and economics	Uranium producers, Ministries of energy and mines, Atomic Energy Commissions	TC 86/6		1986
8. Technical report - Manual on analytical methods for uranium exploration, development, mining and ore processing	Uranium exploration and development analytical laboratories	CM 86		1987
9. Technical document surveying computer software	Governments and organizations concerned with uranium exploration and development		Data processing	1986
10. Technical document - Manual on the construction of calibration facilities	Governments and organizations concerned with uranium exploration	Expert group		1985
11. Technical document on uranium metallogenesis	As above	Consultants TC 85/1 TC 86/3		1986
12. Annual training course on aspects of uranium geology and exploration	Uranium geologists in developing countries	Technical co-operation		

Table 60 (cont.)

PROJECT: INTERNATIONAL URANIUM GEOLOGY INFORMATION SYSTEM (INTURGEO)				
Task	Beneficiary	Action or source	Services needed	Year of completion
13. Data collection and dissemination (INTURGEO)	Uranium producers and consumers, Ministries of energy and mines, Atomic Energy Commissions	Consultants, information from Member States	Data processing	Continuing activity
14. Technical document - World Atlas of Uranium Occurrences and Deposits	As above	INTURGEO data analysis	As above	1986
15. Technical document on recognition criteria for major uranium deposits	As above	INTURGEO data analysis, consultants	As above	1987
16. Internal reports - Recommendations to the Secretariat on uranium exploration activities	As above, and Secretariat	AG 85/3 TC 85/5 TC 86/2 TC 86/4		1985 1986

Table 61

Sub-programme 1.3.2 Processing and production of nuclear and reactor materials

PROJECT: URANIUM EXTRACTION TECHNOLOGY				
Task	Beneficiary	Action or source	Services needed	Year of completion
1. Internal reports - Recommendations to the Secretariat on uranium extraction activities	Secretariat	TC 85/6 TC 86/7		1985 1986
2. Revision of technical report on Uranium Extraction Technology	Uranium producers and potential producers, operators of nuclear power reactors	Consultants TC 85/6 TC 86/7		1987
3. Technical report - Manual on laboratory techniques for uranium ore processing	Technical universities, metallurgical research institutions, potential uranium producers	CM 83 CM 84		1985
4. Technical report - Manual on economic evaluation techniques for uranium production projects	As above	CM 84 CM 85		1986
5. Technical report - Manual on pilot plant techniques for uranium ore processing	As above	CM 84 CM 85		1986
6. Technical report on process selection and design for uranium ore processing	As above	TC 86/8		1987
7. CRP on the modification of ore processing to improve mill tailings (84-88)	Uranium producers and potential producers, regulatory authorities	Consultants		

Table 61 (cont.)

PROJECT: PROCESSING OF NUCLEAR AND REACTOR MATERIALS				
Task	Beneficiary	Action or source	Services needed	Year of completion
8. Technical report on ion exchange technology in the nuclear fuel cycle	Research institutes, uranium producers and potential uranium producers, planners and operators of nuclear fuel cycle facilities	Consultants		1985
9. Technical document on advances in uranium refining and conversion	Research institutes, planners and operators of refining and conversion facilities	TC 86/9		1986
10. Technical report on separation and purification processes in the nuclear fuel cycle	Research institutes, planners and operators of nuclear fuel cycle facilities	Consultants		1987
11. Technical report on heavy water production	Research institutes, producers and potential producers of heavy water, owners and operators of HWRS	CM 85 CM 86		1987
PROJECT: NUCLEAR FUEL CYCLE INFORMATION SYSTEM (NFCIS)				
Task	Beneficiary	Action or source	Services needed	Year of completion
12. Data compilation and dissemination (NFCIS)	Atomic Energy Commissions, nuclear power reactor operators, Ministries of energy and mines	Questionnaire, technical literature	Data processing	Summary report, 1985

Table 62

Sub-programme 1.3.3 Nuclear fuel performance

PROJECT: WATER REACTOR FUEL PERFORMANCE AND FABRICATION TECHNOLOGY				
Task	Beneficiary	Action or source	Services needed	Year of completion
1. Technical report on corrosion and coolant cladding interaction in power reactors	Atomic Energy Commissions, nuclear power reactor operators, Ministries of energy and mines	TC 85/10 Consultants		1986
2. Internal report - Recommendations to the Secretariat on LWR fuel performance and technology	IAEA Secretariat	IWGFPT 85/9		1985
3. Technical document on the analysis of LWR fuel assembly behaviour under power ramping and cycling conditions	Atomic Energy Commissions, nuclear power reactor operators, Ministries of energy and mines	TC 85/8 Consultants	Data processing	1985

Table 62 (cont.)

PROJECT: WATER REACTOR FUEL PERFORMANCE AND FABRICATION TECHNOLOGY				
Task	Beneficiary	Action or source	Services needed	Year of completion
4. Technical report on internal fuel rod chemistry	NPP designers, operators and regulators in Member States, IAEA Secretariat	TC 85/7 Consultants		1986
5. Technical report on the behaviour of defected zircaloy-clad fuel elements in LWRs	As above	TC 86/10 Consultants		1986
6. Technical report on world experience regarding safety aspects of LWR fuel behaviour with respect to fission product build-up under irradiation and release in severe fuel damage conditions	As above	TC 86/12 Consultants		1986
7. Technical report on fuel element computer modelling in steady-state and transient conditions	As above	TC 86/13 Consultants		1986
8. Symposium on improvements in water reactor fuel utilization (1986)	As above			Proceedings, 1986
9. CRP on fuel element cladding interaction with water coolant in power reactors (82-86)	As above	CM 85		Final report, 1986
10. CRP on the development of computer models for fuel element behaviour in LWRs (81-85)	As above	CM 85		Final report, 1985
11. CRP on examination and documentation methodology for water reactor fuel (83-88)	As above	Consultants		
PROJECT: ADVANCED FUEL				
Task	Beneficiary	Action or source	Services needed	Year of completion
12. Technical report on experience in the fabrication and performance of advanced fuel	Designers, reactor operators, fuel fabrication utilities, metallurgical research institutions	TC 86/11 Consultants		1986
13. Technical document on the status of advanced fuel in Member States including problems of research and development fabrication, performance and economics	IAEA Secretariat, Atomic Energy Commissions	Consultants		1986
14. Technical document containing data on the irradiation behaviour of advanced fuels in LWRs, FBRs, HTGRs	Designers, reactor operators, fuel fabrication utilities, metallurgical research institutes, hot laboratories	Consultants, questionnaire		1986
15. Technical document on alternative fuel production technologies (sol-gel process, sphere-pac techniques and others)	As above	As above		1987
16. Technical document on the economic analysis of fuel cycles with alternative fuel (carbides for FBRs, mixed oxides for LWRs and FBRs, and others)	As above	As above		1987
17. Technical document on the status of fuel and cladding materials for advanced FWRs (requirements for these materials, research and development status in Member States, special fuel cycle features, forecasts)	As above	As above		1987

Table 63Sub-programme 1.3.4 Spent fuel management

PROJECT: SPENT FUEL STORAGE				
Task	Beneficiary	Action or source	Services needed	Year of completion
1. Technical report - Survey of world dry and wet spent fuel storage experience	Spent fuel management policy makers, operators of spent fuel storage facilities	Questionnaire, NFCIS, consultants		1986
2. Two technical documents on spent fuel management (subjects to be decided)	As above	TC 85/11 AG 86/14 Consultants		1985 1986
3. Technical report - Revision and expansion of Guidebook on Spent Fuel Storage	As above	Questionnaire, consultants		1987
4. CRP on the behaviour of spent fuel assemblies during extended storage (BEFAST) (81-86)	Operators of spent fuel storage facilities		Data processing	Final report, 1986
PROJECT: REPROCESSING AND RECYCLING				
Task	Beneficiary	Action or source	Services needed	Year of completion
5. Technical document on options for spent fuel management, including reprocessing and recycling	Spent fuel management policy-making organizations	Consultants		1985
6. Technical document containing reference material on the back-end of the nuclear fuel cycle	As above	Questionnaire, consultants		1986
7. Technical document containing data on spent fuel arisings and capacities for reprocessing in Member States	As above	As above		1986

Table 64Sub-programme 1.4.1 Handling, treatment, conditioning and storage of radioactive wastes

PROJECT: GASEOUS WASTE				
Task	Beneficiary	Action or source	Services needed	Year of completion
1. Technical report on the design and operation of off-gas cleaning systems at waste conditioning facilities	Nuclear and waste management facility designers and operators	TC 85/12 AG 86/18		1987
2. Technical report on the management of gaseous wastes at waste treatment facilities	As above	AG 85/13		1986
3. CRP on the retention of iodine and other airborne radionuclides in nuclear facilities during abnormal or accident conditions (84-88)	As above			

Table 64 (Cont.)

PROJECT: ALPHA-BEARING AND HIGH-LEVEL WASTES				
Task	Beneficiary	Action or source	Services needed	Year of completion
4. Technical report on the treatment of alpha-bearing wastes	As above	AG 86/15		1987
5. Technical document on the solidification of organic radioactive waste	As above	TC 86/16		1986
6. CRP on the performance of solidified HLW forms and engineered barriers under repository conditions (84-89)	As above			
PROJECT: NUCLEAR POWER PLANT WASTE AND LOW- AND INTERMEDIATE-LEVEL WASTES				
Task	Beneficiary	Action or source	Services needed	Year of completion
7. Safety Series, guide on the handling and treatment of radioactive waste from unplanned events at NPPs	As above	AG 85/14		1986
8. Safety Series, guide on the design of waste treatment facilities at NPPs	As above	AG 85/15		1986
9. Regional seminar on management options for low- and intermediate-level wastes (1985)	As above			Summary report, 1985
10. Technical report on low- and intermediate-level radioactive waste immobilization with polymer	As above	TC 86/17		1987
11. CRP on the evaluation of solidified low- and intermediate-level waste forms (85-88)	As above			
<u>General^{a/}</u>				
12. Technical document - Waste Management Research Abstracts	As above	Questionnaire		Annually

a/ Tasks described here relate to all projects under this sub-programme.

Table 65

Sub-programme 1.4.2 Decontamination and decommissioning of nuclear installations

PROJECT: DECONTAMINATION				
Task	Beneficiary	Action or source	Services needed	Year of completion
1. Technical report on decontamination prior to modification or maintenance of a nuclear facility	Nuclear facility owners, regulatory authorities	TC 85/16		1986
2. Technical report on the decontamination and demolition of concrete and steel structures	As above	TC 86/19		1987

Table 65 (cont.)

PROJECT: DECOMMISSIONING				
Task	Beneficiary	Action or source	Services needed	Year of completion
3. Technical document - Methodology of decommissioning and inventory of nuclear facilities to be decommissioned	As above	TC 85/17		1986
4. Technical report on the technology, safety and economics of the decommissioning of nuclear facilities	As above	AG 86/20		1987
5. CRP on the decontamination and decommissioning of nuclear facilities (83-88)	As above			1988

Table 66

Sub-programme 1.4.3 Underground disposal of radioactive wastes

PROJECT: UNDERGROUND DISPOSAL OF RADIOACTIVE WASTES				
Task	Beneficiary	Action or source	Services needed	Year of completion
1. Technical document on <u>in situ</u> experiments for the disposal of radioactive wastes in deep geological formations	Regulatory authorities, designers and operators of waste management facilities	CM 85 TRCUD 85/18 CM 86		1986
2. Safety Series, document on the siting, design and construction of geological repositories for the disposal of high-level and alpha-bearing radioactive wastes	As above	TRCUD 85/18 CM 86 TRCUD 86/21		1988
3. Safety Series, document on waste acceptance criteria for solid waste in deep continental geological formations	As above	CM 85 TRCUD 85/18 AG 86/22 TRCUD 86/21		1987
4. Safety Series, document on the operation, shutdown and closing of deep geological repositories	As above	TRCUD 85/18 CM 86 TRCUD 86/21		1988
5. Safety Series, code of practice on underground disposal and guides to the code (shallow ground; rock cavities; deep geological formations)	As above	TRCUD 85/18 CM 86 TRCUD 86/21		1988
6. Safety Series, document on the regulation of underground repositories for the disposal of solid radioactive wastes	As above	TRCUD 85/18 CM 86 TRCUD 86/21		1987
7. Technical document on borehole plugging and shaft sealing related to underground disposal of long-lived radioactive wastes	As above	CM 86 TRCUD 86/21		1987
8. Symposium on the siting, design and construction of underground repositories (1986)	As above			Proceedings, 1987

Table 66 (cont.)

PROJECT: UNDERGROUND DISPOSAL OF RADIOACTIVE WASTES				
Task	Beneficiary	Action or source	Services needed	Year of completion
9. Safety Series, document on international guidelines and technical criteria for the underground disposal of high-level radioactive waste	As above	CM 85 AG 85/19 TRCUD 85/18 CM 86 AG 86/23 TRCUD 86/21		1987
10. CRP on the migration and dispersion of radionuclides from waste packages disposed in shallow ground repositories (84-89)	As above			
11. CRP on the geochemistry of neptunium (85-90)	As above			

Table 67Sub-programme 1.4.4 Sea dumping and releases of radioactive effluents

PROJECT: DEFINITION AND RECOMMENDATIONS UNDER THE LONDON DUMPING CONVENTION				
Task	Beneficiary	Action or source	Services needed	Year of completion
1. Safety Series code, revision of the Agency's Definition and Recommendations on radioactive matters for the purposes of the London Dumping Convention (INFCIRC 205/Add.1/Rev.1)	Regulatory authorities, international conventions	AG 82, TC 82 AG 83, TC 83 AG 84		1985
2. Safety Series, procedures and data for the evaluation of ocean disposal of radioactive waste	Regulatory authorities, international conventions, other UN agencies	AG 82 TC 83 AG 84 TC 85/20		1985
3. Technical report on procedures for site-specific modelling and pathway analysis in coastal marine environments	As above	TC 85/21 AG 86/24	Data processing	1987

PROJECT: ENVIRONMENTAL FATE AND TRANSPORT OF RELEASES OF RADIOACTIVE EFFLUENTS				
Task	Beneficiary	Action or source	Services needed	Year of completion
4. Technical document on procedures for environmental impact assessment for advanced reactor waste management	Planners, regulatory authorities, international conventions, other UN organizations	TC 85/22		1985
5. CRP on the environmental migration of radium and other contaminants present in solid and liquid wastes from the mining and milling of uranium (81-85)	As above			Final report, 1986
6. CRP on the role of sediments in the transport and accumulation of radioactive pollutants in rivers and estuaries (82-85)	As above			Final report, 1986
7. Safety Series, recommendations for monitoring the migration of radioactive effluents from uranium mill tailings	As above	AG 86/25		1986

TECHNICAL COMMITTEES, ADVISORY GROUPS AND SPECIALISTS' MEETINGS IN 1985-86

Within the limits of the appropriation and subject to the requirements of the programme as outlined for 1985-86, it is planned to hold the meetings listed below. The reference following each meeting is to the relevant table of planned actions given above.

<u>1985</u>		<u>Table</u>
1.	Technical Committee on the metallogenesis of uranium deposits	60, No. 11
2.	Advisory Group on uranium resources	60, No. 1
3.	Advisory Group on uranium exploration and resource appraisal	60, No. 16
4.	Technical Committee on the uranium geology and resources of Asia and the Pacific	60, No. 6
5.	Technical Committee on the recognition of uranium provinces	60, No. 16
6.	Technical Committee on uranium extraction	61, Nos 1,2
7.	Technical Committee on internal fuel rod chemistry	62, No. 4
8.	Technical Committee on power ramping and cycling	62, No. 3
9.	International Working Group on Fuel Performance and Technology (IWGFPT)	62, No. 2
10.	Technical Committee on water side corrosion of fuel	62, No. 1
11.	Technical Committee on spent fuel management	63, No. 2
12.	Technical Committee on off-gas cleaning systems at waste conditioning facilities - design and operation	64, No. 1
13.	Advisory Group on the management of gaseous wastes at waste treatment facilities	64, No. 2
14.	Advisory Group on the handling and treatment of radioactive wastes from unplanned events	64, No. 7
15.	Advisory Group on the design of waste treatment facilities at nuclear power plants	64, No. 8
16.	Technical Committee on decontamination prior to modification or maintenance of a nuclear facility	65, No. 1
17.	Technical Committee on methodology of decommissioning and inventory of nuclear facilities to be decommissioned	65, No. 3
18.	Technical Review Committee on Underground Disposal of Radioactive Wastes (TRCUD)	66, Nos 1-6,9
19.	Advisory Group on international guidelines and technical criteria for underground disposal of high-level radioactive waste	66, No. 9

1985 (cont.)

Table

- | | | |
|-----|---|-----------|
| 20. | Technical Committee on procedures and data for the evaluation of ocean disposal of radioactive waste | 67, No. 2 |
| 21. | Technical Committee on procedures for site-specific modelling and pathway analysis in coastal marine environments | 67, No. 3 |
| 22. | Technical Committee on procedures for environmental impact assessment for advanced reactor waste management | 67, No. 4 |

1986

Table

- | | | |
|-----|---|-------------|
| 1. | Advisory Group on uranium resources | 60, No. 1 |
| 2. | Technical Committee on uranium exploration techniques | 60, No. 16 |
| 3. | Technical Committee on uranium in magmatic rocks | 60, No. 11 |
| 4. | Technical Committee on geological data interpretation and analysis | 60, No. 16 |
| 5. | Technical Committee on uranium resources and supply in Latin America | 60, No. 4 |
| 6. | Technical Committee on technological aspects of uranium mining - planning, operations, health, safety and economics | 60, No. 7 |
| 7. | Technical Committee on uranium extraction | 61, Nos 1,2 |
| 8. | Technical Committee on process selection and design for uranium ore processing | 61, No. 6 |
| 9. | Technical Committee on advances in uranium refining and conversion | 61, No. 9 |
| 10. | Technical Committee on the behaviour of defected zircaloy clad fuel in water-cooled reactors | 62, No. 5 |
| 11. | Technical Committee on advanced fuel technology and performance | 62, No. 12 |
| 12. | Technical Committee on safety aspects of fuel behaviour with respect to fission product build-up under irradiation and release in severe fuel damage conditions | 62, No. 6 |
| 13. | Technical Committee on fuel element computer modelling in steady-state and transient conditions | 62, No. 7 |
| 14. | Advisory Group on spent fuel management | 63, No. 2 |
| 15. | Advisory Group on the treatment of alpha-bearing radioactive wastes | 64, No. 4 |
| 16. | Technical Committee on the solidification of organic radioactive waste | 64, No. 5 |
| 17. | Technical Committee on low-and intermediate-level radioactive waste immobilization with polymers | 64, No. 10 |

<u>1986</u> (cont.)	<u>Table</u>
18. Advisory Group on off-gas cleaning systems at waste conditioning facilities - design and operation	64, No. 1
19. Technical Committee on the decontamination and demolition of concrete and steel structures	65, No. 2
20. Advisory Group on the technology, safety and economics of the decommissioning of nuclear facilities	65, No. 4
21. Technical Review Committee on Underground Disposal of Radioactive Wastes (TRCUD)	66, Nos 2-7,9
22. Advisory Group on waste acceptance criteria for solid waste in deep continental geological formations	66, No. 3
23. Advisory Group on international guidelines and technical criteria for underground disposal of high-level radioactive waste	66, No. 9
24. Advisory Group on procedures for site-specific modelling and pathway analysis in coastal marine environments	67, No. 3
25. Advisory Group on recommendations for monitoring the migration of radioactive effluents from uranium mill tailings	67, No. 7

Division of Nuclear Fuel Cycle

Summary of cost

Table 68

Item of expenditure	1983 Actual obligations	1984 Budget	Programme increase (decrease) %		1985 at 1984 price	Price increase %	1985 Estimate	1986 Preliminary estimate
Salaries for established posts	1 086 233	1 406 000	(23 000)	(1.6)	1 383 000	5.5	1 459 000	1 577 000
Consultants	110 970	97 900	14 400	14.7	112 300	5.0	117 900	130 000
Overtime	463	600	(600)	(100.0)	-	-	-	-
Temporary assistance	5 774	2 100	800	38.1	2 900	5.0	3 100	3 300
Common staff costs	380 541	463 200	(7 200)	(1.5)	456 000	8.7	496 000	536 200
Common equipment	1 509	1 000	(1 000)	(100.0)	-	-	-	-
Common supplies	487	1 500	(1 500)	(100.0)	-	-	-	-
Scientific and technical contracts	221 788	233 000	20 000	8.6	253 000	5.0	266 000	310 000
Conferences, symposia, seminars	107 134	90 000	(60 000)	(66.7)	30 000	6.5	32 000	102 000
Technical committees, advisory groups	231 425	249 000	32 000	12.9	281 000	6.5	299 000	311 000
Hospitality	9 631	11 000	(800)	(7.3)	10 200	5.0	10 700	11 500
Travel	65 780	79 700	8 400	10.5	88 100	7.0	94 000	102 000
Common services	9 911	11 000	3 500	31.8	14 500	5.5	15 300	17 000
Other	-	-	11 000	-	11 000	5.5	12 000	15 000
Sub-total: Direct costs	2 231 646	2 646 000	(4 000)	(0.2)	2 642 000	6.2	2 805 000	3 115 000
Contracts administration services	13 810	25 000	(5 000)	(20.0)	20 000	6.4	21 000	22 000
Conference services	33 165	44 000	(6 000)	(13.6)	38 000	6.3	40 000	42 000
Translation and records services	63 568	79 000	4 000	5.1	83 000	6.1	88 000	93 000
Data processing services	58 612	75 000	11 000	14.7	86 000	4.0	89 000	93 000
Printing and publishing services	304 144	368 000	-	-	368 000	5.5	388 000	410 000
Sub-total: Shared costs	473 299	591 000	4 000	0.7	595 000	5.2	626 000	660 000
TOTAL	2 704 945	3 237 000	-	-	3 237 000	6.0	3 431 000	3 775 000

Division of Nuclear Fuel Cycle

Summary of manpowerTable 69

Grade of post	Number of established posts					1985
	1983 Adjusted	1984	1984 Adjusted	Change		
				New Posts	Reclassi- fications	
D	1	1	1	-	-	1
P-5	7	7	7	-	-	7
P-4	13	13	13	-	-	13
P-3	1	1	1	-	-	1
Sub-total	22	22	22	-	-	22
GS	13	13	13	-	-	13
TOTAL	35	35	35	-	-	35

Division of Nuclear Fuel Cycle

Summary of manpower and costs by SectionTable 70

Section	1984 Estimate			1985 Estimate		
	P	G	Costs	P	G	Costs
Nuclear materials and fuel cycle technology	11.5	6.0	1 494 000	11.5	6.0	1 568 000
Waste management	10.5	7.0	1 743 000	10.5	7.0	1 863 000
Total	22.0	13.0	3 237 000	22.0	13.0	3 431 000

NUCLEAR ENERGY AND SAFETY

D I V I S I O N O F N U C L E A R S A F E T Y

ACTIONS PLANNED FOR 1985-86

Table 71

Sub-programme 3.1.1 Basic criteria on radiation protection

PROJECT: BASIC SAFETY STANDARDS FOR RADIATION PROTECTION				
Task	Beneficiary	Action or source	Services needed	Year of completion
1. Revision of the Agency's Radiation Protection Rules and Procedures applicable to personnel for whose radiation protection the Agency is responsible	IAEA	CM 85		1986
2. Revision of Safety Series No.9, Basic Safety Standards for Radiation Protection, including recommendations for exemptions of radioactive substances, apparatus and sources from the requirement of notification, licensing and registration	Competent authorities, regulatory bodies, health physicists	CM 85 AG 86/1		1987
PROJECT: PROMOTING A BASIC LEVEL OF UNDERSTANDING				
Task	Beneficiary	Action or source	Services needed	Year of completion
3. Safety Series, guide on training in radiation protection	Radiation protection authorities	Technical co-operation project INT/9/055		1985
4. Annual post-graduate courses in radiation protection	As above	Technical co-operation		
5. Annual interregional training course on planning, preparedness and response to radiological emergencies	Government agencies at local, state and national levels, nuclear facility management and operators	As above		
6. Annual training course on radiation protection in the exploration, mining and milling of radioactive ores	Operators of mines and mills, health physicists, competent authorities			
7. Annual interregional training course on safe transport of radioactive materials	Competent authorities, international transport organizations, package designers, shippers and carriers	Technical co-operation		
8. Technical document - Handbook for the training course on radiation protection	Participants in training courses	CM 85	Contractual	1986
9. Training and information film on planning and preparedness for radiological emergencies	Government agencies at local, state and national levels, nuclear facility management and operators		Contractual	1985

Table 71 (cont.)

PROJECT: PROMOTING A BASIC LEVEL OF UNDERSTANDING				
Task	Beneficiary	Action or source	Services needed	Year of completion
10. Technical assistance missions to develop and improve national radiation protection services/programmes and to advise or participate in national training courses	Radiation protection authorities	Technical co-operating project INT/9/055		
11. Symposium on emergency planning and preparedness for nuclear facilities (1985)	Competent authorities, nuclear facility operators			Proceedings, 1985
12. Symposium on packaging and transport of radioactive materials (1986)	Competent authorities, international transport organizations, package designers, shippers and carriers			Proceedings, 1986
13. Symposium on the optimization of radiation protection (1986)	Radiation protection authorities			Proceedings, 1986
14. Technical document - Health Physics Research Abstracts Bulletin	Health physicists, radiation protection authorities	Input from Member States		Annually
15. Safety Series, guide on radiation protection terms	As above	CM 84		1985
16. Technical document on recent advances in the diagnosis, prognosis and treatment of radiation over-exposures	Medical authorities, physicians, occupational physicians, health physicists	TC 86/18		1986

Table 72

Sub-programme 3.1.2 Occupational radiation protection

PROJECT: DESIGN OF RADIATION PROTECTION SYSTEMS				
Task	Beneficiary	Action or source	Services needed	Year of completion
1. Safety Series, guide on the application of the BSS to the design of radiation protection systems	Designers and operators of nuclear and radiation installations	CM 84		1985
2. Safety Series, recommendations on the design of radiation protection systems in nuclear power plants	Designers and operators of nuclear power plants	AG 85/2		1986
3. Safety Series, recommendations on the design of radiation protection systems in nuclear fuel reprocessing plants	Designers and operators of reprocessing plants	CM 86		1987
4. Safety Series, recommendations on the design of radiation protection systems in nuclear fuel fabrication plants	Designers and operators of fuel fabrication plants	CM 85 AG 86/3		1987
5. Technical document on the radiation safety of fusion facilities	Fusion reactor researchers	TC 86/6		1987

NUCLEAR ENERGY AND SAFETY

Table 72 (cont.)

PROJECT: OPERATIONAL RADIATION PROTECTION				
Task	Beneficiary	Action or source	Services needed	Year of completion
6. Safety Series, guide on the application of the BSS to operational radiation protection activities	Operators of radiation installations, health physicists	AG 85/1 CM 85		1987
7. Safety Series, recommendations on radiation protection services for nuclear research reactors	Research reactor operators, health physicists	CM 85 AG 86/4		1987
8. Safety Series, recommendations on radiation protection services in nuclear power plants	Nuclear power plant operators, health physicists	AG 86/2		1987
9. Safety Series, recommendations on the safe use of industrial radiation sources	Competent authorities, health physicists	AG 85/5 CM 86		1987
10. Safety Series, recommendations on the safe handling of tritium	As above	TC 86/5		1988
11. Nine research reactor radiation protection missions	Regulatory bodies, research reactor operators			Annually
PROJECT: RADIATION PROTECTION IN MINING AND MILLING				
Task	Beneficiary	Action or source	Services needed	Year of completion
12. Safety Series, guide on the application of the BSS to control measures for limiting radiation exposure in the mining and milling of radioactive ores	Operators of mines and mills, health physicists, competent authorities	CM 83 AG 83 AG 84		1985
13. Safety Series, recommendations on radiation protection monitoring services in uranium and thorium mines and mills	As above	CM 84 AG 84		1985
PROJECT: OCCUPATIONAL MONITORING				
Task	Beneficiary	Action or source	Services needed	Year of completion
14. Safety Series, guide on monitoring for the radiation protection of occupationally exposed workers	Operators of nuclear facilities, health physicists, competent authorities	AG 84		1985
15. Safety Series, recommendations on the assessment of occupational exposure to external irradiation (for monitoring purposes)	Health physicists, competent authorities	TC 86/7		1987
16. Safety Series, recommendations on the assessment of occupational intake of radioactive materials (for monitoring purposes)	As above	TC 85/3		1986
17. Safety Series, procedures and data for the application of the dose-equivalent index concept	As above	CM 86		1987
18. Safety Series, procedures and data for the intercomparison of personnel dosimeters	Health physicists, competent authorities	TC 85/4		1986
19. Safety Series, procedures and data on neutron spectra for radiation protection purposes	Health physicists	CM 86		1988

Table 73

Sub-programme 3.1.3 Radiation protection of the general public and the environment

PROJECT: LIMITATION OF RELEASES OF RADIOACTIVE EFFLUENTS INTO THE ENVIRONMENT				
Task	Beneficiary	Action or source	Services needed	Year of completion
1. Safety Series, guide on the principles for limiting radioactive releases into the environment	Operators of nuclear facilities, health physicists, competent authorities	CM 85		1986
2. Safety Series, recommendations on the methodologies for source- and individual-related assessment in relation to the limitation of releases of radioactive effluents into the environment	As above	CM 84 AG 85/6 CM 86		1986
3. Safety Series, procedures and data for the application of the principles for limiting radioactive releases from the mining and milling of radioactive ores	Operators of uranium and thorium mines and mills, health physicists, competent authorities	CM 85 AG 85/7 CM 86		1986
4. Safety Series, procedures and data for the application of the principles for limiting radioactive releases in the case of nuclear power plants	Operators of nuclear facilities, health physicists, competent authorities	CM 86 AG 86/10		1987
5. Safety Series, procedures and data for the application of the principles for limiting radioactive releases in the case of fuel reprocessing plants	Operators of fuel reprocessing plants, health physicists, competent authorities	CM 86 AG 86/11		1987
6. Safety Series, procedures and data for evaluating radiation detriment	Health physicists, competent authorities	CM 86 AG 86/9		1987
7. Technical document on the radiological impact due to carbon-14 released from nuclear installations	Health physicists, public health authorities	CRP 80-86		1987
PROJECT: MONITORING FOR THE RADIATION PROTECTION OF THE PUBLIC				
Task	Beneficiary	Action or source	Services needed	Year of completion
8. Safety Series, guide on the principles of monitoring for the radiation protection of the general public	Operators of nuclear facilities, health physicists, competent authorities	CM 85 AG 85/9 CM 86		1986
9. Safety Series, recommendations for source- and individual-related environmental monitoring and for effluent monitoring	As above	AG 85/10 AG 86/8 CM 86		1987
PROJECT: RADIATION PROTECTION PRINCIPLES FOR POTENTIAL EXPOSURES				
Task	Beneficiary	Action or source	Services needed	Year of completion
10. Safety Series, guide on the application of the principles of radiation protection to sources of potential exposure with special reference to radioactive waste repositories	Operators of nuclear facilities, health physicists, competent authorities	CM 85 AG 85/8 AG 86/12 CM 86		1987
PROJECT: NUCLEAR EXPLOSIONS FOR PEACEFUL PURPOSES				
Task	Beneficiary	Action or source	Services needed	Year of completion
11. Technical report on the phenomenology and practical aspects of nuclear explosions for peaceful purposes	Research establishments concerned with PNE techniques and applications	TC 85-86/1		1985 or 1986

Table 74

Sub-programme 3.1.4 Transport radiation safety

PROJECT: REGULATIONS FOR THE SAFE TRANSPORT OF RADIOACTIVE MATERIALS				
Task	Beneficiary	Action or source	Services needed	Year of completion
1. Continuous updating of Safety Series No. 6, Regulations for the Safe Transport of Radioactive Materials	Competent authorities, international transport organizations, package designers, shippers and carriers	Questionnaire, liaison with international organizations and competent authorities		Periodic
PROJECT: DEVELOPMENT OF ADVISORY MATERIAL TO SUPPLEMENT THE TRANSPORT REGULATIONS				
Task	Beneficiary	Action or source	Services needed	Year of completion
2. Third edition of Safety Series No. 37, Advisory Material for the Application of the IAEA Transport Regulations	As above	AG 85/11 CM 86		1986
3. Safety Series, procedures and data on explanatory material for the transport regulations	As above	CM 83		1986
4. Technical document on assuring the implementation of the transport regulations	As above	AG 86/13		1986
5. Technical document on package design review and approval procedures	As above	CM 85 CM 86	Member States' comments	1986
6. Technical document on guidance for the optimization of radiation protection in the transport of radioactive materials	All Member States	TC 85/12	As above, and cost-free experts	1985
7. Technical document on a sample optimization assessment for demonstrating compliance with the BSS	As above	TC 86/14	As above	1987
8. Technical document on the assessment of the radiological impact from the transport of radioactive materials	As above	TC 85/13 CM 86	Member States' use of INTERTRAN, cost-free experts	1986
9. CRP on transport radiation safety (80-85)	Competent authorities, international transport organizations, package designers, shippers and carriers			Final report, 1985
PROJECT: COLLECTION OF DATA ON TRANSPORT OPERATIONS				
Task	Beneficiary	Action or source	Services needed	Year of completion
10. Technical report - Directory of test facilities for transport packages	Competent authorities, package designers	Input from Member States, 1985	Data collection	1986
11. Technical report - Directory of national competent authorities for transport	Competent authorities, package designers, shippers and carriers	Input from Member States	Data collection	Annually
12. Technical report - Directory of competent authorities' approval certificates	As above	Data from Member States	Data processing	Annually

Table 74 (cont.)

PROJECT: COLLECTION OF DATA ON TRANSPORT OPERATIONS				
Task	Beneficiary	Action or source	Services needed	Year of completion
13. Data base on shipment of radioactive materials	As above	Questionnaire	Data processing	1986
14. Data base on radiation exposure in transport	As above	CM 86	Data processing	1986
15. Data base on transport accidents and incidents	As above	CM 84		1985
<u>General</u>				
16. Technical review of transport safety activities	IAEA	AG 86/15 (SAGSTRAM)		1986

Table 75

Sub-programme 3.1.5 Planning and preparedness for radiation emergencies

PROJECT: PRINCIPLES OF RADIATION PROTECTION IN THE EVENT OF ACCIDENTS AND EMERGENCIES				
Task	Beneficiary	Action or source	Services needed	Year of completion
1. Safety Series, recommendations on radiation protection principles applicable to emergency planning and preparedness, specifically on intervention levels for controlling radiation doses to the public in the event of a nuclear accident or radiological emergency	Government agencies at local, state and national levels, nuclear facility management and operators, nuclear industry organizations, international organizations	CM 83 AG 84 CM 84 AG 85/15 CM 85		1986
 PROJECT: EMERGENCY PLANNING AND PREPAREDNESS				
Task	Beneficiary	Action or source	Services needed	Year of completion
2. Safety Series, guide on emergency planning and preparedness arrangements of the operating organization for nuclear accidents or radiological emergencies at nuclear facilities	As above	CM 86		1987
3. Safety Series, guide on preparedness of public authorities for nuclear accidents or radiological emergencies at nuclear facilities	As above	CM 86		1987
4. Revision of Safety Series No. 55, Recommendations for Planning for Off-Site Response to Radiation Accidents in Nuclear Facilities	As above	CM 86		1987
5. Safety Series, recommendations on the monitoring of the accident release source in a nuclear installation	As above	AG 86/16 CM 86		1987
6. Safety Series, recommendations on maintaining on-site habitability during accidents at nuclear installations	As above	AG 85/14 CM 85 AG 86/17		1987

Table 75 (cont.)

PROJECT: EMERGENCY PLANNING AND PREPAREDNESS				
Task	Beneficiary	Action or source	Services needed	Year of completion
7. Safety Series, procedures and data for post-accident assessment and recovery operations in a radiation environment	As above	AG 85/16 CM 85		1986
8. Safety Series, recommendations on requirements for emergency response facilities	As above	CMs 85		1986
9. Evaluation of emergency plans and preparedness at the request of Member States (four missions per year and reports)	Requesting Member States	Missions	External experts	
PROJECT: MUTUAL EMERGENCY ASSISTANCE				
Task	Beneficiary	Action or source	Services needed	Year of completion
10. Revision of technical document on potential emergency assistance resources, requirements and status of emergency planning and preparedness in Member States	As above	Questionnaire	Data processing	1985
11. Guidelines on reportable events, integrated planning and information exchange for accidental releases of radioactive materials having transboundary implications (INFCIRC)	As above	Expert Group 1984		1985
12. Technical document - Conversion of the current IAEA internal radiation emergency assistance plan into a comprehensive nuclear accident assistance plan for Member States	As above	CM 85		1986

Table 76Sub-programme 3.1.6 Handling of radiation-exposed persons

PROJECT: MEDICAL SURVEILLANCE OF EXPOSED PERSONS				
Task	Beneficiary	Action or source	Services needed	Year of completion
1. Revision of Safety Series No. 25, Medical Supervision of Radiation Workers	Competent authorities, physicians, health physicists	CM 84		1985

Table 76 (cont.)

PROJECT: ASSESSMENT OF HUMAN RADIATION EXPOSURE				
Task	Beneficiary	Action or source	Services needed	Year of completion
2. Safety Series, recommendations on the use of chromosomal aberration analysis in lymphocytes for estimating radiation dose	Occupational physicians, medical authorities	CRP 82-85		1986
3. Safety Series, recommendations on the use of thermography, cell membrane probes, EEG and other biological and biochemical indicators for estimating radiation dose	As above	AG 85/17 CM 85		1986
4. Technical document on the calibration of chest monitoring equipment for assessing the intake of transuranium elements	Health physicists, physicians	CRP 83-86 CM 85		1987
5. Technical report on the deposition and clearance of radioactive material from the lungs and other body organs, including related aspects of dosimetry and decorporation	As above	CM 85		1986
PROJECT: MEDICAL CRITERIA FOR THE TREATMENT OF OVER-EXPOSED PERSONS				
Task	Beneficiary	Action or source	Services needed	Year of completion
6. Safety Series, recommendations on general principles for the diagnosis, prognosis and treatment of over-exposed persons	Competent authorities, physicians	AG 84		1985
7. Technical report on the diagnosis, prognosis and treatment of over-exposures by internal and external contamination	As above	CM 84 (two)		1986
8. Technical report on the diagnosis, prognosis and treatment of over-exposure by external irradiation	As above	TC 83 CM 85		1986
9. Technical document - "What the General Practitioner (MD) Should Know About the Medical Handling of Over-Exposed Persons"	As above	CM 84		1985
10. Technical document - Inventory of facilities (hospitals, laboratories, centres) internationally available and qualified for the treatment of over-exposed persons	As above	TC 83		1985

Table 77

Sub-programme 3.1.7 Physical protection of nuclear facilities and materials

PROJECT: PHYSICAL PROTECTION OF NUCLEAR FACILITIES AND MATERIALS				
Task	Beneficiary	Action or source	Services needed	Year of completion
1. International training course on the physical protection of nuclear facilities and materials	Government agencies at local, state and national levels, nuclear facility management and operators, nuclear industry organizations			1985

Table 78

Sub-programme 3.2.1 Safety principles and regulatory activities

PROJECT: SAFETY PRINCIPLES				
Task	Beneficiary	Action or source	Services needed	Year of completion
1. Annual Safety Review	Board of Governors			Annually
2. Technical document on source term evaluation for accident conditions	Regulatory bodies, designers and operators of nuclear installations	TC 86/19		1986
3. Symposium on source term evaluation for accident conditions (1985)	As above			Proceedings, 1985
PROJECT: DEVELOPMENT OF SAFETY GUIDELINES				
Task	Beneficiary	Action or source	Services needed	Year of completion
4. Revision of a Safety Series document in the area of governmental organization	Regulatory bodies, utilities, designers and constructors of nuclear power plants	CM 86 TC 86/20 AG 86/22		1986
5. Safety Series, manual on the contribution of the probabilistic analysis of systems to regulatory decisions for nuclear installations	As above	CM 86		1986
6. Safety Series, manual on regulatory control during the construction and operation of NPPs	Regulatory bodies	CM 85 TC 85/19		1985
PROJECT: DISSEMINATION AND PROMOTION OF SAFETY GUIDELINES				
Task	Beneficiary	Action or source	Services needed	Year of completion
7. Advice on NUSS revision and implementation	Regulatory bodies and utilities in developing countries	AG 85/20 AG 86/23		
8. 3-4 missions per year on the establishment of regulatory organizations and the performance of specific regulatory tasks	Regulatory bodies	Technical co-operation		
9. Seminar on recurrent safety evaluation of nuclear installations (1985)	Regulatory bodies, designers and operators of nuclear installations			Summary report, 1985
10. Seminar on regulatory inspection during nuclear power plant construction, commissioning and operation (1986)	Regulatory bodies, utilities, designers and constructors of nuclear power plants			Summary report, 1986

Table 79Sub-programme 3.2.2 Siting of nuclear installations

PROJECT: DEVELOPMENT OF SAFETY GUIDELINES				
Task	Beneficiary	Action or source	Services needed	Year of completion
1. Safety Series Guide SG-S8, Safety Aspects of the Foundations of Nuclear Power Plants	Regulatory bodies, utilities, designers and constructors of nuclear power plants	TC 85/22 AG 85/18		1985
2. Safety Series, manual on radiation protection aspects of siting	As above	TC 85/22		1985
3. Revision of two Safety Series documents in the siting area	As above	CM 86		1986
4. Safety Series, guide on the siting of research reactors	Regulatory bodies, designers, constructors and operators of research reactors	CM 85 TC 85/21		1986
5. Safety Series, manual on seismic aspects of nuclear power plants	Regulatory bodies, utilities, designers and constructors of nuclear power plants	CM 85 TC 85/22		1985
6. Safety Series, manual on plant/site interaction	As above	CM 86 TC 86/24		1986
PROJECT: DISSEMINATION AND PROMOTION OF SAFETY GUIDELINES				
Task	Beneficiary	Action or source	Services needed	Year of completion
7. 4-5 advisory missions for siting of nuclear installations (both multidisciplinary and specialized)	Regulatory bodies, utilities	Technical co-operation		

Table 80Sub-programme 3.2.3 Safe design and construction of nuclear installations

PROJECT: DEVELOPMENT OF SAFETY GUIDELINES				
Task	Beneficiary	Action or source	Services needed	Year of completion
1. Safety Series Guide SG-D11, General Design Safety Principles for Nuclear Power Plants	Regulatory bodies, utilities, designers and constructors of nuclear power plants	TC 85/23 AG 85/18		1985
2. Safety Series Guide SG-D13, Reactor Cooling Systems in Nuclear Power Plants	As above	TC 85/24 AG 85/18		1985
3. Safety Series Guide SG-D14, Design for Reactor Core Safety in Nuclear Power Plants	As above	TC 85/25 AG 85/18		1985
4. Safety Series, manual on instrumentation and control systems	As above	AG 85/26		1985
5. Safety Series, manual on emergency power supply	As above	TC 86/25		1986

Table 80 (cont.)

PROJECT: DISSEMINATION AND PROMOTION OF SAFETY GUIDELINES				
Task	Beneficiary	Action or source	Services needed	Year of completion
6. Two missions to developing countries on safe design aspects per year	Regulatory bodies, utilities	Technical co-operation		

Table 81Sub-programme 3.2.4 Operational safety of nuclear installations

PROJECT: DEVELOPMENT OF SAFETY GUIDELINES				
Task	Beneficiary	Action or source	Services needed	Year of completion
1. Safety Series Guide SG-011, Operational Management of Radioactive Effluents and Wastes Arising in Nuclear Power Plants	Regulatory bodies, utilities, designers and constructors of nuclear power plants	TC 85/27		1985
2. Safety Series, manual on the maintenance of systems and components important to safety	As above	CM 86 AG 85/28		1986
3. Revision of a Safety Series document in the operation area	As above	CM 86 TC 86/26 AG 86/22		1986
PROJECT: DISSEMINATION AND PROMOTION OF SAFETY GUIDELINES				
Task	Beneficiary	Action or source	Services needed	Year of completion
4. Seminar on operating procedures for abnormal conditions in nuclear power plants (1986)	As above			Summary report, 1986
5. Technical report on specific operational safety issues particularly relevant for developing countries	Regulatory bodies, utilities	CM 85 CM 86 TC 85/31 TC 86/29		Annually
PROJECT: OPERATIONAL SAFETY REVIEW TEAMS				
Task	Beneficiary	Action or source	Services needed	Year of completion
6. Five OSART missions per year	As above	Technical co-operation		
7. Technical document - Revision of guidelines for OSART	As above	CM 86		1986
8. Technical document on recurrent OSART findings	Regulatory bodies	CM 86		1986

Table 81 (cont.)

PROJECT: RESEARCH REACTOR SAFETY MISSIONS				
Task	Beneficiary	Action or source	Services needed	Year of completion
9. Two advisory missions per year on specific issues	Regulatory bodies, research reactor operators	Technical co-operation		
10. Nine operational safety review missions per year to research reactors	As above	As above		
PROJECT: INCIDENT REPORTING SYSTEM (IRS)				
Task	Beneficiary	Action or source	Services needed	Year of completion
11. Technical document - Review and assessment of incidents at nuclear power plants	Regulatory bodies, utilities	TC 85/30 TC 86/28 IRS		Annual
12. Revision of guide on national IRS (TECDOC No. 278)	As above	CM 85 CM 86 TC 85/29 TC 86/27		1987

Table 82Sub-programme 3.2.5 Safety aspects of quality assurance

PROJECT: DEVELOPMENT OF SAFETY GUIDELINES				
Task	Beneficiary	Action or source	Services needed	Year of completion
1. Revision of a Safety Series guide on quality assurance	Regulatory bodies, utilities, designers and constructors of nuclear power plants	CM 85 TC 85/32 AG 86/21		1986
PROJECT: DISSEMINATION AND PROMOTION OF SAFETY GUIDELINES				
Task	Beneficiary	Action or source	Services needed	Year of completion
2. Two advisory missions to developing countries per year	Regulatory bodies, utilities	Technical co-operation		

Table 83

Sub-programme 3.2.6 Safety research and development

PROJECT: EXCHANGE OF INFORMATION ON SAFETY RESEARCH				
Task	Beneficiary	Action or source	Services needed	Year of completion
1. Technical report - Safety research index	Regulatory bodies, designers and operators of nuclear power plants	CM 85 CM 86 TC 85/34 TC 86/30		Annually
2. Technical document on specific research topics	As above	CM 85 CM 86 SP 85/33 SP 86/31		Annually
PROJECT: ASSISTANCE IN USE OF ADVANCED METHODS FOR SAFETY ANALYSIS				
Task	Beneficiary	Action or source	Services needed	Year of completion
3. Technical report on the use of computer codes for safety analysis with special reference to developing country conditions	Regulatory bodies and utilities of developing countries	TC 85/35 TC 86/32		1985 1986

Table 84

Sub-programme 3.3.1 Risk analysis techniques

PROJECT: BASIC CRITERIA FOR NUCLEAR RISK ASSESSMENT				
Task	Beneficiary	Action or source	Services needed	Year of completion
1. Technical report on risk analysis and operating experience	Designers, utilities, licensing authorities	TC 85/36	Cost-free experts	1985
2. Technical document on risk criteria for the nuclear fuel cycle	As above	CRP 83-87 CM 86		1987
3. Technical document on advances in nuclear power plant risk analysis	As above	TC 86/37	Cost-free experts	1986
PROJECT: APPLICATION OF RISK ANALYSIS TECHNIQUES				
Task	Beneficiary	Action or source	Services needed	Year of completion
4. Seminar on the implications of probabilistic risk assessment for nuclear safety (1985)	Designers, utilities, licensing authorities, research institutes			Summary report, 1985
5. Technical report on probabilistic risk analysis of engineered safety systems	Designers, utilities, licensing authorities	TC 85/37	Cost-free experts	1986

Table 85Sub-programme 3.3.2 Comparative risk assessment

PROJECT: COMPARATIVE RISK ASSESSMENT				
Task	Beneficiary	Action or source	Services needed	Year of completion
1. Technical report on the cost-effectiveness of risk reduction	Designers, utilities, CRP 82-87 licensing authorities		UNEP, WHO, WEC, Data processing	1987
2. Technical report on risk management for energy systems	As above, and energy planning authorities	CRP 82-87 Symposium 84 TC 85/36 TC 86/35	UNEP, WHO, WEC, OECD	1987

Table 86Sub-programme 3.3.3 Risk perception

PROJECT: RISK PERCEPTION				
Task	Beneficiary	Action or source	Services needed	Year of completion
1. Information exchange on public understanding of safety principles	Energy planning authorities, licensing authorities, utilities	Data supplied by Member States	National Science Foundation, Battelle North-West, Data processing	1986
2. Information exchange on the role of newspapers	Energy planning authorities, utilities	As above	Data processing	

TECHNICAL COMMITTEES, ADVISORY GROUPS AND SPECIALISTS' MEETINGS IN 1985-86

Within the limits of the appropriation and subject to the requirements of the programme as outlined for 1985-86, it is planned to hold the meetings listed below. The reference following each meeting is to the relevant table of planned actions given above.

1985Table

- | | |
|--|------------|
| 1. Advisory Group on the application of the Basic Safety Standards for Radiation Protection to operational radiation protection activities | 72, No. 6 |
| 2. Advisory Group on the design of radiation protection systems in nuclear power plants | 72, No. 2 |
| 3. Technical Committee on the assessment of occupational intake of radioactive materials (for monitoring purposes) | 72, No. 16 |

<u>1985</u> (cont.)	<u>Table</u>
4. Technical Committee on the intercomparison of personnel dosimeters	72, No. 18
5. Advisory Group on the safe use of industrial radiation sources	72, No. 9
6. Advisory Group on the methodologies for source- and individual-related assessment in relation to the limitation of releases of radioactive effluents into the environment	73, No. 2
7. Advisory Group on the application of the principles for limiting radioactive releases from the mining and milling of radioactive ores	73, No. 3
8. Advisory Group on the application of the principles of radiation protection to sources of potential exposure with special reference to radioactive waste repositories	73, No. 10
9. Advisory Group on principles of monitoring for the radiation protection of the general public	73, No. 8
10. Advisory Group on source- and individual-related environmental monitoring and for effluent monitoring	73, No. 9
11. Advisory Group to revise advisory material for the application of the IAEA transport regulations	74, No. 2
12. Technical Committee on guidance for the optimization of radiation protection in the transport of radioactive materials	74, No. 6
13. Technical Committee on the assessment of the radiological impact from the transport of radioactive materials	74, No. 8
14. Advisory Group on maintaining on-site habitability during accidents at nuclear installations	75, No. 6
15. Advisory Group on intervention levels for controlling radiation doses to the public in the event of a nuclear accident or radiological emergency	75, No. 1
16. Advisory Group on post-accident assessment and recovery operations in a radiation environment	75, No. 7
17. Advisory Group on the use of thermography, cell membrane probes, EEG and other biological and biochemical indicators for estimating radiation dose	76, No. 3
18. Senior Advisory Group for establishing safety codes and guides for nuclear power plants	79, No. 1 80, Nos 1-3
19. Technical Committee to review the manual on regulatory control during the construction and operation of nuclear power plants	78, No. 6
20. Advisory Group of NUSS Liaison Officers to review NUSS implementation	78, No. 7
21. Technical Committee on the siting of research reactors	79, No. 4

1985 (cont.)Table

22.	Technical Review Committee on siting	79, Nos 1, 2 and 5
23.	Technical Review Committee on design	80, No. 1
24.	Technical Review Committee on design	80, No. 2
25.	Technical Review Committee on design	80, No. 3
26.	Advisory Group to review the manual on instrumentation and control systems	80, No. 4
27.	Technical Review Committee on operation	81, No. 1
28.	Advisory Group to review the manual on the maintenance of systems and components important to safety	81, No. 2
29.	Technical Committee on National Incident Reporting Systems	81, No. 12
30.	Technical Committee on IAEA Incident Reporting System	81, No. 11
31.	Technical Committee on operational safety issues for developing countries	81, No. 5
32.	Technical Review Committee on quality assurance	82, No. 1
33.	Specialists' Meeting on research topics	83, No. 2
34.	Technical Committee on reactor safety research	83, No. 1
35.	Technical Committee on the use of computer codes	83, No. 3
36.	Technical Committee on combining risk analysis and operating experience	84, No. 1 85, No. 2
37.	Technical Committee on probabilistic risk analysis of engineered safety systems	84, No. 5

1986Table

1.	Advisory Group to perform a limited review of the Basic Safety Standards for Radiation Protection including recommendations for exemptions of radioactive substances, apparatuses and sources from the requirement of notification, licensing and registration	71, No. 2
2.	Advisory Group on radiation protection services in nuclear power plants	72, No. 8
3.	Advisory Group on the design of radiation protection systems in nuclear fuel fabrication plants	72, No. 4
4.	Advisory Group on radiation protection services for nuclear research reactors	72, No. 7
5.	Technical Committee on the safe handling of tritium	72, No. 10
6.	Technical Committee on the radiation safety of fusion facilities	72, No. 5

NUCLEAR ENERGY AND SAFETY

<u>1986 (cont.)</u>	<u>Table</u>
7. Technical Committee on the assessment of occupational exposure to external irradiation	72, No. 15
8. Advisory Group on source- and individual-related environmental monitoring and effluent monitoring	73, No. 9
9. Advisory Group on assigning a value to radiation detriment	73, No. 6
10. Advisory Group on the application of the principles for limiting radioactive releases in the case of nuclear power plants	73, No. 4
11. Advisory Group on the application of the principles for limiting radioactive releases in the case of fuel reprocessing plants	73, No. 5
12. Advisory Group on the application of the principles of radiation protection to sources of potential exposure with special reference to radioactive waste repositories	73, No. 10
13. Advisory Group on assuring the implementation of the transport regulations	74, No. 4
14. Technical Committee on a sample optimization assessment for demonstrating compliance with the BSS	74, No. 7
15. Standing Advisory Group on the safe transport of radioactive materials	74, No. 16
16. Advisory Group on the monitoring of the accident release source in a nuclear installation	75, No. 5
17. Advisory Group on maintaining on-site habitability during accidents at nuclear installations	75, No. 6
18. Technical Committee on recent advances in the diagnosis, prognosis and treatment of radiation over-exposures	71, No. 16
19. Technical Committee on source term evaluation	78, No. 2
20. Technical Committee on governmental organization	78, No. 4
21. Senior Advisory Group on the Agency's plans for establishing safety codes and guides for nuclear power plants	82, No. 1
22. Senior Advisory Group on the Agency's plans for establishing safety codes and guides for nuclear power plants	78, No. 4 81, No. 3
23. Advisory Group of NUSS Liaison Officers to review NUSS implementation	78, No. 7
24. Technical Committee on plant/site interaction	79, No. 6
25. Technical Committee to review the manual on emergency power supply	80, No. 5
26. Technical Committee on operation	81, No. 3

<u>1986 (cont.)</u>	<u>Table</u>
27. Technical Committee on National Incident Reporting Systems	81, No. 12
28. Technical Committee on the IAEA Incident Reporting System	81, No. 11
29. Technical Committee on operational safety issues for developing countries	81, No. 5
30. Technical Committee on reactor safety research	83, No. 1
31. Specialists' Meeting on a research topic	83, No. 2
32. Technical Committee on the use of computer codes	83, No. 3
33. Technical Committee on probabilistic safety evaluation of accident precursors	
34. Technical Committee on status, experience and future prospects for the development of quantitative safety goals/design objectives	
35. Technical Committee on the identification of failure sequences sensitive to human error	85, No. 2
36. Technical Committee on the establishment of a consistent framework for risk-related data treatment and storage for routine operation and accidents	
37. Technical Committee on advances in nuclear power plant risk analysis	84, No. 3

1985/86

- | | |
|--|------------|
| 1. Technical Committee on the phenomenology and practical aspects of nuclear explosions for peaceful purposes[1] | 73, No. 11 |
|--|------------|

[1] Depending on the amount of new information available, the convening of this Technical Committee in 1985 or 1986 will be considered.

Division of Nuclear Safety

Summary of costTable 87

Item of expenditure	1983 Actual obligations	1984 Budget	Programme increase (decrease) %		1985 at 1984 price	Price increase %	1985 Estimate	1986 Preliminary estimate
Salaries for established posts	1 616 345	2 055 000	20 000	0.1	2 075 000	5.5	2 189 000	2 320 000
Consultants	136 573	132 300	38 200	28.9	170 500	5.0	179 000	190 000
Overtime	10 103	11 600	(1 200)	(10.3)	10 400	5.0	11 000	12 000
Temporary assistance	32 873	39 600	(9 600)	(24.2)	30 000	5.0	31 500	33 000
Common staff costs	566 254	678 200	7 800	1.2	686 000	8.7	744 200	789 000
Scientific equipment	46 938	39 000	(5 000)	(12.8)	34 000	5.0	35 700	38 000
Common equipment	880	5 600	(300)	(5.0)	5 300	4.0	5 500	6 000
Scientific supplies	21 834	10 100	(100)	(1.0)	10 000	4.0	10 400	11 000
Common supplies	2 215	4 100	(300)	(7.3)	3 800	4.0	4 000	4 000
Scientific and technical contracts	287 354	318 000	42 000	13.2	360 000	5.0	378 000	400 000
Training	-	11 000	700	6.4	11 700	5.5	12 300	13 000
Conferences, symposia, seminars	125 929	153 000	(9 000)	(5.8)	144 000	6.5	153 000	187 000
Technical committees, advisory groups	415 807	496 000	56 000	11.3	552 000	6.5	588 000	889 000
Hospitality	10 032	12 900	(100)	(0.8)	12 800	5.0	13 400	14 000
Travel	117 121	139 300	30 700	22.0	170 000	7.0	182 000	193 000
Common services	68 979	71 300	(4 800)	(6.7)	66 500	5.0	70 000	75 000
Other	13 095	-	70 000	-	70 000	5.5	74 000	28 000
Sub-total: Direct costs	3 472 332	4 177 000	235 000	5.6	4 412 000	6.1	4 681 000	5 202 000
Contracts administration services	20 085	35 000	(6 000)	(17.1)	29 000	6.4	31 000	33 000
Conference services	46 589	75 000	10 000	13.3	85 000	6.3	90 000	95 000
Translation and records services	439 108	447 000	(171 000)	(38.3)	276 000	6.1	293 000	311 000
Data processing services	91 174	217 000	(11 000)	(5.1)	206 000	4.0	214 000	224 000
Printing and publishing services	558 796	574 000	(57 000)	(9.9)	517 000	5.5	545 000	577 000
Sub-total: Shared costs	1 155 752	1 348 000	(235 000)	(17.4)	1 113 000	5.4	1 173 000	1 240 000
TOTAL	4 628 084	5 525 000	-	-	5 525 000	6.0	5 854 000	6 442 000

Division of Nuclear Safety

Summary of manpowerTable 88

Grade of post	Number of established posts					1985
	1983 Adjusted	1984	1984 Adjusted	Change		
				New Posts	Reclassi- fications	
D	1	1	1	-	-	1
P-5	13	15	15	-	-	15
P-4	11	11	11	1	-	12
P-3	3	3	3	-	-	3
Sub-total	28	30	30	1	-	31
GS	21	22	22	-	-	22
TOTAL	49	52	52	1	-	53

Division of Nuclear Safety

Summary of manpower and costs by SectionTable 89

Section	1984 Estimate			1985 Estimate		
	P	GS	Costs	P	GS	Costs
Radiological safety	10.3	5.7	2 141 000	10.4	5.7	2 288 000
Safety of nuclear installations	15.4	6.7	2 360 000	15.4	6.7	2 559 000
Radiation protection service	3.1	5.3	428 000	3.1	5.3	452 000
Risk assessment	1.2	4.3	596 000	2.1	4.3	555 000
Total	30.0	22.0	5 525 000	31.0	22.0	5 854 000

NUCLEAR ENERGY AND SAFETY

D I V I S I O N O F S C I E N T I F I C A N D T E C H N I C A L I N F O R M A T I O N

ACTIONS PLANNED FOR 1985-86

Table 90

Sub-programme S.5.2 International Nuclear Information System

PROJECT: INTERNATIONAL NUCLEAR INFORMATION SYSTEM				
Task	Beneficiary	Action or source	Services needed	Year of completion
1. Compilation of INIS data base	Nuclear information service organizations in Member States		Data processing	Semi-monthly, Computer tapes
2. INIS Atomindex	World nuclear community		As above	Semi-monthly
3. Microfiche document service	As above			Continuing activity
4. Technical advice on system operation	Member States, IAEA	INIS Liaison Officers' meeting, 85/1 86/1		Annual
5. INIS training seminar	Nuclear information service organizations in Member States			Annually
6. Updating of technical input-output procedures (INIS Reference Series)	INIS members	TC 85/2 TC 86/2		Annually

Table 91

Sub-programme 1.5.3 Nuclear fusion

PROJECT: PUBLICATION OF SCIENTIFIC JOURNALS				
Task	Beneficiary	Action or source	Services needed	Year of completion
1. Nuclear Fusion (journal)	World fusion community	Laboratories in Member States		Monthly
2. Technical report - World Survey of Major Activities in Controlled Fusion Research	As above	As above		1985

TECHNICAL COMMITTEES, ADVISORY GROUPS AND SPECIALISTS' MEETINGS IN 1985-86

Within the limits of the appropriation and subject to the requirements of the programme as outlined for 1985-86, it is planned to hold the meetings listed below. The reference following each meeting is to the relevant table of planned actions given above.

1985Table

- | | | |
|----|--|-----------|
| 1. | Thirteenth Consultative Meeting of INIS Liaison Officers | 90, No. 4 |
| 2. | Technical Committee on INIS input-output procedures | 90, No. 6 |

1986

- | | | |
|----|--|-----------|
| 1. | Fourteenth Consultative Meeting of INIS Liaison Officers | 90, No. 4 |
| 2. | Technical Committee on INIS input-output procedures | 90, No. 6 |

Division of Scientific and Technical Information

Summary of costs

Table 92

Item of expenditure	1983 Actual obligations	1984 Budget	Programme increase (decrease) %		1985 at 1984 price	Price increase %	1985 Estimate	1986 Preliminary estimate
Salaries for established posts	1 105 365	1 352 000	(21 000)	(1.5)	1 331 000	5.5	1 405 000	1 490 000
Consultants	-	6 000	-	-	6 000	5.0	6 400	7 000
Overtime	1 255	1 300	-	-	1 300	5.0	1 400	1 500
Temporary assistance	24 671	26 300	(300)	(1.1)	26 000	5.0	27 300	29 500
Common staff costs	387 241	445 700	(6 200)	(1.4)	439 500	8.7	478 600	506 000
Common equipment	-	46 000	(9 000)	(19.6)	37 000	4.0	38 500	48 000
Common supplies	26 903	30 000	-	-	30 000	4.0	31 000	34 000
Scientific and technical contracts	30 446	24 300	(300)	(1.2)	24 000	5.0	25 300	28 000
Training	-	6 300	-	-	6 300	5.5	6 600	7 000
Conferences, symposia, seminars	22 171	22 000	3 000	13.6	25 000	6.5	27 000	51 000
Technical committees, advisory groups	67 847	49 000	11 000	22.4	60 000	6.5	64 000	56 000
Hospitality	1 759	3 400	-	-	3 400	5.0	3 600	4 000
Travel	17 434	23 000	(200)	(0.9)	22 800	7.0	24 400	26 000
Common services	161 361	116 700	52 000	44.5	168 700	5.0	177 900	198 000
Other	3 487	-	31 000	-	31 000	3.2	32 000	223 000
Sub-total: Direct costs	1 849 940	2 152 000	60 000	2.8	2 212 000	6.2	2 349 000	2 709 000
Conference services	17 372	8 000	2 000	25.0	10 000	6.3	11 000	11 000
Translation and records services	56 723	32 000	29 000	90.6	61 000	6.1	64 000	68 000
Library	800 338	940 000	-	-	940 000	5.4	991 000	1 050 000
Data processing services	680 086	877 000	(259 000)	(29.5)	618 000	4.0	643 000	674 000
Printing and publishing services	740 267	916 000	168 000	18.3	1 084 000	5.5	1 144 000	1 210 000
Sub-total: Shared costs	2 294 786	2 773 000	(60 000)	(2.2)	2 713 000	5.2	2 853 000	3 013 000
TOTAL	4 144 726	4 925 000	-	-	4 925 000	5.6	5 202 000	5 722 000

Division of Scientific and Technical Information

Summary of manpowerTable 93

Grade of post	Number of established posts					
	1983 Adjusted	1984	1984 Adjusted	Change		1985
				New Posts	Reclass- ifications	
D	1	1	1	-	-	1
P-5	3	3	3	-	-	3
P-4	5	5	5	-	-	5
P-3	7	8	8	-	-	8
Sub-total	16	17	17	-	-	17
GS	30	29	29	1	-	30
TOTAL	46	46	46	1	-	47

Division of Scientific and Technical Information

Summary of manpower and costs by SectionTable 94

Section	1984 Estimate			1985 Estimate		
	P	GS	Costs	P	GS	Costs
Office of the Director	1	2	158 000	1	2	167 000
Scientific journals	1	3	450 000	1	3	477 000
INIS	15	24	3 377 000	15	25	3 567 000
Library	-	-	940 000	-	-	991 000
Total	17	29	4 925 000	17	30	5 202 000

APPROPRIATION SECTION 3

RESEARCH AND ISOTOPES

APPROPRIATION SECTION 3 : RESEARCH AND ISOTOPES

Summary of costsTable 95

Item of expenditure	1983 Actual obligations	1984 Budget	Programme increase (decrease) %		1985 at 1984 price	Price increase %	1985 Estimate	1986 Preliminary estimate
Salaries for established posts	5 546 638	6 636 000	(204 000)	(3.1)	6 432 000	5.5	6 785 000	7 301 000
Consultants	134 094	155 500	55 000	35.4	210 500	5.0	221 000	237 000
Overtime	22 093	20 300	6 200	30.5	26 500	5.0	27 800	30 500
Temporary assistance	28 300	26 600	3 900	14.7	30 500	5.0	32 000	39 300
Common staff costs	1 943 154	2 190 600	(65 000)	(3.0)	2 125 600	8.7	2 307 000	2 483 500
Scientific equipment	186 334	110 300	114 700	104.0	225 000	5.0	235 600	283 000
Common equipment	73 947	17 000	24 300	142.9	41 300	4.0	43 000	52 500
Scientific supplies	317 780	328 700	6 800	2.1	335 500	4.0	348 700	406 000
Common supplies	107 979	71 200	1 800	2.5	73 000	4.0	76 000	86 100
Scientific and technical contracts	1 957 663	1 840 000	80 000	4.3	1 920 000	5.0	2 016 000	2 249 000
Training	-	17 500	11 000	62.9	28 500	5.5	30 000	33 000
Conferences, symposia, seminars	137 129	293 000	(26 000)	(8.9)	267 000	6.5	284 000	318 000
Technical committees, advisory groups	176 826	214 000	22 000	10.3	236 000	6.5	251 000	397 000
Hospitality	12 478	19 800	(1 100)	(5.6)	18 700	5.0	19 600	21 500
Travel	125 800	155 300	26 200	16.9	181 500	7.0	194 000	206 000
Common services	1 066 367	842 200	25 200	3.0	867 400	5.0	914 300	1 049 600
Non-shared transferred costs	(1 335 763)	(1 250 000)	-	-	(1 250 000)	5.9	(1 322 000)	(1 420 000)
Other	4 544	-	34 000	-	34 000	5.9	36 000	64 000
Sub-total: Direct costs	10 505 363	11 688 000	115 000	1.0	11 803 000	5.9	12 499 000	13 837 000
Contracts administration services	120 513	220 000	11 000	5.0	231 000	6.4	246 000	261 000
Conference services	56 855	97 000	31 000	32.0	128 000	6.3	136 000	143 000
Translation and records services	208 025	274 000	(41 000)	(15.0)	233 000	6.1	247 000	261 000
Data processing services	286 838	341 000	39 000	11.4	380 000	3.7	394 000	414 000
Printing and publishing services	935 573	1 017 000	(9 000)	(0.9)	1 008 000	5.5	1 063 000	1 125 000
Sub-total: Shared costs	1 607 804	1 949 000	31 000	1.6	1 980 000	5.4	2 086 000	2 204 000
TOTAL	12 113 167	13 637 000	146 000	1.1	13 783 000	5.8	14 585 000	16 041 000

APPROPRIATION SECTION 3 : RESEARCH AND ISOTOPES

Expenditure by Division

Table 96

Division	1983 Actual obligations	1984 Budget	Programme increase (decrease) %		1985 at 1984 price	Price increase %	1985 Estimate	1986 Preliminary estimate
3. Food and Agriculture	2 594 871	2 987 000	17 000	0.6	3 004 000	5.7	3 174 000	3 428 000
Life Sciences	2 143 583	2 424 000	120 000	5.0	2 544 000	5.8	2 692 000	3 014 000
Research and Laboratories	3 388 712	3 945 000	9 000	0.2	3 954 000	5.9	4 186 000	4 522 000
Laboratory	3 986 001	4 281 000	-	-	4 281 000	5.9	4 533 000	5 077 000
Total Appropriation Section	12 113 167	13 637 000	146 000	1.1	13 783 000	5.8	14 585 000	16 041 000

APPROPRIATION SECTION 3: RESEARCH AND ISOTOPES

Manpower by Division

Table 97

Division	1984				1985			
	P	GS	M&O	Total	P	GS	M&O	Total
Food and Agriculture	15	8	-	23	16	8	-	24
Life Sciences	13	9	-	22	13	9	-	22
Research and Laboratories	27	18	-	45	27	18	-	45
Laboratory	30	55	27	112	30	55	27	112
Total Appropriation Section	85	90	27	202	86	90	27	203

DIVISION OF FOOD AND AGRICULTURE

ACTIONS PLANNED FOR 1985-86

Table 98

Sub-programme 2.1.1 Soil fertility, irrigation and crop production

PROJECT: OPTIMIZATION OF CROP PRODUCTION BY IMPROVED PLANT NUTRITION				
Task	Beneficiary	Action or source	Services needed	Year of completion
1. CRP on nuclear techniques in the development of fertilizer and water management practices for multiple cropping systems (81-85)	Agricultural research institutions		^{15}N and ^{32}P analyses (AL) ^{a/}	Final report, 1986
2. CRP on isotopic studies of nitrogen fixation in nitrogen cycling in <u>Azolla</u> and blue-green algae (83-87)	As above		Preparatory research, ^{15}N analyses, training (AL)	
3. CRP on nuclear techniques in improving pasture management (82-86)	As above		^{15}N analyses (AL)	Final report, 1987
4. CRP on the use of rock phosphates as a source of phosphorus for crops (84-88)	As above		Preparatory research, ^{32}P analyses, training (AL)	
5. CRP on the optimization of fertilizer and water uptake in tree crops (84-88)	As above		Preparatory research, ^{15}N and ^{32}P analyses, training (AL)	
6. Technical report on the use of nuclear techniques in studies of fertilizer use efficiency	As above	AG 86/1		1987
PROJECT: IMPROVING CROP PRODUCTION BY OPTIMIZING THE PHYSICAL CHARACTERISTICS OF SOILS AND WATER QUALITY AND MANAGEMENT				
Task	Beneficiary	Action or source	Services needed	Year of completion
7. CRP on irrigation management and crop production in saline and salt-affected soils (84-88)	As above		Preparatory research, ^{15}N and ^{32}P analyses, neutron probe calibration, training (AL)	
8. CRP on soil/water management practices with special reference to minimum tillage and erosion (86-90)	As above		Preparatory research, radiotracer analysis, training (AL)	
9. Technical report on the use of nuclear techniques in studies of water conservation through improved soil and water management practices	As above	AG 85/1		1986
<u>General</u>				
10. Technical report - Laboratory training manual on the use of isotope and radiation techniques in soil-plant relationship studies	University students, research workers		Testing concepts and methods (AL)	1985
11. Soils Newsletter	Agricultural research institutions			Quarterly

^{a/} Agency's Laboratory

Table 99

Sub-programme 2.1.2 Plant breeding and genetics

PROJECT: CROP IMPROVEMENT THROUGH INDUCED MUTATIONS				
Task	Beneficiary	Action or source	Services needed	Year of completion
1. CRP on the use of induced mutations for improvement of grain legume production in South East Asia (77-85)	Agricultural research institutions		Preparatory research, seed irradiation, training (AL)	
2. CRP on induced mutations for disease resistance in grain legumes (77-85)	As above		As above	
3. CRP on the evaluation of semi-dwarf cereal mutants for cross breeding (81-85)	As above		As above	Final report, 1986
4. CRP on the improvement of leguminous and oil seed crops in Latin America (82-86)	As above		As above	Final report, 1987
5. CRP on the improvement of leguminous food crops in Africa and the Near East (81-86)	As above		As above	Final report, 1987
6. CRP on semi-dwarf mutants for rice improvement in South East Asia (82-86)	As above		As above	Final report, 1987
7. CRP on the improvement of root and tuber crops and similar vegetatively propagated crop plants in tropical countries (83-88)	As above		As above	
8. CRP on the improvement of oil seed and industrial crops (84-89)	As above		As above	
9. CRP on the improvement of nitrogen fixation in leguminous crops (84-89)	As above		As above	
10. Annual training course on the induction and use of mutation in plant breeding	Research workers		Technical co-operation	
11. Technical report on the possible use of mutation breeding for rapid domestication of new crop plants	As above		AG 86/2	1987
12. Technical report - Revision of the Manual on Mutation Breeding	As above			1986
PROJECT: DEVELOPMENT AND TRANSFER OF INDUCED MUTATION TECHNOLOGY				
Task	Beneficiary	Action or source	Services needed	Year of completion
13. CRP on <u>in vitro</u> technology for mutation breeding (83-87)	Agricultural research institutions		Preparatory research (AL)	
14. CRP on tissue culture applications through mutation breeding to increase resistance in rice against adverse soil factors (83-88)	As above		As above	
15. CRP on the improvement of basic food crops in Africa through plant breeding including the use of induced mutation (84-89)	As above		As above	
16. Symposium on the use of nuclear techniques and <u>in vitro</u> culture for plant improvement (1985)	Research workers			Proceedings, 1985
<u>General</u>				
17. Mutation Breeding Newsletter	Agricultural research institutions			Quarterly

Table 100Sub-programme 2.1.3 Animal production and health

PROJECT: ANIMAL PRODUCTION AND HEALTH				
Task	Beneficiary	Action or source	Services needed	Year of completion
1. CRP on isotope-aided studies of non-protein Nitrogen and agro-industrial by-product utilization by ruminants, with particular reference to developing countries (80-85)	Agricultural research institutions		Quality control, preparatory research, training (AL)	Final report, 1986
2. CRP on optimizing grazing animal productivity in the Mediterranean and North African region with the aid of nuclear techniques (82-87)	As above		As above	
3. CRP on improving sheep and goat productivity with the aid of nuclear techniques, with particular reference to Africa and the Middle East (83-88)	As above		As above	
4. CRP on the use of nuclear techniques to improve domestic buffalo production in Asia (Phase II) (84-89)	As above		As above	
5. CRP on the application of radioimmunoassay to improve the reproductive efficiency and productivity of large ruminants (83-88)	As above		As above	
6. CRP on the regional network for improving reproductive management of meat- and milk-producing livestock in Latin America with the aid of radioimmunoassay techniques (84-89)	As above		As above	
7. CRP on the use of nuclear techniques in the study and control of parasitic diseases in farm animals (81-86)	As above		As above	Final report, 1987
8. Seminar on the use of nuclear techniques in research aimed at improving meat, milk and wool production from ruminant animals in Africa and the Middle East (1985)	As above			Summary report, 1985
9. Technical report on improving the productivity of indigenous animals in harsh environments with the aid of nuclear techniques	As above	AG 85/2		1986
10. Symposium on the use of nuclear techniques in studies of animal production in different environments (1986)	As above			Proceedings, 1987
<u>General</u>				
11. Animal Production and Health Newsletter	As above			Quarterly

Table 101

Sub-programme 2.1.4 Insect and pest control

PROJECT: DEVELOPMENT OF THE STERILE INSECT TECHNIQUE FOR THE CONTROL OF INSECT PESTS				
Task	Beneficiary	Action or source	Services needed	Year of completion
1. CRP on tsetse fly control or eradication by the sterile-insect technique (80-87)	Agricultural research institutions		Back-up research, training (AL)	
2. CRP on the development of artificial diets for tsetse and other haematophagous insects (80-87)	As above		As above	
3. CRP on the development of sexing mechanisms in fruit flies through manipulation of radiation-induced conditional lethals and other genetic measures (81-87)	As above		As above	
4. CRP on the evaluation of attractants and traps for medfly control (84-88)	As above		As above	
5. CRP on the evaluation of the role of the sterile-insect technique in mosquito eradication programmes (85-89)	Health and agricultural research institutions		As above	
6. Technical report on radiation-induced genetic control of insect pests		AG 86/3		1987
7. Technical report on medfly eradication through the use of isotopes and radiation		AG 85/3		1986
PROJECT: DEVELOPMENT OF INSECT PEST MANAGEMENT SYSTEMS BY USING ISOTOPES AND RADIATION TECHNIQUES				
Task	Beneficiary	Action or source	Services needed	Year of completion
8. CRP on the use of isotopes in pest management with emphasis on rice insects (80-85)	Agricultural research institutions	As above		Final report, 1986
PROJECT: DEVELOPMENT OF GENETIC METHODS FOR THE CONTROL OF LEPIDOPTERAN SPECIES				
Task	Beneficiary	Action or source	Services needed	Year of completion
9. CRP on F_1 sterility and other genetic methods for controlling Lepidopteran crop pests (85-89)	As above		As above	
10. Technical document on the genetic control of major insect pests of field crops	As above	TC 86/5		1986
<u>General</u>				
11. Technical report - Revision of the Laboratory Training Manual on Isotopes and Radiation in Entomology	Agricultural research institutions			1986
12. Information Circular	As above			Quarterly

Table 102

Sub-programme 2.1.5 Agrochemicals and residues**PROJECT: IMPROVING THE EFFICACY OF AGROCHEMICALS IN PROTECTING
FOOD SOURCES FROM PESTS BY MEANS OF NUCLEAR TECHNIQUES**

Task	Beneficiary	Action or source	Services needed	Year of completion
1. CRP on the development and evaluation of controlled-release formulations of pesticides to reduce residues and increase efficacy, utilizing radioisotopes (82-87)	Agricultural research institutions		Preparatory research (AL)	Final report, 1987
2. CRP on isotope-aided research on insect pheromones for pest management in developing countries (85-89)	As above		As above	

**PROJECT: IMPROVING THE SAFE USE OF AGROCHEMICALS BY DETERMINING THEIR FATE IN
PLANTS, ANIMALS, FOOD AND THE ENVIRONMENT BY MEANS OF NUCLEAR TECHNIQUES**

Task	Beneficiary	Action or source	Services needed	Year of completion
3. CRP on isotopic tracer-aided studies of unextractable or "bound" pesticides in soil, plants and food (81-85)	As above			Final report, 1986
4. CRP on studies of agricultural chemical residues in meat, milk and related products of livestock with the aid of nuclear techniques (82-86)	As above		As above	Final report, 1987
5. CRP on the fate of persistent pesticides in the tropics, using isotope techniques (83-88)	As above		As above	
6. CRP on isotopic tracer-aided studies of pesticide residues in stored products (82-87)	As above		As above	
7. CRP on the use of isotopes in studies of pesticide residues in rice-fish ecosystems (84-88)	As above		As above	
8. CRP on radiotracer studies of fungicide residues in food plants (84-88)	As above		As above	
9. CRP on the development of improved rural methane production from biomass, utilizing nuclear techniques (82-86)	As above		As above	Final report, 1987
10. Technical report on isotope-aided studies of pesticide residues in different ecosystems	As above	AG 86/4		1987
<u>General</u>				
11. Seminar on research and development of controlled-release technology for pesticides using isotopes (1985)	As above			Summary report, 1985
12. Agrochemicals Newsletter	As above			Quarterly

Table 103Sub-programme 2.1.6 Food preservation

PROJECT: TECHNOLOGICAL AND ECONOMIC FEASIBILITY OF FOOD IRRADIATION				
Task	Beneficiary	Action or source	Services needed	Year of completion
1. CRP on pre-commercial scale radiation treatment of food (82-85)	Food research institutions, food industry			Final report, 1986
2. CRP on insect disinfestation of food and agricultural products by irradiation (81-86)	As above			Final report, 1987
3. CRP - Asian Regional Co-operative Project on food irradiation (84-89)	As above			
4. Annual training course on food irradiation technology	Food research institutions, research workers	IFFIT	Technical co-operation	
5. CRP on irradiation as a quarantine treatment of agricultural commodities (85-90)	Food research institutes, food industry			
PROJECT: PUBLIC HEALTH ACCEPTANCE AND REGULATORY ASPECTS OF THE PROCESS OF FOOD IRRADIATION				
Task	Beneficiary	Action or source	Services needed	Year of completion
6. CRP on factors influencing the utilization of food irradiation processes (80-85)	Food research institutions, food industry, public health authorities			Final report, 1986
7. Symposium on food irradiation processing (1985)	As above			Proceedings, 1986
8. Seminar on the practical application of food irradiation in Asia and the Pacific (1986)	As above			Summary report, 1986
9. CRP on methods of improving readily applicable food irradiation technologies (86-91)	Food research institutions, food industry			
10. Technical document - Recommendations on the wholesomeness of high-dose irradiated foods	Public health authorities	JECFI 85/4		1986
<u>General</u>				
11. Food Irradiation Newsletter	Food research institutions			Quarterly

TECHNICAL COMMITTEES, ADVISORY GROUPS AND SPECIALISTS' MEETINGS IN 1985-86

Within the limits of the appropriation and subject to the requirements of the programme as outlined for 1985-86, it is planned to hold the meetings listed below. The reference following each meeting is to the relevant table of planned actions given above.

<u>1985</u>	<u>Table</u>
1. FAO/IAEA Advisory Group on the use of nuclear techniques in studies of water conservation through improved soil and water management practices	98, No. 9
2. FAO/IAEA Advisory Group on improving the productivity of indigenous animals in harsh environments with the aid of nuclear techniques	100, No. 9
3. FAO/IAEA Advisory Group on medfly eradication through the use of isotopes and radiation	101, No. 7
4. FAO/IAEA/WHO Expert Committee (JECFI) on the wholesomeness of high-dose irradiated foods	103, No. 10
<u>1986</u>	
1. FAO/IAEA Advisory Group on the use of nuclear techniques in studies of fertilizer use efficiency	98, No. 6
2. FAO/IAEA Advisory Group on the possible use of mutation breeding for rapid domestication of new crop plants	99, No. 11
3. FAO/IAEA Advisory Group on radiation-induced genetic control of insect pests	101, No. 6
4. FAO/IAEA Advisory Group on isotope-aided studies of pesticide residues in different ecosystems	102, No. 10
5. Technical Committee on the genetic control of major insect pests of field crops	101, No. 10

Division of Food and Agriculture^{a/}

Summary of cost

Table 104

Item of expenditure	1983 Actual obligations	1984 Budget	Programme increase (decrease) %		1985 at 1984 price	Price increase %	1985 Estimate	1986 Preliminary estimate
Salaries for established posts	781 150	982 000	(10 000)	(1.0)	972 000	5.5	1 025 000	1 090 000
Consultants	40 008	50 000	10 000	20.0	60 000	5.0	63 000	67 000
Overtime	-	500	-	-	500	5.0	500	500
Temporary assistance	1 261	500	-	-	500	5.0	500	500
Common staff costs	273 661	324 500	(2 500)	(0.8)	322 000	8.7	348 000	371 000
Common equipment	-	2 000	-	-	2 000	4.0	2 100	2 200
Common supplies	3 157	-	-	-	-	-	-	-
Scientific and technical contracts	888 399	746 000	54 000	7.2	800 000	5.0	840 000	923 000
Training	-	4 500	-	-	4 500	5.5	4 700	4 800
Conferences, symposia, seminars	46 102	101 000	(7 000)	(6.9)	94 000	6.5	100 000	68 000
Technical committees, advisory groups	48 102	58 000	(12 000)	(20.7)	46 000	6.5	49 000	118 000
Hospitality	3 652	6 000	-	-	6 000	5.0	6 300	6 500
Travel	40 126	48 500	1 500	3.1	50 000	7.0	53 000	56 000
Common services	6 422	5 500	1 000	18.2	6 500	5.0	6 900	7 500
Sub-total: Direct costs	2 132 040	2 329 000	35 000	1.5	2 364 000	5.7	2 499 000	2 715 000
Contracts administration services	47 703	90 000	6 000	6.7	96 000	6.4	102 000	108 000
Conference services	14 214	24 000	15 000	62.5	39 000	6.3	41 000	43 000
Translation and records services	100 078	135 000	(18 000)	(13.3)	117 000	6.1	124 000	131 000
Data processing services	28 841	43 000	12 000	27.9	55 000	4.0	57 000	60 000
Printing and publishing services	271 995	366 000	(33 000)	(9.0)	333 000	5.5	351 000	371 000
Sub-total: Shared costs	462 831	658 000	(18 000)	(2.7)	640 000	5.5	675 000	713 000
TOTAL	2 594 871	2 987 000	17 000	0.6	3 004 000	5.7	3 174 000	3 428 000

^{a/} See footnote b/ on Table 37.

Division of Food and Agriculture

Summary of manpowerTable 105

Grade of post	Number of established posts										
	1983 Adjusted		1984		1984 Adjusted		Change		1985		
							New posts	Reclassi- fications			
D	-	(1)	-	(1)	-	(1)	-	-	-	-	(1)
P-5	6	(2)	6	(2)	6	(2)	-	-	-	-	6 (2)
P-4	7	(3)	7	(3)	6	(3)	-	-	-	-	6 (3)
P-3	1	(-)	1	(-)	2	(-)	-	-	-	-	2 (-)
P-2	1	(-)	1	(-)	1	(-)	1	-	-	-	2 (-)
Sub-total	15	(6)	15	(6)	15	(6)	1	-	-	-	16 (6)
GS	8	(6)	8	(6)	8	(6)	-	-	-	-	8 (6)
TOTAL	23	(12)	23	(12)	23	(12)	1	-	-	-	24 (12)

Division of Food and Agriculture

Summary of manpower and costs by SectionTable 106

Section	1984 Estimate			1985 Estimate		
	P	GS	Costs	P	GS	Costs
Soil fertility, irrigation and crop production	4.2	1.4	647 000	4.2	1.4	624 000
Plant breeding and genetics	2.2	1.4	447 000	2.2	1.4	539 000
Animal production and health	1.2	1.3	356 000	2.2	1.3	486 000
Insect and pest control	2.1	1.3	492 000	1.1	1.3	380 000
Agrochemicals and residues	1.2	2.2	371 000	2.2	2.2	491 000
Food preservation	4.1	0.4	674 000	4.1	0.4	654 000
TOTAL	15.0	8.0	2 987 000	16.0	8.0	3 174 000

D I V I S I O N O F L I F E S C I E N C E S

ACTIONS PLANNED FOR 1985-86

Table 107Sub-programme 2.2.1 Nuclear medicine

PROJECT: ESTABLISHMENT AND STRENGTHENING OF NUCLEAR MEDICINE SERVICES IN MEDICAL INSTITUTIONS				
Task	Beneficiary	Action or source	Services needed	Year of completion
1. CRP on the optimization of nuclear medicine procedures for diagnosis and management of thyroid disorders (83-86)	Nuclear medicine laboratories		External quality control service	Final report, 1987
2. CRP on the improvement of nuclear techniques in the study of liver disorders (84-88)	As above			
3. Establishment of library of selected computer programs for nuclear medicine	As above		Consultants	1985
4. Annual training course on RIA techniques (2-3 weeks)	Radioimmunoassayists	Technical co-operation		
5. Annual training course on general nuclear medicine (8 weeks)	Nuclear medicine physicians	As above		
PROJECT: DEVELOPMENT AND ESTABLISHMENT OF QUALITY ASSURANCE PROCEDURES AND SERVICES				
Task	Beneficiary	Action or source	Services needed	Year of completion
6. CRP on the investigation of the reliability of RIA of thyroid-related hormones (83-87)	RIA laboratories			1989
7. CRP on the quality control of hospital-produced radiopharmaceuticals (85-89) (jointly with RIRL)	Nuclear medicine laboratories			
8. CRP on the investigation of national practice in quality control of nuclear medicine instruments (Asia) (84-88)	As above			
9. CRP on the investigation of national practice in quality control of nuclear medicine instruments (Latin America) (84-88)	As above			
10. Technical report on recommended procedures for QC tests of nuclear medicine instruments (extension and revision)	As above		Consultants	1985
11. Development and testing of software to perform recommended QC tests of gamma cameras	As above		Consultants	1986
12. Survey of imaging performance using IAEA/WHO phantom	As above		Laboratory and data analysis	Summary report, 1986
13. Annual training course on data processing in RIA (2 weeks)	RIA laboratories	Technical co-operation		
14. Regional seminar on quality control in RIA (Latin America) (1985)	As above	As above		Summary report, 1985
15. Regional seminar on quality control of nuclear medicine instruments (Africa and Middle East) (1986)	Nuclear medicine laboratories			Summary report, 1986

RESEARCH AND ISOTOPES

Table 107 (cont.)

PROJECT: RESEARCH ON NUCLEAR TECHNIQUES FOR THE STUDY OF PARASITIC DISEASES				
Task	Beneficiary	Action or source	Services needed	Year of completion
16. CRP on nuclear techniques for the detection of parasitic antigens in host body fluids (82-86)	Immunodiagnostic laboratories		Reagents, training	Final report, 1987
17. CRP on nuclear techniques for the diagnosis of tropical parasitic diseases (84-87) (RCA)	As above		As above	
18. CRP on nuclear techniques for monitoring malaria vectors (83-87)	Epidemiology laboratories		As above	
19. CRP on the evaluation of radiation immobilization of bioactive materials for immunoradiometric assays (86-89) (jointly with RIRL)	Immunodiagnostic laboratories		As above	
20. Annual training course on immunoradiometric assays (RCA) (2 weeks)	As above	Technical co-operation	As above	
<u>General</u>				
21. Symposium on the medical applications of nuclear techniques in developing countries (1985)	Nuclear medicine laboratories			Proceedings, 1985
22. Technical report on the educational requirements for nuclear medicine technicians and physicists	Developing Member States	AG 85/1		1986

Table 108

Sub-programme 2.2.2 Radiotherapy

PROJECT: RADIOTHERAPY				
Task	Beneficiary	Action or source	Services needed	Year of completion
1. CRP on the collection and evaluation of recent data on combining radiation treatment with chemical and physical means in Asian countries (RCA) (83-87)	Medical institutes, especially cancer hospitals and patients mainly in developing countries			
2. CRP on the collection and evaluation of recent data on combining radiation treatment with chemical and physical means (83-87)	As above			
3. CRP on the assessment of the effectiveness of high-LET radiation (82-87)	As above			
4. Annual 5-week regional training course on brachytherapy (RCA) or radiotherapy	Medical institutes and hospitals	Technical co-operation		
5. Symposium on radiation therapy in developing countries: present status and future trends (1986)	As above			Proceedings, 1986

Table 109

Sub-programme 2.2.3 Applied radiation biology

PROJECT: APPLIED RADIATION BIOLOGY				
Task	Beneficiary	Action or source	Services needed	Year of completion
1. CRP on the adaptation of existing practices for the radiation sterilization of medical supplies to local conditions in Africa and the Middle East (83-87)	Public health-care services, general population, national health authorities			
2. CRP on practices for the radiation sterilization of tissue grafts and the establishment of tissue banking in Asia (84-88)	Public health-care services for traumatology and disabled patients, rehabilitative surgeons, national health authorities			
3. Development of a biological dosimeter for radiation protection	National radiation protection authorities, workers at nuclear installations, risk exposure evaluators	CRP 82-85 (jointly with Division of Nuclear Safety)		
4. CRP on the use of radiation and radioisotope techniques for the development of a defined antigen vaccine (84-87)	Research institutes, especially in developing Member States			
5. CRP to promote radiation treatment of sewage sludge for safe re-utilization (83-85) (jointly with RIRL)	Public health and municipal waste management authorities, national environmental protection/regulatory agencies, authorities dealing with by-product re-utilization programmes			
6. Technical report - Revision of the Code of Practice for the Radiation Sterilization of Medical Supplies (Asia and Pacific region)	National health regulatory bodies, public health services	AG 86/1		1986
7. Seminar on radiation sterilization practices in Africa and the Middle East (1985)	Medical profession			Summary report, 1986

Table 110

Sub-programme 2.2.4 Trace elements in the environment and in nutrition

PROJECT: IMPROVING HUMAN HEALTH THROUGH RESEARCH ON TOXIC ELEMENTS IN THE ENVIRONMENT				
Task	Beneficiary	Action or source	Services needed	Year of completion
1. CRP on nuclear analytical techniques in the study of occupational exposure to heavy elements (82-87)	Research institutes, industrial workers		Quality control (AL)	Final report, 1987
2. CRP on the significance of hair mineral analysis for assessing internal body burdens of environmental mineral pollutants (83-88)	Environmental research institutes		Quality control, analyses (AL)	
3. CRP on monitoring compliance with regulations for toxic elements in foodstuffs, water and air (RCA) (85-89)	Environmental and nutritional research institutes		As above	
4. Technical document - Laboratory training manual for training courses	Environmental research institutes	Consultants		1985
5. Technical report on nuclear techniques in occupational and environmental health studies	Environmental and occupational health institutes	CM 80 AG 86/2		1987
6. Technical document on QC guidelines	Environmental research institutes, national laboratories			1985
PROJECT: IMPROVING HUMAN HEALTH THROUGH ISOTOPE-AIDED NUTRITION RESEARCH				
Task	Beneficiary	Action or source	Services needed	Year of completion
7. CRP on dietary intakes of nutritionally important trace elements (83-88)	Nutrition research institutes		Quality control, analyses (AL)	
8. CRP on applications of stable-isotope-labelled macronutrients in studies of malabsorption and malnutrition (86-90)	Medical and nutrition research institutes		As above	
9. Seminar on stable isotopes in medicine (1986)	As above			Summary report, 1986
10. Technical document - Directory of reference materials	Research workers			1985
11. Technical document on isotope tracer methods for studying the bio-availability and nutritional status of essential and toxic mineral elements	As above	CM 85		1986

Table 111Sub-programme 2.2.5 Radiation dosimetry

PROJECT: DEVELOPMENT OF IAEA/WHO NETWORK OF SSDLS				
Task	Beneficiary	Action or source	Services needed	Year of completion
1. Dose intercomparisons for about 20 SSDLS	National health and regulatory authorities, radiotherapy hospitals, individual SSDLS, users of radiation	AL	AL, data processing	Annually
2. Calibration and advisory missions to about 10 SSDLS	As above	Technical co-operation (interregional project)	Outside expert	
3. SSDL Circular Letter	As above			Semi-annually
4. Technical report - SSDL manual on measurement of radioactivity	As above	CM 85		1985
5. On-site training for SSDL staff (6-8 m/m per year)	As above	AL		
6. Technical report - Code of practice for the dosimetry of high-energy gamma and electron beams		AG 85/2 AG 86/3 Consultants		1986
PROJECT: OPERATION OF IAEA/WHO POSTAL DOSE SERVICE FOR RADIOTHERAPY				
Task	Beneficiary	Action or source	Services needed	Year of completion
7. Postal dose service for cobalt-60 dosimetry for about 300 radiotherapy hospitals	Radiotherapy hospitals	AL	AL, data processing	Annually
8. Postal dose service for high energy photons and electrons for about 50 radiotherapy hospitals	As above	AL	AL, data processing, outside laboratories	Annually
9. Technical document - Manual for laboratory training programme	SSDL personnel	AL Consultants	AL	1986
PROJECT: DEVELOPMENT OF DOSIMETRY FOR RADIATION PROCESSING				
Task	Beneficiary	Action or source	Services needed	Year of completion
10. Development of a dosimeter for use in the electron high-dose QA service	Radiation processing industry, national regulatory authorities, facility operators	CRP 84-89	Primary Standards Dosimetry Laboratories, AL	
11. International gamma dose assurance service (about 100 irradiation facilities)	Irradiation facilities	IAEA/GSF/ Member States		Annually

Table 112Sub-programme 2.3.6 Instrumentation

PROJECT: INSTRUMENTATION				
Task	Beneficiary	Action or source	Services needed	Year of completion
1. Annual training course on the maintenance of nuclear instruments (6 weeks)	Users of nuclear instruments in developing countries	Technical co-operation	AL	
2. Technical document on power conditioning for nuclear instruments	As above			1985
3. CRP on the formulation and implementation of maintenance plans for nuclear laboratories in South East Asia (RCA) (79-86)	Nuclear laboratories in developing countries			Final report, 1986
4. CRP on the formulation and implementation of maintenance plans for nuclear laboratories in Latin America (80-86)	As above			Final report, 1986

TECHNICAL COMMITTEES, ADVISORY GROUPS AND SPECIALISTS' MEETINGS IN 1985-86

Within the limits of the appropriation and subject to the requirements of the programme as outlined for 1985-86, it is planned to hold the meetings listed below. The reference following each meeting is to the relevant table of planned actions given above.

1985Table

- | | | |
|----|--|-------------|
| 1. | Advisory Group on the educational requirements for nuclear medicine technicians and physicists in developing countries | 107, No. 22 |
| 2. | Advisory Group on the code of practice for the dosimetry of high-energy gamma and electron beams in radiotherapy | 111, No. 6 |

1986

- | | | |
|----|--|------------|
| 1. | Advisory Group on the code of practice for the radiation sterilization of medical supplies (Asia and Pacific region) | 109, No. 6 |
| 2. | Advisory Group on nuclear-based techniques in occupational and environmental health studies | 110, No. 5 |
| 3. | Advisory Group on the code of practice for the dosimetry of high-energy gamma and electron beams in radiotherapy | 111, No. 6 |

Division of Life Sciences

Summary of cost

Table 113

Item of expenditure	1983 Actual obligations	1984 Budget	Programme increase (decrease) %		1985 at 1984 price	Price increase %	1985 Estimate	1986 Preliminary estimate
Salaries for established posts	740 413	880 000	11 000	4.3	891 000	5.5	940 000	1 015 000
Consultants	36 500	35 500	24 500	69.0	60 000	5.0	63 000	70 000
Temporary assistance	-	300	1 700	566.7	2 000	5.0	2 100	2 200
Common staff costs	259 388	291 000	3 700	1.3	294 700	8.7	319 800	345 000
Common equipment	721	-	-	-	-	-	-	-
Scientific supplies	244	1 700	(700)	(41.2)	1 000	4.0	1 000	1 000
Common supplies	23	500	400	80.0	900	4.0	900	1 000
Scientific and technical contracts	644 895	742 000	15 000	2.0	757 000	5.0	795 000	926 000
Training	-	-	2 000	-	2 000	5.5	2 100	2 200
Conferences, symposia, seminars	44 578	73 000	4 000	5.5	77 000	6.5	82 000	92 000
Technical committees, advisory groups	29 734	24 000	1 000	4.2	25 000	6.5	27 000	61 000
Hospitality	3 708	4 500	(700)	(15.6)	3 800	5.0	4 000	5 000
Travel	35 871	43 800	12 000	27.4	55 800	7.0	60 000	64 000
Common services	4 893	4 700	1 100	23.4	5 800	5.5	6 100	7 600
Other	-	-	-	-	-	-	-	10 000
Sub-total: Direct costs	1 800 968	2 101 000	75 000	3.6	2 176 000	5.8	2 303 000	2 602 000
Contracts administration services	50 214	85 000	5 000	5.9	90 000	6.4	96 000	102 000
Conference services	15 003	23 000	7 000	30.4	30 000	6.3	32 000	34 000
Translation and records services	42 379	51 000	(17 000)	(33.3)	34 000	6.1	36 000	38 000
Data processing services	16 746	29 000	10 000	34.5	39 000	4.0	40 000	42 000
Printing and publishing services	218 273	135 000	40 000	29.6	175 000	5.5	185 000	196 000
Sub-total: Shared costs	342 615	323 000	45 000	13.9	368 000	5.4	389 000	412 000
TOTAL	2 143 583	2 424 000	120 000	5.0	2 544 000	5.8	2 692 000	3 014 000

Division of Life Sciences

Summary of manpowerTable 114

Grade of post	Number of established posts					
	1983 Adjusted	1984	1984 Adjusted	Change		1985
				New posts	Reclassi- fications	
D	1	1	1	-	-	1
P-5	5	5	4	-	-	4
P-4	5	5	6	-	-	6
P-3	1	2	2	-	-	2
Sub-total	12	13	13	-	-	13
GS	10	9	9	-	-	9
TOTAL	22	22	22	-	-	22

Division of Life Sciences

Summary of manpower and costs by SectionTable 115

Section	1984 Estimate			1985 Estimate		
	P	GS	Costs	P	GS	Costs
Medical applications	3.2	2.2	702 000	3.2	2.2	947 000
Dosimetry for intentional radiation exposures	4.3	3.3	672 000	4.3	3.3	697 000
Radiation biology and health- related environmental research	5.5	3.5	1 050 000	5.5	3.5	1 048 000
TOTAL	13.0	9.0	2 424 000	13.0	9.0	2 692 000

DIVISION OF RESEARCH AND LABORATORIES

ACTIONS PLANNED FOR 1985-86

Table 116

Sub-programme 2.3.1 Physics

PROJECT: IMPROVEMENT OF INSTRUMENTAL NUCLEAR ANALYTICAL TECHNIQUES				
Task	Beneficiary	Action or source	Services needed	Year of completion
1. Development of software for use on microcomputers	Nuclear research laboratories in developing countries	CRP 84-87		1986
2. CRP on solid state nuclear track detectors (85-87)	As above			Final report, 1987
3. Technical report on improved nuclear methods in the study of specific materials such as metals and alloys	As above			1985
4. Technical document - Procedures manual on training for nuclear sciences	As above	AG 85/3		1985
5. Internal report on the Agency's training activities in nuclear sciences	Secretariat	AG 86/1		1986
6. Technical document on the use of accelerators in small laboratories	Nuclear research laboratories in developing countries	TC 85/4		1985
7. Annual training course on X-ray fluorescence analysis	As above	Technical co-operation		
PROJECT: ASSESSMENT OF THE IMPACT OF NUCLEAR SCIENCES ON DEVELOPING COUNTRIES				
Task	Beneficiary	Action or source	Services needed	Year of completion
8. Symposium on the significance and impact of nuclear research in developing countries (1986)	Nuclear science laboratories, universities, organizations			Proceedings, 1986
PROJECT: RESEARCH REACTOR UTILIZATION				
Task	Beneficiary	Action or source	Services needed	Year of completion
9. Technical report on research reactor activities in support of national nuclear power programmes	Research reactor owners/operators	TC 85/2		1986
10. Technical report - Guidebook on the efficient use of research reactors	As above			1985
11. Seminar on applied research and service activities for research reactor operation (1985)	As above			Summary report, 1985
12. CRP on core management techniques to improve radioisotope production in research reactors (84-87)	As above		Preparatory research	Final report, 1987
13. Development of software for small computers for research reactor operation	As above	CRP 84-87	As above	

Table 116 (cont.)

PROJECT: CONVERSION OF RESEARCH REACTORS TO LEU FUELS				
Task	Beneficiary	Action or source	Services needed	Year of completion
14. Technical report on the physical properties and irradiation behaviour of LEU fuels	As above	TC 85/1 TC 86/2	Development and testing of fuels in Member States	1986

Table 117Sub-programme 1.5.3 Nuclear fusion

PROJECT: NUCLEAR FUSION				
Task	Beneficiary	Action or source	Services needed	Year of completion
1. Technical document on auxiliary heating and current drive in fusion	National fusion laboratories	SP 85/5		1985
2. Technical document on the theory of thermonuclear plasmas	As above	SP 85/6		1985
3. Technical report - Phase II.A INTOR Workshop Report (Part 2)	Individual or groups of Member States	TC 85/7		1986
4. Technical report - Phase II.A INTOR Workshop Report (Part 3)	As above	TC 86/4		1988
5. Internal report - IFRC	Member States, IAEA	TC 85/8 TC 86/5		1985 1986
6. Technical document on the mirror approach to fusion	Member States with open confinement programmes	TC 85/9 TC 86/3		1985 1986
7. Technical document on the inertial confinement approach to fusion	National fusion laboratories	TC 85/10		1986
8. Technical document on instabilities in tokamaks	As above	SP 85/11		1985
9. Technical document on the operation of large tokamak machines	As above	TC 86/6		1986
10. Technical document on computing techniques for fusion	As above	SP 86/7		1986
11. Technical document on physics data for stellarator experiments	As above	SP 86/8		1986
12. Technical document on approaches to fusion other than tokamaks	As above	TC 86/9		1986
13. Technical document on methods of heating thermonuclear plasmas	As above	SP 86/10		1986
14. Technical document on impurity control techniques in fusion machines	As above	SP 86/11		1987
15. Technical document on plasma physics research using small tokamaks	As above	TC 85/12		1985
16. Eleventh International Conference on Plasma Physics and Controlled Nuclear Fusion Research (1986)	As above			Proceedings, 1986

Table 118

Sub-programme 2.3.2 Chemistry

PROJECT: CHEMISTRY OF LABELLED COMPOUNDS AND RADIATION FOR BIOLOGICAL AND MEDICAL APPLICATIONS				
Task	Beneficiary	Action or source	Services needed	Year of completion
1. CRP on the development of $^{99}\text{Tc}^m$ generators using low-power research reactors (RCA, South East Asia and Pacific) (83-86)	Nuclear research laboratories, nuclear medical centres and hospitals			Final report, 1987
2. CRP on the development of $^{99}\text{Tc}^m$ generators using low-power research reactors (Europe and Middle East) (83-86)	As above			Final report, 1987
3. CRP on the chemistry and biochemistry of radiopharmaceuticals (85-89)	As above			
4. CRP on new radiopharmaceuticals from cyclotrons and enriched stable targets (82-85)	As above			Final report, 1986
5. Technical report on the benefits of enriched targets for isotope production		CM 85		1986
6. Technical report on recent advances in radiopharmaceutical research		CM 86		1987
7. Technical report on reactor production of fluorine-18 and the preparation of radiopharmaceuticals	As above	CM 86		1987
8. Technical report on stable isotope-labelled compounds in biomedical studies	As above	AG 85/13		1986
9. Technical report on radiation technology and its biomedical applications	As above	AG 86/13		1987
10. Educational seminar on radionuclide generator technology (1986)	As above			Summary report, 1986
PROJECT: ANALYTICAL CHEMISTRY AND NUCLEAR METHODS				
Task	Beneficiary	Action or source	Services needed	Year of completion
11. CRP on chemical aspects of nuclear methods of analysis (81-85)	Analytical and nuclear research laboratories, industrial quality control and environmental monitoring bodies			Final report, 1986
12. Technical report on nuclear techniques in the analysis of environmental samples	As above	CM 85		1986
13. Technical report on advances in chemical standards for nuclear fuel analyses and safeguards purposes	As above	Questionnaire CM 85		1985
14. Technical report on training requirements in radiochemistry and nuclear analytical techniques	As above	CM 86		1987
15. Technical report on the comparison of nuclear analytical methods with competitive methods	As above	AG 86/12		1987
16. Technical report - Remaining volumes of Chemical Thermodynamics of Actinide Elements and Compounds	As above			1985

RESEARCH AND ISOTOPES

Table 118 (cont.)

PROJECT: ANALYTICAL CHEMISTRY AND NUCLEAR METHODS				
Task	Beneficiary	Action or source	Services needed	Year of completion
17. Four analytical quality control inter-comparisons per year, and technical documents on results	Analytical, geological survey, material accountancy, environmental activation analysis and radio-chemical laboratories		AL	Annual
18. Preparation and distribution of about 30 reference materials (including 6-8 new ones)	As above		AL	Annual
19. Measurement programme - about 1000 analyses per month of trace elements in rain water and on air filter samples (in co-operation with WMO)	WMO, UNEP Background Air Pollution Monitoring Network (BAPMON)		AL	Annual
PROJECT: FUSION MATERIALS CHEMISTRY				
Task	Beneficiary	Action or source	Services needed	Year of completion
20. CRP on tritium materials data base for fusion (85-88)	Fusion research laboratories and international fusion projects			
21. Technical report on developments in tritium handling technology for fusion applications	As above	CM 86		1987
22. Technical report on chemical aspects of fusion technology	As above	AG 85/14		1986

Table 119Sub-programme 2.3.3 Hydrology

PROJECT: RESEARCH AND DEVELOPMENT OF TECHNIQUES				
Task	Beneficiary	Action or source	Services needed	Year of completion
1. Technical report - Basic Data on Isotopes in Precipitation (1980-83) Vol. 8	Isotope hydrology institutions	Data from national laboratories	T, D and ¹⁸ O analyses (AL)	1985
2. Technical report on the application of environmental isotopes in geochemistry of natural waters	As above	AG 85/17		1986
3. Intercomparison of tritium measurements (involving 30-40 laboratories)	As above		AL	1985
4. Distribution of 200 reference samples annually	As above		AL	

Table 119 (cont.)

PROJECT: APPLICATIONS IN SURFACE WATERS				
Task	Beneficiary	Action or source	Services needed	Year of completion
5. Technical report on the use of tritium for measuring the discharge of rivers	National hydrological services, Atomic Energy Commissions	CM 86		1986
6. Technical report on the use of radio-isotope gauges for measuring suspended sediment in rivers	As above	CM 85		1985
PROJECT: APPLICATIONS IN GROUNDWATER				
Task	Beneficiary	Action or source	Services needed	Year of completion
7. CRP on the application of environmental isotope techniques to groundwater problems in the Asian and Pacific region (RCA) (80-85)	As above	Consultants	Research, advisory services, isotope analyses (AL)	Final report, 1986
8. CRP on isotope techniques in hydrology in Latin America (83-86)	As above	As above	As above	Final report, 1987
9. Technical report on mathematical models in the interpretation of tracer data in groundwater hydrology	Isotope hydrology institutions	AG 84		1985
10. Technical report on the application of isotope techniques in the study of the hydrogeology of fractured and fissured rocks	National hydrological services, Atomic Energy Commissions	AG 86/16		1987
11. Seminar on the application of isotope techniques in the hydrology of arid and semi-arid lands (1985)	As above			Summary report, 1985
12. Seminar for Asia and the Pacific on isotope hydrology techniques (1986)	As above			Summary report, 1986
PROJECT: APPLICATIONS IN GEOTHERMAL EXPLORATION				
Task	Beneficiary	Action or source	Services needed	Year of completion
13. CRP on the application of isotope and geo-chemical techniques in geothermal exploration in Latin America (83-86)	National energy authorities, Atomic Energy Commissions	Consultants	Research, advisory services, isotope analyses (AL)	Final report, 1987

Table 120

Sub-programme 2.3.4 Industrial applications

PROJECT: INDUSTRIAL APPLICATIONS OF IRRADIATION				
Task	Beneficiary	Action or source	Services needed	Year of completion
1. CRP on the application of radiation technology for the immobilization of bioactive materials (82-86)	Industrial companies, research institutes, industrial development planners particularly in developing countries			Final report, 1987
2. CRP on the radiation modification of polymers for industrial and medical use (85-88)	As above			
3. CRP on radiation damage to organic materials for nuclear reactors (84-87)	As above			
4. Technical report on advances in industrial applications of low energy electron beam accelerators	As above	CM 85		1986
5. Technical report on the use of radiation technology for the preparation of functional polymer materials	As above	CM 85		1986
6. Technical report on irradiation facilities to test the resistance of organic material for nuclear industry	As above	CM 85		1986
7. Technical report on the technological and economic comparison of irradiation and conventional methods		AG 86/14		1987
PROJECT: NUCLEAR TECHNIQUES FOR NATURAL RESOURCES EXPLOITATION, ENVIRONMENTAL CONSERVATION, INDUSTRIAL PROCESSING AND NON-DESTRUCTIVE TESTING				
Task	Beneficiary	Action or source	Services needed	Year of completion
8. CRP on nuclear analytical techniques in mineral exploration, mining and processing (82-86)	National programmes for resource development			Final report, 1987
9. Technical report on the use of nuclear techniques for natural resource exploration and exploitation	As above	CM 86		1987
10. CRP on the radiographical evaluation of welds and castings (85-88)	Safety and quality assurance authorities			
11. Technical report on radiation technology for low-energy electron beam applications	Companies and research institutes in developing countries	AG 85/15		1986
12. Technical report on the practical applications of tracers in chemical processing	Research institutes, industrial development planners, technology transfer projects	AG 85/16		1986
13. Technical report on the critical assessment of the industrial application of radioactive tracers	As above	AG 86/15		1987
14. Annual training course on industrial irradiation technology or non-destructive testing	As above	Technical co-operation		
15. CRP on nuclear borehole logging for mineral exploration (85-87)	National resource development programmes			

Table 120 (cont.)

PROJECT: NUCLEAR TECHNIQUES FOR NATURAL RESOURCES EXPLOITATION, ENVIRONMENTAL CONSERVATION, INDUSTRIAL PROCESSING AND NON-DESTRUCTIVE TESTING				
Task	Beneficiary	Action or source	Services needed	Year of completion
16. Internal report on the feasibility of establishing facilities at the Agency's Laboratory for the international standardization of borehole logging probes and training	National programmes for resource development	CM 85		1985

Table 121

Sub-programme 2.3.5 Nuclear data

PROJECT: ASSESSMENT OF NUCLEAR AND ATOMIC DATA STATUS AND REQUIREMENTS				
Task	Beneficiary	Action or source	Services needed	Year of completion
1. Technical document on nuclear and atomic data needs for medical diagnostics and radiation therapy	Medical physicists	AG 85/18		1986
2. Technical document on atomic and molecular data needs in fusion research	Fusion laboratories	AG 85/19		1986
3. Technical document - INDC report on nuclear data requirements for nuclear safety	Nuclear reactor and fuel cycle safety laboratories	CM 85		1985
4. Technical document - INDC report summarizing and evaluating the results of the inter-laboratory project (REAL-84) for radiation damage estimates	Nuclear reactor safety laboratories	CM 85		1985
5. Technical document - INDC report on the status and requirements of 14 MeV neutron emission spectra	Nuclear fission and fusion laboratories	CM 85		1985
6. Technical document - INDC report on the status and requirements of nuclear data for nuclear geophysics	Nuclear geophysicists	SP 85/20		1985
7. Technical document on the status and requirements of neutron source data	Neutron nuclear physicists	AG 86/17		1987
8. Technical document on the status and requirements of nuclear data for fusion	Fusion laboratories	AG 86/18		1987
9. Technical document - Report of the INDC reviewing the Agency's nuclear data programme	IAEA	TC 86/19		1986
10. Technical document - INDC report on the data requirements for X-ray and proton-induced X-ray emission (PIXE) analysis	Nuclear techniques and applications	CM 86		1986

Table 121 (cont.)

PROJECT: CO-ORDINATION OF NUCLEAR DATA RESEARCH				
Task	Beneficiary	Action or source	Services needed	Year of completion
11. CRP on the validation and benchmark testing of actinide nuclear data (84-86)	Nuclear reactor and fuel cycle community			INDC reports, 1985, 1986
12. CRP on the measurement and analysis of (p,n) and (α ,n) reaction cross-sections and of emission neutron spectra (85-89)	Nuclear physicists, nuclear techniques and applications			INDC report, 1986
13. CRP on the calculation of structural material nuclear data (84-88)	Nuclear reactor community			INDC reports, 1985, 1986
14. CRP on the measurement and analysis of 14 MeV neutron data needed for fission and fusion reactor technology (83-87)	Fission and fusion reactor technology			INDC reports, 1985, 1986
PROJECT: CO-ORDINATION OF DATA CENTRE NETWORKS				
Task	Beneficiary	Action or source	Services needed	Year of completion
15. Technical document - INDC report on the co-ordination of the international nuclear reaction data centre network	All users of nuclear data/fission reactor/nuclear applications	CM 85 SP 86/21		1985 1986
16. Technical documents - INDC reports on the co-ordination of the international atomic data centre network	All users of atomic data, fusion research community	CM 85 CM 86		1985, 1986
17. Technical documents - INDC report on the co-ordination of the international network of nuclear structure and decay data evaluators	Nuclear techniques and applications	CM 86		1986
18. Technical document - INDC report on material properties' data for fusion technology	Fusion research and technology laboratories	SP 85/21 SP 86/20		1985 1986
PROJECT: COMPILATION, VERIFICATION AND EXCHANGE OF NUCLEAR AND ATOMIC DATA				
Task	Beneficiary	Action or source	Services needed	Year of completion
19. Compilation of experimental and evaluated nuclear reaction data	All users of nuclear data/fission and fusion reactor/nuclear applications		Data processing	Continuing activity
20. Conversion of files into a common format, testing of existing nuclear data and performance of benchmark testing of data	All users of nuclear data		As above	As above
21. Systematic exchange of nuclear and atomic reaction data in EXFOR format with co-operating data centres	All users of nuclear and atomic data		As above	As above
PROJECT: PRODUCTION AND VALIDATION OF COMPUTER-BASED NUCLEAR AND ATOMIC DATA FILES FOR SPECIFIC APPLICATIONS				
Task	Beneficiary	Action or source	Services needed	Year of completion
22. Computer-based file and a handbook on nuclear data for safeguards applications	Safeguards, nuclear fuel cycle		As above	1986/1987
23. Upgrading of computer-based nuclear data file for INTOR neutronics calculations	Fusion reactor laboratories	INTOR Workshop	As above	1985/1986

Table 121 (cont.)

PROJECT: PRODUCTION AND VALIDATION OF COMPUTER-BASED NUCLEAR AND ATOMIC DATA FILES FOR SPECIFIC APPLICATIONS				
Task	Beneficiary	Action or source	Services needed	Year of completion
24. Computer-based file and a handbook on nuclear data for nuclear geophysics techniques	Geologists and geophysicists		As above	1986/1987
25. Production and maintenance of a file of evaluated atomic reaction data for fusion	Fusion research laboratories		As above	Continuing activity
26. Validation and intercomparison of different nuclear data files and processing codes with about 20 laboratories	All users of nuclear data		As above	As above
PROJECT: PROVISION OF NUCLEAR AND ATOMIC DATA SERVICES AND TECHNOLOGY TRANSFER				
Task	Beneficiary	Action or source	Services needed	Year of completion
27. Provision, upon request, of nuclear and atomic data centre services to Member States (dissemination of nuclear and atomic data, data processing codes and associated documentation)	Data users predominantly in developing Member States		As above	
28. Training course on the required nuclear data basis for reactor and safety analysis (in co-operation with ICTP)	Reactor scientists in developing Member States		Data processing at ICTP	1986
29. Annual training course on the production, processing and application of nuclear data	Scientists in developing Member States	Technical co-operation		
PROJECT: NUCLEAR DATA PUBLICATIONS				
Task	Beneficiary	Action or source	Services needed	Year of completion
30. Technical report - CINDA index to neutron data	All nuclear data users, fission and fusion reactor laboratories	Member States' contributions	Data processing	Annually
31. Technical report - CIAMDA index to atomic collision data	All atomic data producers and users, fusion research laboratories	As above	As above	1985
32. Technical report - Nuclear Activation Data Handbook	Activation analysts	Contributions from external authors		1985
33. International Bulletin on Atomic and Molecular Data for Fusion	All atomic data producers and users, fusion research laboratories		As above	Quarterly
34. Technical document - INDC report on progress in fission product nuclear data	Fission reactor physicists	Contributions from laboratories in Member States		Annually
35. Nuclear Data Newsletter	All nuclear data users and data centre customers			Semi-annually

Table 122Sub-programme 2.3.6 Instrumentation

PROJECT: INSTRUMENTATION				
Task	Beneficiary	Action or source	Services needed	Year of completion
1. Annual training course on nuclear electronics (3 months)	Nuclear laboratories in developing countries	Technical co-operation	AL	
2. Annual training course on nuclear instrumentation for technicians (8 weeks)	As above	As above	AL	
3. Development and testing of nuclear modular instruments in the Eurocard system	As above	CRP 83-85 TC 86/23	AL	1986
4. Technical document - Review of interfacing between small computers and nuclear experiment	As above	AG 86/22	AL	1986

TECHNICAL COMMITTEES, ADVISORY GROUPS AND SPECIALISTS' MEETINGS IN 1985-86

Within the limits of the appropriation and subject to the requirements of the programme as outlined for 1985-86, it is planned to hold the meetings listed below. The reference following each meeting is to the relevant table of planned actions given above.

<u>1985</u>	<u>Table</u>
1. Technical Committee to prepare a guidebook on LEU fuels	116, No. 14
2. Technical Committee on research reactor activities in support of national nuclear programmes	116, No. 9
3. Advisory Group on IAEA training courses in nuclear science	116, No. 4
4. Technical Committee on the use of accelerators in small laboratories	116, No. 6
5. Specialists' Meeting on auxiliary heating and current drive in fusion devices	117, No. 1
6. Specialists' Meeting on advances in theory of thermonuclear plasmas	117, No. 2
7. International Tokamak Reactor Workshop (4 meetings)	117, No. 3
8. International Fusion Research Council (3 meetings)	117, No. 5
9. Technical Committee on mirror fusion	117, No. 6
10. Technical Committee on advances in inertial confinement	117, No. 7
11. Specialists' Meeting on disruptive instabilities in tokamaks	117, No. 8
12. Technical Committee on plasma physics research using small tokamaks	117, No. 15

<u>1985 (cont.)</u>	<u>Table</u>
13. Advisory Group on stable isotope labelled compounds in biomedical studies	118, No. 8
14. Advisory Group on chemical aspects of fusion technology	118, No. 22
15. Advisory Group on radiation technology for low-energy electron beam applications	120, No. 11
16. Advisory Group on practical applications of tracers in chemical processing	120, No. 12
17. Advisory Group on the application of environmental isotopes in geochemistry of natural waters	119, No. 2
18. Advisory Group on nuclear data for medical diagnostics and therapy	121, No. 1
19. Advisory Group on atomic and molecular data for fusion technology	121, No. 2
20. Specialists' Meeting on nuclear data requirements for nuclear geophysics	121, No. 6
21. Specialists' Meeting on the requirements for material properties' data for fusion technology	121, No. 18

1986

1. Advisory Group to review the Agency's training activities in nuclear sciences	116, No. 5
2. Technical Committee on the physical properties and irradiated behaviour of LEU fuel	116, No. 14
3. Technical Committee on Mirror Fusion	117, No. 6
4. International Tokamak Reactor Workshop (4 meetings)	117, No. 4
5. International Fusion Research Council (3 meetings)	117, No. 5
6. Technical Committee on the operation of large tokamaks	117, No. 9
7. Specialists' Meeting on computing for fusion	117, No. 10
8. Specialists' Meeting on physics data for stellarator experiments	117, No. 11
9. Technical Committee on alternative approaches to fusion	117, No. 12
10. Specialists' Meeting on auxiliary heating and current drive	117, No. 13
11. Specialists' Meeting on impurity control in fusion machines	117, No. 14
12. Advisory Group on the comparison of nuclear analytical methods with competitive methods	118, No. 15
13. Advisory Group on radiation technology and its biomedical applications	118, No. 9
14. Advisory Group on the technological and economic comparison of irradiation and conventional methods	120, No. 7

1986 (cont.)

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| 15. | Advisory Group on the critical assessment of the industrial application of radioactive tracers | 120, No. 13 |
| 16. | Advisory Group on the application of isotope techniques in the study of the hydrogeology of fractured and fissured rocks | 119, No. 10 |
| 17. | Advisory Group on neutron source properties | 121, No. 7 |
| 18. | Advisory Group on nuclear data needs for fusion reactor technology | 121, No. 8 |
| 19. | Fifteenth meeting of the International Nuclear Data Committee | 121, No. 9 |
| 20. | Specialists' Meeting on the requirements for material properties' data for fusion technology | 121, No. 18 |
| 21. | Specialists' Meeting on technical aspects of nuclear data processing and exchange | 121, No. 15 |
| 22. | Advisory Group on interfacing between small computers and nuclear experiment | 122, No. 4 |
| 23. | Technical Committee on the design and construction of inexpensive modular instruments | 122, No. 3 |

Division of Research and Laboratories

Summary of cost

Table 123

Item of expenditure	1983 Actual obligations	1984 Budget	Programme increase (decrease) %		1985 at 1984 price	Price increase %	1985 Estimate	1986 Preliminary estimate
Salaries for established posts	1 478 524	1 752 000	(73 000)	(4.2)	1 679 000	5.5	1 771 000	1 874 000
Consultants	57 586	70 000	20 500	29.3	90 500	5.0	95 000	100 000
Temporary assistance	1 652	6 100	(100)	(1.6)	6 000	5.0	6 300	6 600
Common staff costs	517 972	578 100	(23 200)	(4.0)	554 900	8.7	602 700	637 500
Scientific equipment	7 352	9 300	2 700	29.0	12 000	5.0	12 600	13 000
Common equipment	-	-	300	-	300	4.0	300	300
Scientific supplies	10 398	7 000	(2 500)	(35.7)	4 500	4.0	4 700	5 000
Common supplies	1 421	700	(600)	(85.7)	100	4.0	100	100
Scientific and technical contracts	413 226	346 000	17 000	4.9	363 000	5.0	381 000	400 000
Conferences, symposia, seminars	46 449	119 000	(23 000)	(19.3)	96 000	6.5	102 000	158 000
Technical committees, advisory groups	98 990	132 000	33 000	25.0	165 000	6.5	175 000	218 000
Hospitality	5 076	8 800	100	1.4	8 900	5.0	9 300	10 000
Travel	41 196	46 000	11 700	25.4	57 700	7.0	61 700	65 000
Common services	15 578	4 000	100	2.5	4 100	5.0	4 300	4 500
Other	-	-	34 000	-	34 000	5.5	36 000	54 000
Sub-total: Direct costs	2 695 420	3 079 000	(3 000)	(0.1)	3 076 000	6.0	3 262 000	3 546 000
Contracts administration services	22 596	45 000	-	-	45 000	6.4	48 000	51 000
Conference services	27 638	50 000	9 000	18.0	59 000	6.3	63 000	66 000
Translation and records services	58 678	73 000	6 000	8.2	79 000	6.1	84 000	89 000
Data processing services	174 906	214 000	-	-	214 000	4.0	222 000	233 000
Printing and publishing services	409 474	484 000	(3 000)	(0.6)	481 000	5.5	507 000	537 000
Sub-total: Shared costs	693 292	866 000	12 000	1.4	878 000	5.2	924 000	976 000
TOTAL	3 388 712	3 945 000	9 000	0.2	3 954 000	5.9	4 186 000	4 522 000

Division of Research and Laboratories

Summary of manpowerTable 124

Grade of post	Number of established posts					
	1983 Adjusted	1984	1984 Adjusted	Change		1985
				New posts	Reclassi- fications	
D	1	1	1	-	-	1
P-5	7	7	7	-	-	7
P-4	10	11	11	-	-	11
P-3	7	6	4	-	-	4
P-2	3	3	4	-	-	4
Sub-total	28	28	27	-	-	27
GS	18	18	18	-	-	18
TOTAL	46	46	45	-	-	45

Division of Research and Laboratories

Summary of manpower and costs by SectionTable 125

Section	1984 Estimate			1985 Estimate		
	P	GS	Costs	P	GS	Costs
Physics	4.3	2.3	891 000	4.3	2.3	932 000
Industrial applications and chemistry	5.2	2.2	809 000	5.2	2.2	864 000
Isotope hydrology	4.2	3.2	592 000	4.2	3.2	631 000
Nuclear data	14.3	10.3	1 653 000	13.3	10.3	1 759 000
Total	28.0	18.0	3 945 000	27.0	18.0	4 186 000

THE AGENCY'S LABORATORY

ACTIONS PLANNED FOR 1985-86

Table 126Sub-programme 2.3.6 Instrumentation

PROJECT: INSTRUMENTATION				
Task	Beneficiary	Action or source	Services needed	Year of completion
1. Provision of kits for modular nuclear counting (300 per year)	Nuclear laboratories in developing countries	Technical co-operation		Annually
2. Provision of power conditioning units (300 per year)	As above	As above		Annually
3. Spare parts service	As above	As above		Annually

The Laboratory
Summary of cost
Table 127

Item of expenditure	1983 Actual obligations	1984 Budget	Programme increase (decrease) %		1985 at 1984 price	Price increase %	1985 Estimate	1986 Preliminary estimate
Salaries for established posts	2 546 551	3 022 000	(132 000)	(4.4)	2 890 000	5.5	3 049 000	3 322 000
Overtime	22 093	19 800	6 200	31.3	26 000	5.0	27 300	30 000
Temporary assistance	25 387	19 700	2 300	11.7	22 000	5.0	23 100	30 000
Common staff costs	892 133	997 000	(43 000)	(4.3)	954 000	8.7	1 036 500	1 130 000
Scientific equipment	178 982	101 000	112 000	10.9	213 000	5.0	223 000	270 000
Common equipment	73 226	15 000	24 000	160.0	39 000	4.0	40 600	50 000
Scientific supplies	307 138	320 000	10 000	3.1	330 000	4.0	343 000	400 000
Common supplies	103 378	70 000	2 000	2.9	72 000	4.0	75 000	85 000
Scientific and technical contracts	11 143	6 000	(6 000)	(100.0)	-	-	-	-
Training	-	13 000	9 000	69.2	22 000	5.5	23 200	26 000
Hospitality	42	500	(500)	(100.0)	-	-	-	-
Travel	8 607	17 000	1 000	5.9	18 000	7.0	19 300	21 000
Common services	1 039 474	828 000	23 000	2.8	851 000	5.0	897 000	1 030 000
Non-shared transferred costs	(1 335 763)	(1 250 000)	-	-	(1 250 000)	5.9	(1 322 000)	(1 420 000)
Other	4 544	-	-	-	-	-	-	-
Sub-total: Direct costs	3 876 935	4 179 000	8 000	0.2	4 187 000	5.9	4 435 000	4 974 000
Translation and records services	6 890	15 000	(12 000)	(80.0)	3 000	6.1	3 000	3 000
Data processing services	66 345	55 000	17 000	30.9	72 000	4.0	75 000	79 000
Printing and publishing services	35 831	32 000	(13 000)	(40.6)	19 000	5.5	20 000	21 000
Sub-total: Shared costs	109 066	102 000	(8 000)	(7.8)	94 000	4.3	98 000	103 000
TOTAL	3 986 001	4 281 000	-	-	4 281 000	5.9	4 533 000	5 077 000

The Laboratory
Summary of manpower
Table 128

Grade of post	Number of established posts									
	1983 Adjusted		1984		1984 Adjusted		Change			
							New posts		Reclassi- fications	
D	-	-	-	-	-	-	-	-	1	-
P-5	4	-	4	-	4	-	-	-	(1)	-
P-4	11	-	11	-	11	-	-	-	-	-
P-3	7	-	8	-	8	-	-	-	-	-
P-2	2	-	6	-	6	-	-	-	-	-
P-1	1	(3)	1	(3)	1	(3)	-	-	-	-
Sub-total	25	(3)	30	(3)	30	(3)	-	-	-	-
GS	60	(5)	55	(5)	55	(6)	-	-	-	-
M&O	27	(10)	27	(10)	27	(15)	-	-	-	-
TOTAL	112	(18)	112	(18)	112	(24)	-	-	-	-

The Laboratory
Breakdown of costs by user
Table 129

	1983 Actual obligations	1984 Adjusted budget	1985 Estimate	1986 Preliminary estimate
Food and Agriculture	1 281 481	1 358 000	2 017 000	2 259 000
Life Sciences	595 505	657 000	878 000	983 000
Research and Laboratories	2 109 015	2 266 000	1 638 000	1 835 000
Sub-total	3 986 001	4 281 000	4 533 000	5 077 000
Safeguards	1 335 763	1 250 000	1 322 000	1 420 000
TOTAL	5 321 764	5 531 000	5 855 000	6 497 000

The Laboratory
Manpower and costs by Unit

Table 130

Unit	1984 Budget				1985 Estimate			
	Man-years ^{a/}			Costs	Man-years ^{a/}			Costs
	P	GS	M&O		P	GS	M&O	
Food and Agriculture								
Soil science	4.2	5.7	3.5	326 000	3.8	5.3	2.4	576 000
Plant breeding	3.1	1.0	3.2	340 000	3.3	1.0	3.0	399 000
Animal production	-	-	-	-	0.3	1.7	0.7	93 000
Entomology	3.3	4.2	5.2	638 000	3.4	4.2	4.8	698 000
Agrochemicals	1.0	0.4	0.4	54 000	1.3	1.2	1.4	251 000
Sub-total	11.6	11.3	12.3	1 358 000	12.1	13.4	12.3	2 017 000
Life Sciences								
Instrumentation for nuclear medicine	0.1	0.6	0.1	111 000	1.0	1.2	0.3	450 000
Trace analysis of elements of biomedical significance	1.2	2.6	0.2	317 000	1.0	3.5	0.6	290 000
Radiation dosimetry	0.1	0.6	0.5	229 000	-	1.5	0.6	138 000
Sub-total	1.4	3.8	0.8	657 000	2.0	6.2	1.5	878 000
Research and Laboratories								
Physics	-	-	-	-	0.5	2.2	0.4	129 000
Analytical quality control service	2.8	7.3	1.7	592 000	2.0	2.5	0.6	247 000
Chemistry	2.3	2.1	0.6	294 000	2.0	2.5	0.6	370 000
Electronic instrumentation and equipment	1.2	5.0	0.8	746 000	1.1	4.6	0.8	192 000
Isotope hydrology	4.2	10.6	3.0	634 000	4.1	9.5	3.0	700 000
Sub-total	10.5	25.0	6.1	2 266 000	9.7	21.3	5.4	1 638 000
Safeguards								
Safeguards analytical services	5.9	12.9	7.5	1 175 000	6.2	14.1	7.8	1 322 000
Safeguards technical support	0.6	2.0	0.3	75 000	-	-	-	-
Sub-total	6.5	14.9	7.8	1 250 000	6.2	14.1	7.8	1 322 000
TOTAL	30.0	55.0	27.0	5 531 000	30.0	55.0	27.0	5 855 000

^{a/} Sub-programme totals include allocated administrative and maintenance personnel.

APPROPRIATION SECTION 4

OPERATIONAL FACILITIES

APPROPRIATION SECTION 4: OPERATIONAL FACILITIES

Summary of costTable 131

Item of expenditure	1983 Actual obligations	1984 Budget	Programme increase (decrease) %		1985 at 1984 price	Price increase %	1985 Estimate	1986 Preliminary estimate
Salaries for established posts	485 908	711 000	(13 000)	(1.8)	698 000	5.5	736 000	736 000
Consultants	33 277	9 000	3 000	33.3	12 000	5.0	12 600	25 000
Temporary assistance	25 565	5 000	1 000	20.0	6 000	5.0	6 300	27 800
Common staff costs	170 228	227 100	2 900	1.3	230 000	8.7	250 000	250 000
Scientific equipment	117 452	3 000	12 000	400.0	15 000	5.0	15 800	50 000
Common equipment	3 046	5 000	25 000	500.0	30 000	4.0	31 200	9 000
Scientific supplies	93 773	3 100	14 900	480.0	18 000	4.0	18 700	40 000
Common supplies	18 556	20 000	(4 000)	(20.0)	16 000	4.0	16 600	30 000
Scientific and technical contracts	48 938	58 000	(26 000)	(44.8)	32 000	5.0	33 000	50 000
Hospitality	577	1 800	200	11.1	2 000	5.0	2 100	2 200
Travel	18 468	20 000	(2 000)	(10.0)	18 000	7.0	19 000	21 000
Common services	31 656	20 000	10 000	50.0	30 000	5.0	31 700	50 000
Non-shared transferred costs	-	-	109 000	-	109 000	5.9	115 000	122 000
Other	1 000 000	1 025 000	(25 000)	(59.4)	1 000 000	-	1 000 000	1 108 000
Sub-total: Direct costs	2 047 444	2 108 000	108 000	5.1	2 216 000	3.2	2 288 000	2 521 000
Contracts administration services	-	5 000	(1 000)	(20.0)	4 000	6.4	4 000	4 000
Translation and records services	978	1 000	-	-	1 000	6.1	1 000	1 000
Printing and publishing services	154 822	180 000	(107 000)	(59.4)	73 000	5.5	77 000	81 000
Sub-total: Shared costs	155 800	186 000	(108 000)	(58.0)	78 000	5.1	82 000	86 000
TOTAL	2 203 244	2 294 000	-	-	2 294 000	3.3	2 370 000	2 607 000

APPROPRIATION SECTION 4: OPERATIONAL FACILITIES

Expenditure by Division

Table 132

Division	1983 Actual obligations	1984 Budget	Programme increase (decrease) %	1985 at 1984 price	Price increase %	1985 Estimate	1986 Preliminary estimate
International Centre for Theoretical Physics	1 153 130	1 179 000	- -	1 179 000	0.8	1 189 000	1 308 000
International Laboratory of Marine Radioactivity	1 050 114	1 115 000	- -	1 115 000	5.9	1 181 000	1 299 000
Total Appropriation Section	2 203 244	2 294 000	- -	2 294 000	3.3	2 370 000	2 607 000

APPROPRIATION SECTION 4: OPERATIONAL FACILITIES

Manpower by Division

Table 133

Division	1984			1985		
	P	GS	Total	P	GS	Total
International Centre for Theoretical Physics	5	19	24	7	21	28
International Laboratory of Marine Radioactivity	10	13	23	10	13	23
Total Appropriation Section	15	32	47	17	34	51

International Centre for Theoretical Physics

Summary of costTable 134

Item of expenditure	1983 Actual obligations	1984 Budget	Programme increase (decrease) %		1985 at 1984 price	Price increase %	1985 Estimate	1986 Preliminary estimate
Non-shared transferred costs	-	-	109 000	-	109 000	5.9	115 000	122 000
Other	1 000 000	1 000 000	-	-	1 000 000	-	1 000 000	1 108 000
Sub-total: Direct costs	1 000 000	1 000 000	109 000	10.9	1 109 000	0.5	1 115 000	1 230 000
Printing and publishing services	153 130	179 000	(109 000)	(60.9)	70 000	5.5	74 000	78 000
Sub-total: Shared costs	153 130	179 000	(109 000)	(60.9)	70 000	5.5	74 000	78 000
TOTAL	1 153 130	1 179 000	-	-	1 179 000	0.8	1 189 000	1 308 000

International Centre for Theoretical Physics

Summary of manpowerTable 135

Grade of post	Number of established posts					
	1983 Adjusted	1984	1984 Adjusted	Change		1985
				New posts	Reclassi- fications	
P-5	2	2	2	2	-	4
P-4	1	1	1	-	-	1
P-3	2	2	2	-	-	2
Sub-total	5	5	5	2	-	7
GS	17	19	19	2	-	21
M&O	-	-	-	-	-	-
TOTAL	22	24	24	4	-	28

International Centre for Theoretical Physics

Costs of the programme

Table 136

Item of expenditure	1983 Actual obligations	1984 Budget	Programme increase (decrease) %		1985 at 1984 price	Price increase %	1985 Estimate	1986 Preliminary estimate
Salaries for established posts	385 760	545 000	25 000	4.6	570 000	-	570 000	630 000
Consultants	109 469	130 000	(20 000)	(15.4)	110 000	-	110 000	120 000
Overtime	49 727	40 000	15 000	37.5	55 000	-	55 000	60 000
Temporary assistance	229 023	30 000	205 000	683.3	235 000	-	235 000	250 000
Common staff costs	248 750	174 000	20 000	11.5	194 000	-	194 000	212 000
Common equipment	202 919	-	-	-	-	-	-	-
Common supplies	285 942	264 000	8 000	3.0	272 000	-	272 000	272 000
Scientific and technical contracts	42 658	-	-	-	-	-	-	-
Conferences, symposia, seminars	1 249 377	1 710 000	(440 000)	(25.7)	1 270 000	-	1 270 000	1 270 000
Technical committees, advisory groups	19 531	18 000	(3 000)	(16.7)	15 000	-	15 000	15 000
Hospitality	22 363	24 000	(2 000)	(8.3)	22 000	-	22 000	22 000
Travel	19 982	20 000	(1 000)	(5.0)	19 000	-	19 000	19 000
Common services	638 683	640 000	(56 000)	(8.8)	584 000	-	584 000	584 000
Non-shared transferred costs	-	-	109 000	-	109 000	5.5	115 000	122 000
Other	1 509 088	1 896 000	(298 000)	(15.7)	1 598 000	-	1 598 000	1 598 000
Sub-total: Direct costs	5 013 272	5 491 000	(438 000)	(8.0)	5 053 000	-	5 059 000	5 174 000
Translation and records services	380	-	-	-	-	-	-	-
Data processing services	3 701	-	-	-	-	-	-	-
Printing and publishing services	153 130	179 000	(109 000)	(60.9)	70 000	5.7	74 000	78 000
Sub-total: Shared costs	157 211	179 000	(109 000)	(60.9)	70 000	5.7	74 000	78 000
TOTAL	5 170 483	5 670 000	(547 000)	(9.6)	5 123 000	0.2	5 133 000	5 252 000
<u>Source of funds</u>								
Regular Budget	1 153 130	1 179 000	-	-	1 179 000	0.8	1 189 000	1 308 000
Extrabudgetary resources	4 017 353	4 491 000	(547 000)	(12.2)	3 944 000	-	3 944 000	3 944 000
T O T A L	5 170 483	5 670 000	(547 000)	(12.2)	5 123 000	0.8	5 133 000	5 252 000

OPERATIONAL FACILITIES

INTERNATIONAL LABORATORY OF MARINE RADIOACTIVITY
ACTIONS PLANNED FOR 1985-86

Table 137

Sub-programme 1.4.5 International Laboratory of Marine Radioactivity

PROJECT: EVALUATION OF ENVIRONMENTAL IMPACTS OF RADIONUCLIDE RELEASES INTO THE SEA				
Task	Beneficiary	Action or source	Services needed	Year of completion
1. Intercalibration of radionuclide measurements	Marine and nuclear national institutions			Semi-annual progress reports
2. Improvement of radiochemical separation and alpha-spectrometry procedures for trans-uranic and other actinides	As above			
3. Development of ⁹⁹ Tc separation procedures	As above			
4. Development of long-lived nuclide measurement techniques	As above			
5. Assessment of the processes controlling the vertical flux of radionuclides associated with particulate matter in the sea	As above, and national regulatory agencies			Results to be published in open literature
6. Study of the bioaccumulation, transfer and transport of radionuclides through marine-food chains	As above			As above
7. Comparative study of the fate of radionuclides released into different types of marine environment	As above			As above
8. Study of the behaviour and location of natural alpha-emitting radionuclides in marine organisms	As above			As above
9. In-service training (4 trainees per year)	Marine and nuclear national institutions			
10. CRP on radionuclide releases into the tropical marine environment (85-88)	As above			

Table 137 (cont.)

PROJECT: DEEP-OCEAN RADIOACTIVE WASTE DISPOSAL ASSESSMENT				
Task	Beneficiary	Action or source	Services needed	Year of completion
11. Study of the leaching of vitrified radionuclides in marine sediments	Marine and nuclear national institutions, national regulatory agencies, NEA/OECD			Results to be published in open literature
12. Study of the behaviour of radionuclides within sediment layers	As above			As above
13. Study of the migration across the water/seabed interface of natural radionuclides and stable elements as analogues of artificial radionuclides	As above			As above
PROJECT: INTERNATIONAL MARINE NON-RADIOACTIVE POLLUTION MONITORING				
Task	Beneficiary	Action or source	Services needed	Year of completion
14. Regional and global intercalibration of marine pollutants, trace metals and chlorinated and petroleum hydrocarbons	Marine pollution institutions	UNEP		Semi-annual progress reports
15. Development of reference methods (4 per year)	As above	UNEP		
16. Instrument maintenance service	As above	UNEP		
17. Co-ordination of 5 research contracts per year	As above	UNEP		
18. In-service training (5 trainees per year)	As above	UNEP		

International Laboratory of Marine Radioactivity

Summary of costTable 138

Item of expenditure	1983 Actual obligations	1984 Budget	Programme increase (decrease) %		1985 at 1984 price	Price increase %	1985 Estimate	1986 Preliminary estimate
Salaries for established posts	485 908	711 000	(13 000)	(1.8)	698 000	5.5	736 000	736 000
Consultants	33 277	9 000	3 000	33.3	12 000	5.0	12 600	25 000
Temporary assistance	25 565	5 000	1 000	20.0	6 000	5.0	6 300	27 800
Common staff costs	170 228	227 100	2 900	1.3	230 000	8.7	250 000	250 000
Scientific equipment	117 452	3 000	12 000	400.0	15 000	5.0	15 800	50 000
Common equipment	3 046	5 000	25 000	500.0	30 000	4.0	31 200	9 000
Scientific supplies	93 773	3 100	14 900	480.6	18 000	4.0	18 700	40 000
Common supplies	18 556	20 000	(4 000)	(20.0)	16 000	4.0	16 600	30 000
Scientific and technical contracts	48 938	58 000	(26 000)	(44.8)	32 000	5.0	33 000	50 000
Hospitality	577	1 800	200	11.1	2 000	5.0	2 100	2 200
Travel	18 468	20 000	(2 000)	(10.0)	18 000	7.0	19 000	21 000
Common services	31 656	20 000	10 000	50.0	30 000	5.0	31 700	50 000
Other	-	25 000	(25 000)	(100.0)	-	-	-	-
Sub-total: Direct costs	1 047 444	1 108 000	(1 000)	(0.1)	1 107 000	6.0	1 173 000	1 291 000
Contracts administration services	-	5 000	(1 000)	(20.0)	4 000	6.4	4 000	4 000
Translation and records services	978	1 000	-	-	1 000	6.1	1 000	1 000
Printing and publishing services	1 692	1 000	2 000	200.0	3 000	5.5	3 000	3 000
Sub-total: Shared costs	2 670	7 000	1 000	14.3	8 000	-	8 000	8 000
TOTAL	1 050 114	1 115 000	-	-	1 115 000	5.9	1 181 000	1 299 000

International Laboratory of Marine Radioactivity

Summary of manpowerTable 139

Grade of post	Number of established posts					
	1983 Adjusted	1984	1984 Adjusted	Change		1985
				New posts	Reclassi- fications	
D	-	-	-	-	1	1
P-5	2	2	2	-	(1)	1
P-4	3	3	3	-	-	3
P-3	1	1	1	-	-	1
P-2	3	3	3	-	-	3
P-1	1	1	1	-	-	1
Sub-total	10	10	10	-	-	10
GS	13	13	13	-	-	13
TOTAL	23	23	23	-	-	23

APPROPRIATION SECTION 5

SAFEGUARDS

APPROPRIATION SECTION 5: SAFEGUARDS

Summary of cost

Table 140

Programme	1983 Actual obligations	1984 Budget	Programme increase (decrease) %		1985 at 1984 price	Price increase %	1985 Estimate	1986 Preliminary estimate
Salaries for established posts	11 957 238	15 072 000	322 000	2.1	15 394 000	5.5	16 240 000	18 220 000
Consultants	83 283	246 600	(122 600)	(49.7)	124 000	5.0	130 200	114 000
Overtime	3 826	9 600	-	-	9 600	5.0	10 100	11 000
Temporary assistance	127 521	141 000	-	-	141 000	5.0	147 500	52 000
Common staff costs	4 185 395	4 970 600	109 600	2.2	5 080 200	8.7	5 520 500	6 195 000
Scientific equipment	2 804 427	4 032 000	(32 000)	(0.8)	4 000 000	5.0	4 200 000	4 700 000
Common equipment	245 004	69 800	(20 800)	(29.8)	49 000	4.0	50 900	32 000
Scientific supplies	534 210	1 008 000	(58 000)	(5.8)	950 000	4.0	988 000	1 150 000
Common supplies	170 100	104 800	19 200	18.3	124 000	4.0	128 900	135 000
Scientific and technical contracts	540 125	683 000	(113 000)	(16.5)	570 000	5.0	598 000	660 000
Training	-	0	-	-	-	-	-	-
Conferences, symposia, seminars	34 340	62 000	(12 000)	(19.4)	50 000	6.5	53 000	153 000
Technical committees, advisory groups	147 976	154 000	-	-	154 000	6.5	164 000	200 000
Hospitality	13 072	19 100	(300)	(1.6)	18 800	5.0	19 700	20 500
Representation allowance	2 500	2 500	-	-	2 500	-	2 500	2 500
Travel	2 425 088	2 963 100	380 800	12.9	3 343 900	7.0	3 578 000	4 012 000
Common services	359 937	463 900	(10 900)	(2.5)	453 000	5.0	477 700	540 000
Non-shared transferred costs	1 489 763	1 490 000	-	-	1 490 000	5.9	1 576 000	1 690 000
Other	-	0	-	-	-	-	-	-
Sub-total: Direct costs	25 123 805	31 492 000	462 000	1.5	31 954 000	6.0	33 885 000	37 887 000
Contracts administration services	8 787	30 000	(16 000)	(53.3)	14 000	6.4	15 000	16 000
Conference services	11 845	18 000	1 000	5.6	19 000	6.3	20 000	26 000
Translation and records services	165 928	203 000	(12 000)	(5.9)	191 000	6.1	203 000	215 000
Medical services	-	0	-	-	-	-	-	-
Library	-	0	-	-	-	-	-	-
Data processing services	1 862 560	1 823 000	118 000	6.5	1 941 000	4.0	2 019 000	2 201 000
Printing and publishing services	216 158	211 000	(9 000)	(4.3)	202 000	5.5	213 000	226 000
Sub-total: Shared costs	2 265 278	2 285 000	82 000	3.5	2 367 000	4.4	2 470 000	2 684 000
TOTAL	27 389 083	33 777 000	544 000	1.6	34 321 000	5.9	36 355 000	40 571 000

APPROPRIATION SECTION 5: SAFEGUARDS

Expenditure by Division

Table 141

Division	1983 Actual obligations	1984 Budget	Programme increase (decrease) %		1985 at 1984 price	Price increase %	1985 Estimate	1986 Preliminary estimate
Co-ordination Section	391 617	215 000	(7 000)	(3.3)	208 000	5.8	220 000	245 000
Operations A	5 768 146	6 251 000	404 900	6.5	6 655 900	6.5	7 086 000	7 960 200
Operations B	1 632 982	3 390 000	159 200	4.7	3 549 200	6.3	3 772 600	4 048 200
Operations C	4 843 935	5 580 000	468 900	8.4	6 048 900	6.3	6 432 400	7 266 600
Development and Technical Support	8 139 539	10 489 000	(344 000)	(3.3)	10 145 000	5.4	10 693 000	11 918 000
Safeguards Information Treatment	4 232 080	4 326 000	58 000	1.3	4 384 000	5.3	4 615 000	5 102 000
Safeguards Evaluation	1 065 746	1 823 000	(87 000)	(4.8)	1 736 000	6.2	1 843 000	2 058 000
Standardization, Training and Administrative Support	1 309 590	1 618 000	(24 000)	(1.5)	1 594 000	6.2	1 693 000	1 973 000
International Plutonium Storage Study	5 448	85 000	(85 000)	(100.0)	-	-	-	-
Total Appropriation Section	27 389 083	33 777 000	544 000	1.6	34 321 000	5.9	36 355 000	40 571 000

APPROPRIATION SECTION 5: SAFEGUARDS

Manpower by DivisionTable 142

Division	1984			1985		
	P	GS	Total	P	GS	Total
Programme Co-ordination	1	1	2	1	1	2
Operations A	65	33	98	67	31	98
Operations B	34	17	51	34	17	51
Operations C	66	35	101	69	32	101
Development and Technical Support	34	26	60	34	27	61
Safeguards Information Treatment	27	34	61	27	34	61
Safeguards Evaluation	21	14	35	21	14	35
Standardization, Training and Administrative Support	12	14	26	12	14	26
Total Appropriation Section	260	174	434	265	170	435

APPROPRIATION SECTION 5: SAFEGUARDS

Summary of manpowerTable 143

Grade of post	Number of established posts					
	1983 Adjusted	1984	1984 Adjusted	Change		1985
				New posts	Reclassi- fications	
DDG	1	1	1	-	-	1
D	7	7	7	-	-	7
P-5	50	50	50	-	-	50
P-4	110	114	114	-	-	114
P-3	63	77	77	-	5	82
P-2	2	2	2	-	-	2
P-1	9	9	9	-	-	9
Sub-total	242	260	260	-	5	265
GS	156	174	174	1	(5)	170
TOTAL	398	434	434	1	-	435

Safeguards Programme Co-ordination

Summary of cost

Table 144

Item of expenditure	1983 Actual obligations	1984 Budget	Programme increase (decrease) %		1985 at 1984 price	Price increase %	1985 Estimate	1986 Preliminary estimate
Salaries for established posts	201 012	135 000	(2 000)	(1.5)	133 000	5.5	140 000	157 000
Consultants	41 289	-	-	-	-	-	-	-
Overtime	-	600	-	-	600	5.0	600	600
Temporary assistance	22 207	-	-	-	-	-	-	-
Common staff costs	70 421	45 000	(1 100)	(2.4)	43 900	8.7	47 600	53 100
Common equipment	-	5 000	(5 000)	-	-	-	-	-
Common supplies	1 478	3 000	(1 000)	(33.3)	2 000	4.0	2 100	2 200
Technical committees, advisory groups	9 260	-	-	-	-	-	-	-
Hospitality	-	500	(500)	-	-	-	-	-
Representation allowance	2 500	2 500	-	-	2 500	-	2 500	2 500
Travel	18 281	16 000	-	-	16 000	7.0	17 100	19 200
Common services	4 321	1 400	600	42.9	2 000	5.0	2 100	2 400
Sub-total: Direct costs	370 769	209 000	(9 000)	(4.3)	200 000	6.0	212 000	237 000
Translation and records services	12 388	3 000	3 000	100.0	6 000	6.1	6 000	6 000
Printing and publishing services	8 460	3 000	(1 000)	(33.3)	2 000	5.5	2 000	2 000
Sub-total: Shared costs	20 848	6 000	2 000	33.3	8 000	-	8 000	8 000
TOTAL	391 617	215 000	(7 000)	(3.3)	208 000	5.8	220 000	245 000

Programme Co-ordination

Summary of manpowerTable 145

Grade of post	Number of established posts					1985
	1983 Adjusted	1984	1984 Adjusted	Change		
				New posts	Reclassi- fications	
DDG	1	1	1	-	-	1
Sub-total	1	1	1	-	-	1
GS	2	2	1	-	-	1
TOTAL	3	3	2	-	-	2

DIVISIONS OF OPERATIONS A , B AND C

ACTIONS PLANNED FOR 1985-86

Table 146Sub-programme 4.1.2 Safeguards operations

Task	Beneficiary	Action or source	Services needed	Year of completion
1. Application of safeguards pursuant to agreements in connection with NPT and with the Tlatelolco Treaty and to unilateral submission agreements, safeguards transfer agreements and project agreements concluded under the Agency's safeguards system (1965, as provisionally extended in 1966 and 1968):	International community, Member States with safeguards agreements		Data processing, sample analysis (SAL)	Continuing activity
- Collection, examination and verification of design information;				
- Drafting of Facility Attachments;				
- Inspections for nuclear material accountancy verification and the application of containment and surveillance measures;				
- Evaluation of inspection results and formulation of technical conclusions on verification activities;				
- Provision of input for the development and updating of safeguards implementation practices.				

Division of Operations A

Summary of cost

Table 147

Item of expenditure	1983 Actual obligations	1984 Budget	Programme increase (decrease) %		1985 at 1984 price	Price increase %	1985 Estimate	1986 Preliminary estimate
Salaries for established posts	3 161 628	3 453 000	123 000	3.6	3 576 000	5.5	3 774 000	4 283 000
Consultants	317	-	-	-	-	-	-	-
Overtime	132	1 200	-	-	1 200	8.3	1 300	1 400
Temporary assistance	47 422	26 600	23 400	87.9	50 000	4.6	52 300	14 500
Common staff costs	1 107 613	1 138 300	41 700	3.7	1 180 000	-	1 283 300	1 456 400
Common equipment	441	3 300	6 700	-	10 000	4.0	10 400	3 800
Common supplies	17 968	7 700	(700)	(9.1)	7 000	2.9	7 200	7 600
Scientific and technical contracts	10 806	-	-	-	-	-	-	-
Hospitality	2 190	2 300	100	4.3	2 400	4.2	2 500	2 600
Travel	1 174 176	1 405 000	222 700	15.8	1 627 700	7.0	1 742 100	1 955 800
Common services	136 051	128 600	(20 100)	(15.6)	108 500	5.0	113 900	129 100
Non-shared transferred costs	88 000	80 000	-	-	80 000	5.7	85 000	91 000
Other	-	-	-	-	-	-	-	-
Sub-total: Direct costs	5 746 744	6 246 000	396 800	6.4	6 642 800	6.5	7 072 000	7 945 200
Translation and records services	13 365	-	4 300	-	4 300	7.0	5 000	5 000
Printing and publishing services	8 037	5 000	3 800	76.0	8 800	4.5	9 000	10 000
Sub-total: Shared costs	21 402	5 000	8 100	-	13 100	6.9	14 000	15 000
TOTAL	5 768 146	6 251 000	404 900	6.5	6 655 900	6.5	7 086 000	7 960 200

Division of Operations A

Summary of manpowerTable 148

Grade of post	Number of established posts					1985
	1983 Adjusted	1984	1984 Adjusted	Change		
				New posts	Reclassi- fications	
D	1	1	1	-	-	1
P-5	9	9	9	-	-	9
P-4	24	26	24	-	-	24
P-3	23	30	31	-	2	33
Sub-total	57	66	65	-	2	67
GS	24	32	33	-	(2)	31
TOTAL	81	98	98	-	-	98

Division of Operations B

Summary of cost

Table 149

Item of expenditure	1983 Actual obligations	1984 Budget	Programme increase (decrease) %		1985 at 1984 price	Price increase %	1985 Estimate	1986 Preliminary estimate
Salaries for established posts	936 042	2 010 000	143 000	7.1	2 153 000	5.4	2 270 000	2 434 000
Overtime	-	1 200	-	-	1 200	8.3	1 300	1 400
Temporary assistance	4 103	26 600	(8 100)	(30.5)	18 500	4.9	19 400	14 500
Common staff costs	327 924	664 900	45 600	6.9	710 500	-	771 400	827 400
Common equipment	14 257	6 000	(6 000)	-	-	-	-	1 900
Common supplies	9 130	7 700	1 300	16.9	9 000	4.4	9 400	9 800
Hospitality	729	2 200	(200)	(9.0)	2 000	5.0	2 100	2 200
Travel	264 778	482 000	(10 900)	(2.3)	471 100	7.1	504 700	543 400
Common services	39 808	89 400	(4 400)	(5.0)	85 000	5.1	89 300	101 600
Non-shared transferred costs	22 000	80 000	-	-	80 000	6.2	85 000	91 000
Other	-	-	-	-	-	-	-	-
Sub-total: Direct costs	1 618 771	3 370 000	160 300	4.8	3 530 300	6.3	3 752 600	4 027 200
Translation and records services	13 365	15 000	(600)	(4.0)	14 400	6.2	15 000	16 000
Printing and publishing services	846	5 000	(500)	(10.0)	4 500	4.4	5 000	5 000
Sub-total: Shared costs	14 211	20 000	(1 100)	(5.0)	18 900	5.8	20 000	21 000
TOTAL	1 632 982	3 390 000	159 200	4.7	3 549 200	6.3	3 772 600	4 048 200

Division of Operations B

Summary of manpowerTable 150

Grade of post	Number of established posts					1985
	1983 Adjusted	1984	1984 Adjusted	Change		
				New posts	Reclassi- fications	
D	1	1	1	-	-	1
P-5	6	6	7	-	-	7
P-4	17	17	16	-	-	16
P-3	9	13	10	-	-	10
Sub-total	33	37	34	-	-	34
GS	18	19	17	-	-	17
TOTAL	51	56	51	-	-	51

Division of Operations C

Summary of cost

Table 151

Item of expenditure	1983 Actual obligations	1984 Budget	Programme increase (decrease) %		1985 at 1984 price	Price increase %	1985 Estimate	1986 Preliminary estimate
Salaries for established posts	2 877 439	3 342 000	168 000	5.0	3 510 000	5.5	3 703 000	4 218 000
Overtime	1 345	600	-	-	600	-	600	700
Temporary assistance	11 386	26 600	23 400	88.0	50 000	4.6	52 300	14 700
Common staff costs	1 008 053	1 100 600	57 700	5.2	1 158 300	-	1 259 000	1 435 100
Common equipment	-	27 000	(17 000)	(63.0)	10 000	4.0	10 400	7 400
Common supplies	6 785	25 000	(16 000)	(64.0)	9 000	4.4	9 400	9 800
Hospitality	1 477	2 200	(200)	(9.0)	2 000	5.0	2 100	2 100
Travel	812 542	856 000	248 000	29.0	1 104 000	6.9	1 180 200	1 343 800
Common services	47 820	60 000	8 000	13.3	68 000	5.0	71 400	81 000
Non-shared transferred costs	44 000	80 000	-	-	80 000	6.2	84 000	90 000
Other	-	-	-	-	-	-	-	-
Sub-total: Direct costs	4 810 847	5 520 000	471 900	8.5	5 991 900	6.3	6 372 400	7 202 600
Translation and records services	15 321	44 000	2 300	5.2	46 300	6.1	49 000	52 000
Printing and publishing services	17 767	16 000	(5 300)	(33.0)	10 700	3.7	11 000	12 000
Sub-total: Shared costs	33 088	60 000	(3 000)	(5.0)	57 000	5.3	60 000	64 000
TOTAL	4 843 935	5 580 000	468 900	8.4	6 048 900	6.3	6 432 400	7 266 600

Division of Operations C

Summary of manpowerTable 152

Grade of post	Number of established posts					1985
	1983 Adjusted	1984	1984 Adjusted	Change		
				New posts	Reclassi- fications	
D	1	1	1	-	-	1
P-5	9	9	8	-	-	8
P-4	30	28	30	-	-	30
P-3	23	25	27	-	3	30
Sub-total	63	63	66	-	3	69
GS	27	35	35	-	(3)	32
TOTAL	90	98	101	-	-	101

D I V I S I O N O F D E V E L O P M E N T A N D T E C H N I C A L S U P P O R T

ACTIONS PLANNED FOR 1985-86

Table 153Sub-programme 4.2.1 Development of safeguards equipment, techniques and procedures

PROJECT: PROVISION OF TECHNICAL SERVICES				
Task	Beneficiary	Action or source	Services needed	Year of completion
1. Procurement and maintenance of safeguards equipment	Department of Safeguards			Continuing activity
2. Evaluation of safeguards seals	As above			As above
3. Development and control of the quality of photo surveillance films	As above			As above
4. Shipment and analysis of about 1800 safeguards samples annually	As above		SAL, network of analytical laboratories	As above
5. Preparation and updating of safeguards equipment instructions	As above			As above

Table 153 (cont.)

PROJECT: DEVELOPMENT OF INSTRUMENTS, METHODS AND TECHNIQUES				
Task	Beneficiary	Action or source	Services needed	Year of completion
6. Development of more reliable, simple-to-operate, microprocessor-controlled NDA instruments	As above			As above
7. Development of performance monitoring and control programme for instruments and techniques deployed in the field	As above			1985
8. Development of a standardized data link for NDA instruments	As above			Continuing activity
9. Development of facility-type operating and measurement procedures for NDA instruments	As above			As above
10. Development of authentication techniques	As above			As above
11. Internal report on new developments in optical surveillance	As above	AG 86/1		1986
12. Development of new optical surveillance systems	As above			Continuing activity
13. Investigation of the potential of non-optical surveillance systems	As above			As above
14. Evaluation of new sealing systems	As above			As above
15. Development of field-usable non-destructive measurement methods for the determination of deuterium enrichment in heavy water	As above			1986
16. Evaluation of the potential of remote monitoring systems for inspection use	As above			1986
17. Internal report on progress in neutron coincidence counting techniques	As above	AG 85/1		1985
PROJECT: SYSTEM STUDIES				
Task	Beneficiary	Action or source	Services needed	Year of completion
18. Definition of safeguards approaches based on advanced concepts and on methods aimed at increasing the efficiency of safeguards	As above			Continuing activity
19. Updating of models for safeguarding different types of nuclear facility	As above			As above
20. Internal report on the application of safeguards at reprocessing plants	As above	AG 85/2		1985
21. Development of safeguards concepts and methods applicable to multiple facility nuclear fuel cycles	As above			Continuing activity
22. Development of a methodology for optimizing the allocation of inspection effort at facility and State levels	As above			1986
23. Further development and implementation of the methodology for evaluating safeguards effectiveness, including C/S quantification	As above			Continuing activity

SAFEGUARDS

Table 153 (cont.)

PROJECT: SYSTEM STUDIES				
Task	Beneficiary	Action or source	Services needed	Year of completion
24. Internal report on safeguards effectiveness assessment methods for bulk handling facilities	As above	AG 86/3		1986
25. Formulation of nuclear facility design guidelines to facilitate safeguards implementation	As above	AG 86/2		1987
26. Development of detailed guidelines for the implementation and maintenance of SSACs for specific types of facility	As above			1987
27. Preparation of forecast of future Agency manpower requirements and of the amounts of nuclear material and the number of facilities likely to be under safeguards	As above			Continuing activity

TECHNICAL COMMITTEES, ADVISORY GROUPS AND SPECIALISTS' MEETINGS IN 1985-86

Within the limits of the appropriation and subject to the requirements of the programme as outlined for 1985-86, it is planned to hold the meetings listed below. The reference following each meeting is to the relevant table of planned actions given above.

<u>1985</u>		<u>Table</u>
1.	Advisory Group on progress in neutron coincidence counting techniques	153, No. 17
2.	Advisory Group on the application of safeguards at reprocessing plants	153, No. 20
<u>1986</u>		
1.	Advisory Group on new developments in optical surveillance	153, No. 11
2.	Advisory Group on nuclear facility design assisting the implementation of IAEA safeguards	153, No. 25
3.	Advisory Group on safeguards effectiveness assessment methods (bulk handling facilities)	153, No. 24

Division of Development and Technical Support

Summary of cost

Table 154

Item of expenditure	1983 Actual obligations	1984 Budget	Programme increase (decrease) %		1985 at 1984 price	Price increase %	1985 Estimate	1986 Preliminary estimate
Salaries for established posts	1 751 642	2 234 000	(74 000)	(3.3)	2 160 000	5.5	2 279 000	2 557 000
Consultants	13 255	107 700	(55 700)	(51.7)	52 000	5.0	54 600	47 800
Overtime	-	700	-	-	700	5.0	700	800
Temporary assistance	8 174	7 000	-	-	7 000	5.0	7 300	2 500
Common staff costs	613 653	736 300	(23 300)	(3.2)	713 000	8.7	774 400	869 000
Scientific equipment	2 804 427	4 032 000	(32 000)	(0.8)	4 000 000	5.0	4 200 000	4 700 000
Common equipment	131 810	-	20 000	-	20 000	4.0	20 800	13 100
Scientific supplies	534 210	1 008 000	(58 000)	(5.8)	950 000	4.0	988 000	1 150 000
Common supplies	55 120	44 000	6 000	13.6	50 000	4.0	52 000	54 500
Scientific and technical contracts	509 319	663 000	(113 000)	(17.0)	550 000	5.0	577 000	637 000
Technical committees, advisory groups	24 458	46 000	-	-	46 000	6.5	49 000	60 000
Hospitality	2 747	4 300	-	-	4 300	6.5	4 500	4 700
Travel	44 153	69 000	-	-	69 000	7.0	73 900	82 800
Common services	124 683	176 000	-	-	176 000	5.0	186 800	209 800
Non-shared transferred costs	1 335 763	1 250 000	-	-	1 250 000	5.9	1 322 000	1 418 000
Sub-total: Direct costs	7 953 414	10 378 000	(330 000)	(3.2)	10 048 000	5.4	10 590 000	11 807 000
Contracts administration services	8 787	30 000	(16 000)	(53.3)	14 000	6.4	15 000	16 000
Conference services	4 738	3 000	3 000	100.0	6 000	6.3	6 000	8 000
Translation and records services	59 656	36 000	10 000	27.8	46 000	6.1	49 000	52 000
Printing and publishing services	112 944	42 000	(11 000)	(26.2)	31 000	5.5	33 000	35 000
Sub-total: Shared costs	186 125	111 000	(14 000)	(12.6)	97 000	6.2	103 000	111 000
TOTAL	8 139 539	10 489 000	(344 000)	(3.3)	10 145 000	5.4	10 693 000	11 918 000

Division of Development and Technical Support

Summary of manpowerTable 155

Grade of post	Number of established posts					1985
	1983 Adjusted	1984	1984 Adjusted	Change		
				New posts	Reclassi- fications	
D	1	1	1	-	-	1
P-5	12	12	11	-	-	11
P-4	17	18	19	-	-	19
P-3	2	3	3	-	-	3
Sub-total	32	34	34	-	-	34
GS	25	26	26	1	-	27
TOTAL	57	60	60	1	-	61

D I V I S I O N O F S A F E G U A R D S I N F O R M A T I O N T R E A T M E N T

ACTIONS PLANNED FOR 1985-86

Table 156Sub-programme 4.1.1 Nuclear material accountancy system

PROJECT: SURVEY OF ISIS OPERATING EXPERIENCE

Task	Beneficiary	Action or source	Services needed	Year of completion
1. Internal report - Review of ISIS user and operator experience	Member States, Department of Safeguards	Questionnaire		1986

PROJECT: SYSTEM DEVELOPMENT

Task	Beneficiary	Action or source	Services needed	Year of completion
2. Improvement of safeguards computerized inspection reporting sub-system	Department of Safeguards			1985
3. Development and implementation of new safeguards computerized equipment inventory sub-system	As above			1985
4. Development and implementation of seal sub-system	As above			1985/86
5. Development of integration system for safeguards computers	As above			1985/86

Table 156 (cont.)

PROJECT: OPERATION OF SAFEGUARDS INFORMATION SYSTEM				
Task	Beneficiary	Action or source	Services needed	Year of completion
6. Processing and maintenance of accounting data records submitted by Member States	Member States			Continuing activity
7. Processing and maintenance of accounts for nuclear material in transit	As above			As above
8. Processing and maintenance of files with inspection data	As above			As above
9. Provision of information to safeguards management for planning and evaluation of safeguards activities	Department of Safeguards			As above
10. Workshop seminar on data accounting and reporting (1986)	As above			Summary report, 1986

Division of Safeguards Information Treatment

Summary of cost

Table 157

Item of expenditure	1983 Actual obligations	1984 Budget	Programme increase (decrease) %		1985 at 1984 price	Price increase %	1985 Estimate	1986 Preliminary estimate
Salaries for established posts	1 615 757	1 748 000	(2 000)	(0.1)	1 746 000	5.5	1 842 000	2 067 000
Consultants	10 770	22 000	2 000	9.1	24 000	5.0	25 200	22 200
Overtime	2 005	1 900	-	-	1 900	5.0	2 000	2 200
Temporary assistance	9 027	2 700	-	-	2 700	5.0	2 800	1 000
Common staff costs	562 464	576 900	(1 000)	(0.2)	575 900	8.7	625 900	702 400
Common equipment	61 428	28 500	(28 500)	(100.0)	-	-	-	-
Common supplies	22 994	6 500	18 500	23.7	25 000	4.0	26 000	27 200
Scientific and technical contracts	20 000	20 000	-	-	20 000	5.0	21 000	23 000
Conferences, symposia, seminars	-	35 000	(35 000)	(100.0)	-	-	-	-
Hospitality	1 886	2 000	-	-	2 000	5.0	2 100	2 200
Travel	25 552	20 000	-	-	20 000	7.0	21 400	23 900
Common services	2 533	1 500	1 000	66.7	2 500	5.0	2 600	2 900
Sub-total: Direct costs	2 334 416	2 465 000	(45 000)	(1.8)	2 420 000	6.2	2 571 000	2 874 000
Conference services	-	6 000	(6 000)	(100.0)	-	-	-	-
Translation and records services	13 954	15 000	(3 000)	(20.0)	12 000	6.1	13 000	14 000
Data processing services	1 862 560	1 823 000	118 000	6.5	1 941 000	4.0	2 019 000	2 201 000
Printing and publishing services	21 150	17 000	(6 000)	(35.3)	11 000	5.5	12 000	13 000
Sub-total: Shared costs	1 897 664	1 861 000	103 000	5.5	1 964 000	4.1	2 044 000	2 228 000
TOTAL	4 232 080	4 326 000	58 000	1.3	4 384 000	5.3	4 615 000	5 102 000

Division of Safeguards Information Treatment

Summary of manpowerTable 158

Grade of post	Number of established posts					1985
	1983 Adjusted	1984	1984 Adjusted	Change		
				New posts	Reclassi- fications	
D	1	1	1	-	-	1
P-5	6	6	5	-	-	5
P-4	8	8	9	-	-	9
P-3	2	2	2	-	-	2
P-2	1	1	1	-	-	1
P-1	9	9	9	-	-	9
Sub-total	27	27	27	-	-	27
GS	34	34	34	-	-	34
TOTAL	61	61	61	-	-	61

D I V I S I O N O F S A F E G U A R D S E V A L U A T I O N

ACTIONS PLANNED FOR 1985-86

Table 159Sub-programme 4.2.2 Safeguards evaluation

PROJECT: EFFECTIVENESS EVALUATION				
Task	Beneficiary	Action or source	Services needed	Year of completion
1. SIR for 1984	Member States	Inspection reports, internal questionnaires	Data processing	1985
2. SIR for 1985	Member States	As above	As above	1986
3. Monitoring SIR-related CIR data	Operations Divisions		As above	Continuing activity
4. Updating of evaluation criteria	Department of Safeguards			As above
5. Follow-up and feedback of evaluation results	As above			As above

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Table 159 (cont.)

PROJECT: QUALITY ASSURANCE				
Task	Beneficiary	Action or source	Services needed	Year of completion
6. Monitoring and providing quality assurance of inspection documentation and statements to countries	Department of Safeguards, Member States		Data processing	As above
7. In-depth evaluation of inspection results	As above		As above	As above
8. Revision of procedures necessary for the production of inspection conclusions	As above		As above	3-4 times per year
9. Internal review of safeguards in randomly selected facilities	As above		As above	2-3 times per year
10. Implementation of QA procedures for movie cameras and television surveillance	As above		As above	Continuing activity
11. Implementation of QA procedures for use of safeguards seals	As above		As above	As above
12. Implementation of QA procedures for NDA applications	As above		As above	As above
PROJECT: DATA EVALUATION				
Task	Beneficiary	Action or source	Services needed	Year of completion
13. Data evaluation services, including evaluations of routine analytical and NDA data quality	Operations and development Divisions, safeguards analytical laboratories		Data processing	Continuing activity
14. Internal report on the evaluation of the quality of safeguards analytical measurements	As above	AG 85/1		
15. Development and implementation of isotope correlation methods to verify reprocessing plant input	Department of Safeguards		Data processing, software development, support programme experts	1985
16. Determination of verification accuracy requirements for destructive and non-destructive measurements of important nuclear materials	As above		Data processing	1985-86
17. Internal report on the evaluation of the quality of safeguards analytical measurements	As above	Consultants		1985
18. Technical document on the evaluation of the quality of safeguards NDA measurement data	As above	AG 86/1		1986
19. Revised manual on statistical concepts and techniques	As above			1986
20. Establishment of NDA inspection data files	As above			1985
21. Improved data evaluation software for fabrication and reprocessing plants	As above			1986

TECHNICAL COMMITTEES, ADVISORY GROUPS AND SPECIALISTS' MEETINGS IN 1985-86

Within the limits of the appropriation and subject to the requirements of the programme as outlined for 1985-86, it is planned to hold the meetings listed below. The reference following each meeting is to the relevant table of planned actions given above.

1985Table

- | | | |
|----|---|-------------|
| 1. | Advisory Group on the evaluation of the quality of safeguards analytical measurements | 159, No. 14 |
|----|---|-------------|

1986

- | | | |
|----|---|-------------|
| 1. | Advisory Group on the evaluation of the quality of non-destructive assay measurement data | 159, No. 18 |
|----|---|-------------|

Division of Safeguards Evaluation

Summary of costTable 160

Item of expenditure	1983 Actual obligations	1984 Budget	Programme increase (decrease) %		1985 at 1984 price	Price increase %	1985 Estimate	1986 Preliminary estimate
Salaries for established posts	706 268	1 264 000	(42 000)	(3.3)	1 222 000	5.5	1 289 000	1 446 000
Consultants	13 110	51 900	(3 900)	(7.5)	48 000	5.0	50 400	44 000
Overtime	344	2 600	-	-	2 600	5.0	2 700	2 900
Temporary assistance	3 609	18 700	(18 700)	(100.0)	-	-	-	-
Common staff costs	247 427	416 500	(12 800)	(3.1)	403 700	8.7	438 100	491 200
Common supplies	2 466	900	100	11.1	1 000	4.0	1 000	1 100
Conferences, symposia, seminars	34 340	-	-	-	-	-	-	-
Technical committees, advisory groups	29 128	34 000	-	-	34 000	6.5	36 000	44 000
Hospitality	1 175	1 600	-	-	1 600	6.5	1 700	1 800
Travel	12 714	13 100	-	-	13 100	7.0	14 000	15 600
Common services	199	1 700	300	17.6	2 000	5.0	2 100	2 400
Sub-total: Direct costs	1 050 780	1 805 000	(77 000)	(4.3)	1 728 000	6.2	1 835 000	2 049 000
Conference services	5 528	1 000	2 000	200.0	3 000	6.3	3 000	4 000
Translation and records services	978	12 000	(11 000)	(91.7)	1 000	6.1	1 000	1 000
Printing and publishing services	8 460	5 000	(1 000)	(20.0)	4 000	5.5	4 000	4 000
Sub-total: Shared costs	14 966	18 000	(10 000)	(55.6)	8 000	-	8 000	9 000
TOTAL	1 065 746	1 823 000	(87 000)	(4.8)	1 736 000	6.2	1 843 000	2 058 000

Division of Safeguards Evaluation

Summary of manpowerTable 161

Grade of post	Number of established posts					1985
	1983 Adjusted	1984	1984 Adjusted	Change		
				New posts	Reclassi- fications	
D	1	1	1	-	-	1
P-5	5	5	5	-	-	5
P-4	10	13	13	-	-	13
P-3	2	2	2	-	-	2
Sub-total	18	21	21	-	-	21
GS	13	13	14	-	-	14
TOTAL	31	34	35	-	-	35

D I V I S I O N O F S T A N D A R D I Z A T I O N , T R A I N I N G A N D
A D M I N I S T R A T I V E S U P P O R T

ACTIONS PLANNED FOR 1985-86

Table 162Sub-programme 4.2.3 Safeguards management

PROJECT: SAFEGUARDS MANAGEMENT				
Task	Beneficiary	Action or source	Services needed	Year of completion
1. Negotiation of safeguards agreements and subsidiary arrangements	International community		Legal	Continuing activity
2. Maintenance of depository of safeguards documents	Department of Safeguards			As above
3. Revision of Safeguards Manual	As above			As required
4. Review of departmental security procedures	Member States			As required
5. Organization of training courses and preparation of individual training videotapes	Safeguards personnel, personnel from Member States			Annually
6. Provision of administrative support to the Department of Safeguards	Department of Safeguards			Continuing activity
7. Internal reports on safeguards implementation	Secretariat	SAGSI 85/1 SAGSI 86/1		Twice annually

SAFEGUARDS

TECHNICAL COMMITTEES, ADVISORY GROUPS AND SPECIALISTS' MEETINGS IN 1985-86

Within the limits of the appropriation and subject to the requirements of the programme as outlined for 1985-86, it is planned to hold the meetings listed below. The reference following each meeting is to the relevant table of planned actions given above.

1985

Table

- | | | |
|----|--|------------|
| 1. | Standing Advisory Group on Safeguards
Implementation (two meetings) | 162, No. 7 |
|----|--|------------|

1986

- | | | |
|----|--|------------|
| 1. | Standing Advisory Group on Safeguards
Implementation (two meetings) | 162, No. 7 |
|----|--|------------|

Division of Standardization, Training and Administrative Support

Summary of cost

Table 163

Item of expenditure	1983 Actual obligations	1984 Budget	Programme increase (decrease) %		1985 at 1984 price	Price increase %	1985 Estimate	1986 Preliminary estimate
Salaries for established posts	707 450	886 000	8 000	0.9	894 000	5.5	943 000	1 058 000
Overtime	-	800	-	-	800	5.0	900	1 000
Temporary assistance	20 687	12 800	-	-	12 800	5.0	13 400	4 800
Common staff costs	247 840	292 100	2 800	1.0	294 900	8.7	320 800	360 400
Common equipment	37 068	-	9 000	-	9 000	4.0	9 300	5 800
Common supplies	54 159	10 000	11 000	110.0	21 000	4.0	21 800	22 800
Conferences, symposia, seminars	-	27 000	23 000	85.2	50 000	6.5	53 000	153 000
Technical committees, advisory groups	85 130	74 000	-	-	74 000	6.5	79 000	96 000
Hospitality	2 868	4 000	500	13.0	4 500	5.0	4 700	4 900
Representation allowance	-	-	-	-	-	-	-	-
Travel	72 892	102 000	(79 000)	(77.5)	23 000	7.0	24 600	27 500
Common services	4 522	5 300	3 700	69.8	9 000	5.0	9 500	10 800
Sub-total: Direct costs	1 232 616	1 414 000	(21 000)	(1.5)	1 393 000	6.2	1 480 000	1 745 000
Conference services	1 579	8 000	2 000	25.0	10 000	6.3	11 000	14 000
Translation and records services	36 901	78 000	(17 000)	(21.8)	61 000	6.1	65 000	69 000
Printing and publishing services	38 494	118 000	12 000	10.2	130 000	5.5	137 000	145 000
Sub-total: Shared costs	76 974	204 000	(3 000)	(1.5)	201 000	6.0	213 000	228 000
TOTAL	1 309 590	1 618 000	(24 000)	(1.5)	1 594 000	6.2	1 693 000	1 973 000

Division of Standardization, Training and Administrative Support

Summary of manpowerTable 164

Grade of post	Number of established posts					1985
	1983 Adjusted	1984	1984 Adjusted	Change		
				New posts	Reclassi- fications	
D	1	1	1	-	-	1
P-5	3	3	5	-	-	5
P-4	4	4	3	-	-	3
P-3	2	2	2	-	-	2
P-2	1	1	1	-	-	1
Sub-total	11	11	12	-	-	12
GS	13	13	14	-	-	14
TOTAL	24	24	26	-	-	26

Costs of International Plutonium Storage Study

Table 165

Item of expenditure	1983 Actual obligations	1984 Budget	Programme increase (decrease) %	1985 at 1984 price	Price increase %	1985 Estimate	1986 Preliminary estimate
Consultants	4 542	65 000	(65 000) (100.0)	-	-	-	-
Temporary assistance	906	20 000	(20 000) (100.0)	-	-	-	-
Sub-total: Direct costs	5 448	85 000	(85 000) (100.0)	-	-	-	-
TOTAL	5 448	85 000	(85 000) (100.0)	-	-	-	-

APPROPRIATION SECTION 6

POLICY-MAKING ORGANS

APPROPRIATION SECTION 6: POLICY-MAKING ORGANS

Summary of costTable 166

Item of expenditure	1983 Actual obligations	1984 Budget	Programme increase (decrease) %		1985 at 1984 price	Price increase %	1985 Estimate	1986 Preliminary estimate
Salaries for established posts	190 109	205 000	-	-	205 000	5.5	216 000	230 000
Overtime	15 289	21 600	(2 600)	(12.0)	19 000	5.0	20 000	21 000
Temporary assistance	8 082	6 900	10 800	156.5	17 700	5.0	18 600	18 000
Common staff costs	66 601	67 500	-	-	67 500	8.7	73 500	78 000
Common supplies	2 523	4 000	2 300	57.5	6 300	4.0	6 600	7 000
Conferences, symposia, seminars	183 743	255 000	(10 000)	(3.9)	245 000	6.5	259 000	287 000
Hospitality	5 153	6 700	300	4.5	7 000	5.0	7 400	8 000
Travel	3 384	1 300	3 700	284.6	5 000	7.0	5 400	6 000
Common services	32 664	35 000	1 500	4.3	36 500	5.0	38 500	39 000
Other	63 869	65 000	8 000	12.3	73 000	5.5	77 000	78 000
Sub-total: Direct costs	571 417	668 000	14 000	2.1	682 000	5.9	722 000	772 000
Conference services	120 817	175 000	-	-	175 000	6.3	187 000	197 000
Translation and records services	1 599 901	2 040 000	7 000	0.3	2 047 000	6.1	2 172 000	2 452 000
Data processing services	-	7 000	(6 000)	(85.7)	1 000	4.0	1 000	1 000
Printing and publishing services	385 785	691 000	2 000	0.3	693 000	5.5	731 000	775 000
Sub-total: Shared costs	2 106 503	2 913 000	3 000	0.1	2 916 000	6.0	3 091 000	3 425 000
TOTAL	2 677 920	3 581 000	17 000	0.5	3 598 000	6.0	3 813 000	4 197 000

APPROPRIATION SECTION 6: POLICY-MAKING ORGANS

Summary of manpower

Table 167

Grade of post	Number of established posts					1985
	1983 Adjusted	1984	1984 Adjusted	Change		
				New posts	Reclassi- fications	
D	1	1	1	-	-	1
P-5	1	1	1	-	-	1
P-3	1	1	1	-	-	1
Sub-total	3	3	3	-	-	3
GS	2	2	2	-	-	2
TOTAL	5	5	5	-	-	5

Expenditure by Sub-Division

Table 168

Sub-Division	1983 Actual obligations	1984 Budget	Programme increase (decrease) %		1985 at 1984 price	Price increase %	1985 Estimate	1986 Preliminary estimate
The General Conference	1 002 470	1 365 000	150 000	11.0	1 515 000	6.0	1 606 000	1 764 000
The Board of Governors	1 675 450	2 216 000	(133 000)	(6.0)	2 083 000	6.0	2 207 000	2 433 000
Total Appropriation Section	2 677 920	3 581 000	17 000	0.5	3 598 000	6.0	3 813 000	4 197 000

APPROPRIATION SECTION 7

EXECUTIVE MANAGEMENT AND ADMINISTRATION

APPROPRIATION SECTION 7: EXECUTIVE MANAGEMENT AND ADMINISTRATION

Summary of cost

Table 169

Item of expenditure	1983 Actual obligations	1984 Budget	Programme increase (decrease) %		1985 at 1984 price	Price increase %	1985 Estimate	1986 Preliminary estimate
Salaries for established posts	5 029 885	5 880 000	12 000	0.2	5 892 000	5.5	6 214 000	6 665 000
Consultants	30 108	101 400	2 000	2.0	103 400	5.0	108 500	116 000
Overtime	22 923	33 600	500	1.5	34 100	5.0	35 800	38 000
Temporary assistance	101 087	98 900	(41 500)	(42.0)	57 400	5.0	60 200	65 000
Common staff costs	1 762 120	1 942 500	1 000	0.1	1 943 500	8.7	2 113 700	2 266 000
Common equipment	4 783	9 000	(6 500)	(72.2)	2 500	4.0	2 600	3 000
Common supplies	20 549	20 000	-	-	20 000	4.0	21 000	23 000
Scientific and technical contracts	104 000	-	-	-	-	-	-	-
Training	101 991	602 000	(318 000)	(52.8)	284 000	5.5	299 000	2 000
Conferences, symposia, seminars	14 094	40 000	(19 000)	(47.5)	21 000	6.5	22 000	-
Technical committees, advisory groups	48 678	60 000	(15 000)	(25.0)	45 000	6.5	48 000	56 000
Hospitality	6 975	20 300	800	3.9	21 100	5.0	22 100	23 500
Representation allowance	27 500	27 500	-	-	27 500	-	27 500	27 500
Travel	139 802	188 200	23 200	12.3	211 400	7.0	226 800	243 000
Common services	66 327	67 600	500	0.7	68 100	5.0	71 800	77 000
Non-shared transferred costs	(150 924)	(240 000)	(109 000)	45.5	(349 000)	5.9	(369 000)	(392 000)
Other	-	-	70 000	-	70 000	2.9	72 000	424 000
Sub-total: Direct costs	7 329 898	8 851 000	(399 000)	(4.5)	8 452 000	6.2	8 976 000	9 637 000
Conference services	19 742	16 000	(9 000)	(56.3)	7 000	6.3	7 000	7 000
Translation and records services	396 529	469 000	69 000	14.7	538 000	6.1	571 000	606 000
Medical services	331 670	364 000	6 000	1.6	370 000	5.4	390 000	418 000
Data processing services	560 072	658 000	109 000	16.6	767 000	4.0	798 000	838 000
Printing and publishing services	446 276	617 000	(39 000)	(6.3)	578 000	5.5	611 000	646 000
Sub-total: Shared costs	1 754 289	2 124 000	136 000	6.4	2 260 000	5.2	2 377 000	2 515 000
TOTAL	9 084 187	10 975 000	(263 000)	(2.4)	10 712 000	6.0	11 353 000	12 152 000

APPROPRIATION SECTION 7: EXECUTIVE MANAGEMENT AND ADMINISTRATION

Expenditure

Table 170

	1983 Actual obligations	1984 Budget	Programme increase (decrease) %		1985 at 1984 price	Price increase %	1985 Estimate	1986 Preliminary estimate
Executive management ^{a/}	1 717 454	2 021 000	(3 000)	(0.1)	2 018 000	6.1	2 142 000	2 293 000
Administration	7 366 733	8 954 000	(260 000)	(2.9)	8 694 000	5.9	9 211 000	9 859 000
Total Appropriation Section	9 084 187	10 975 000	(263 000)	(2.4)	10 712 000	6.0	11 353 000	12 152 000

^{a/} Includes the Offices of the Director General and the Deputy Directors General for Technical Co-operation ,
Nuclear Energy and Safety, Research and Isotopes and Administration.

APPROPRIATION SECTION 7: EXECUTIVE MANAGEMENT AND ADMINISTRATION

Manpower

Table 171

	1984			1985		
	P	GS	Total	P	GS	Total
Executive management	16	14	30	16	13	29
Administration	56	97	153	58	97	155
Total Appropriation Section	72	111	183	74	110	184

Executive Management

Summary of cost

Table 172

Item of expenditure	1983 Actual obligations	1984 Budget	Programme increase (decrease) %		1985 at 1984 price	Price increase %	1985 Estimate	1986 Preliminary estimate
Salaries for established posts	1 068 037	1 206 000	67 000	5.5	1 273 000	5.5	1 342 000	1 422 000
Consultants	11 222	73 400	-	-	73 400	5.5	77 000	82 000
Overtime	8 445	13 300	-	-	13 300	5.0	14 000	15 000
Temporary assistance	9 241	12 200	-	-	12 200	5.0	12 800	14 000
Common staff costs	374 167	396 700	22 400	5.6	419 100	8.7	456 100	484 000
Technical committees, advisory groups	48 678	45 000	-	-	45 000	6.5	48 000	56 000
Hospitality	1 195	6 400	600	9.3	7 000	5.0	7 300	7 500
Representation allowance	27 500	27 500	-	-	27 500	-	27 500	27 500
Travel	96 598	129 600	(600)	(0.5)	129 000	7.0	138 200	148 000
Common services	7 106	14 900	(2 400)	(16.1)	12 500	5.0	13 100	14 000
Non-shared transferred costs	-	-	(109 000)	-	(109 000)	5.9	(115 000)	(122 000)
Other	-	-	20 000	-	20 000	-	20 000	38 000
Sub-total: Direct costs	1 652 189	1 925 000	(2 000)	(0.1)	1 923 000	6.1	2 041 000	2 186 000
Conference services	790	1 000	-	-	1 000	6.3	1 000	1 000
Translation and records services	35 205	60 000	-	-	60 000	6.1	64 000	68 000
Data processing services	5 582	2 000	-	-	2 000	-	2 000	2 000
Printing and publishing services	23 688	33 000	(1 000)	(3.0)	32 000	5.5	34 000	36 000
Sub-total: Shared costs	65 265	96 000	(1 000)	(1.0)	95 000	6.3	101 000	107 000
TOTAL	1 717 454	2 021 000	(3 000)	(0.1)	2 018 000	6.1	2 142 000	2 293 000

Executive Management
Summary of manpower
Table 173

Grade of post	Number of established posts					1985
	1983 Adjusted	1984	1984 Adjusted	Change		
				New posts	Reclassi- fications	
DG	1	1	1	-	-	1
DDG	4	4	4	-	-	4
D	1	1	1	-	-	1
P-5	3	3	3	-	-	3
P-4	1	1	1	-	-	1
P-3	1	1	2	-	1	3
P-2	4	4	3	-	(1)	2
P-1	1	1	1	-	-	1
Sub-total	16	16	16	-	-	16
GS	14	14	13	-	-	13
TOTAL	30	30	29	-	-	29

Administration
Summary of manpower
Table 174

Grade of post	Number of established posts					1985
	1983 Adjusted	1984	1984 Adjusted	Change		
				New posts	Reclassi- fications	
D	6	6	6	-	-	6
P-5	13	13	13	-	1	14
P-4	15	15	15	-	(1)	14
P-3	13	13	14	-	1	15
P-2	5	9	10	-	(1)	9
P-1	1	-	-	-	-	-
Sub-total	53	56	58	-	-	58
GS	100	97	97	-	-	97
TOTAL	153	153	155	-	-	155

Administration
Internal Audit and Management Services

Summary of cost

Table 175

Item of expenditure	1983 Actual obligations	1984 Budget	Programme increase (decrease) %		1985 at 1984 price	Price increase %	1985 Estimate	1986 Preliminary estimate
Salaries for established posts	231 074	327 000	14 000	4.3	341 000	5.5	360 000	387 000
Temporary assistance	12 150	13 700	(10 900)	(79.6)	2 800	5.0	2 900	3 100
Common staff costs	80 952	108 000	5 000	4.6	113 000	8.7	122 700	131 300
Scientific and technical contracts	104 000	-	-	-	-	-	-	-
Training	-	2 000	-	-	2 000	5.5	2 000	2 000
Hospitality	143	100	-	-	100	5.0	100	100
Travel	1 687	3 000	(100)	(3.3)	2 900	7.0	3 100	3 300
Common services	320	200	-	-	200	5.5	200	200
Other	-	-	5 000	-	5 000	5.8	5 000	3 000
Sub-total: Direct costs	430 326	454 000	13 000	4.0	467 000	6.1	496 000	530 000
Translation and records services	9 454	11 000	(11 000)	(100.0)	-	-	-	-
Data processing services	13 955	25 000	(2 000)	(8.0)	23 000	4.0	24 000	25 000
Printing and publishing services	21 151	22 000	(2 000)	(9.1)	20 000	5.5	21 000	23 000
Sub-total: Shared costs	44 560	58 000	(15 000)	(34.5)	43 000	5.3	45 000	48 000
TOTAL	474 886	512 000	(2 000)	(0.4)	510 000	6.1	541 000	578 000

Administration
Internal Audit and Management Services
Summary of manpower
Table 176

Grade of post	Number of established posts					1985
	1983 Adjusted	1984	1984 Adjusted	Change		
				New posts	Reclassi- fications	
P-5	1	1	1	-	-	1
P-4	1	1	2	-	-	2
P-3	2	2	1	-	1	2
P-2	1	2	2	-	(1)	1
Sub-total	5	6	6	-	-	6
GS	5	4	5	-	-	5
TOTAL	10	10	11	-	-	11

Administration
Division of Budget and Finance
Summary of cost
Table 177

Item of expenditure	1983 Actual obligations	1984 Budget	Programme increase (decrease) %		1985 at 1984 price	Price increase %	1985 Estimate	1986 Preliminary estimate
Salaries for established posts	1 439 434	1 746 000	(40 000)	(2.3)	1 706 000	5.5	1 800 000	1 938 000
Overtime	13 002	15 000	-	-	15 000	5.0	15 800	16 700
Temporary assistance	37 176	32 000	(11 000)	(34.4)	21 000	5.0	22 000	23 700
Common staff costs	504 276	576 100	(13 100)	(2.3)	563 000	8.7	612 000	659 100
Hospitality	589	500	-	-	500	5.0	500	500
Travel	5 275	6 400	100	1.6	6 500	7.0	7 000	7 500
Common services	8 526	12 000	-	-	12 000	5.0	12 700	13 500
Other	-	-	45 000	-	45 000	5.0	47 000	49 000
Sub-total: Direct costs	2 008 278	2 388 000	(19 000)	(0.8)	2 369 000	6.2	2 517 000	2 708 000
Translation and records services	22 167	22 000	1 000	4.5	23 000	6.1	24 000	26 000
Data processing services	368 419	390 000	21 000	5.4	411 000	4.0	427 000	449 000
Printing and publishing services	34 687	26 000	(3 000)	(11.5)	23 000	5.5	24 000	25 000
Sub-total: Shared costs	425 273	438 000	19 000	4.3	457 000	3.9	475 000	500 000
TOTAL	2 433 551	2 826 000	-	-	2 826 000	5.5	2 992 000	3 208 000

Administration
Division of Budget and Finance
Summary of manpower
Table 178

Grade of post	Number of established posts					
	1983 Adjusted	1984	1984 Adjusted	Change		1985
				New posts	Reclassi- fications	
D	1	1	1	-	-	1
P-5	4	4	4	-	-	4
P-4	5	5	5	-	-	5
P-3	6	6	6	-	-	6
P-2	1	2	4	-	-	4
P-1	1	-	-	-	-	-
Sub-total	18	18	20	-	-	20
GS	47	47	45	-	-	45
TOTAL	65	65	65	-	-	65

Administration
Division of External Relations
Summary of cost
Table 179

Item of expenditure	1983 Actual obligations	1984 Budget	Programme increase (decrease) %		1985 at 1984 price	Price increase %	1985 Estimate	1986 Preliminary estimate
Salaries for established posts	750 693	787 000	(17 000)	(2.2)	770 000	5.5	812 000	874 000
Overtime	106	1 500	-	-	1 500	5.0	1 600	1 700
Common staff costs	262 991	263 500	(9 000)	(3.4)	254 500	8.7	276 000	297 000
Common equipment	-	9 000	(6 500)	(72.2)	2 500	4.0	2 600	3 000
Common supplies	2 250	-	-	-	-	-	-	-
Hospitality	781	3 000	-	-	3 000	6.5	3 200	3 500
Representation allowance	-	-	-	-	-	-	-	-
Travel	16 147	20 000	16 000	80.0	36 000	7.0	38 900	41 800
Common services	3 076	-	3 500	-	3 500	5.0	3 700	4 000
Non-shared transferred costs	-	-	-	-	-	-	-	-
Sub-total: Direct costs	1 036 044	1 084 000	(13 000)	(1.2)	1 071 000	6.3	1 138 000	1 225 000
Translation and records services	30 445	37 000	(8 000)	(21.6)	29 000	6.1	31 000	33 000
Data processing services	-	35 000	(35 000)	(100.0)	-	-	-	-
Printing and publishing services	14 805	75 000	(25 000)	(33.3)	50 000	5.5	53 000	56 000
Sub-total: Shared costs	45 250	147 000	(68 000)	(46.3)	79 000	6.3	84 000	89 000
TOTAL	1 081 294	1 231 000	(81 000)	(6.6)	1 150 000	6.3	1 222 000	1 314 000

Administration
Division of External Relations
Summary of manpower
Table 180

Grade of post	Number of established posts					
	1983 Adjusted	1984	1984 Adjusted	Change		1985
				New posts	Reclassi- fications	
D	2	2	2	-	-	2
P-5	3	3	3	-	-	3
P-4	2	2	2	-	-	2
P-3	-	-	1	-	-	1
P-2	2	2	1	-	-	1
Sub-total	9	9	9	-	-	9
GS	12	12	13	-	-	13
TOTAL	21	21	22	-	-	22

Administration
Division of Public Information
Summary of cost
Table 181

Item of expenditure	1983 Actual obligations	1984 Budget	Programme increase (decrease) %		1985 at 1984 price	Price increase %	1985 Estimate	1986 Preliminary estimate
Salaries for established posts	334 153	408 000	4 000	1.0	412 000	5.5	435 000	468 000
Consultants	18 886	28 000	2 000	7.1	30 000	5.0	31 500	34 000
Overtime	103	2 300	-	-	2 300	5.0	2 400	2 500
Temporary assistance	13 318	2 200	-	-	2 200	5.0	2 300	2 500
Common staff costs	117 063	134 200	1 300	1.0	135 500	8.7	147 900	158 800
Common equipment	4 783	-	-	-	-	-	-	-
Common supplies	18 138	20 000	-	-	20 000	4.0	21 000	23 000
Conferences, symposia, seminars	11 112	-	-	-	-	-	-	-
Hospitality	2 482	6 800	200	5.2	7 000	5.0	7 400	8 000
Travel	5 771	16 500	5 500	33.3	22 000	7.0	23 500	25 200
Common services	47 710	35 000	2 000	5.7	37 000	5.0	39 000	42 000
Sub-total: Direct costs	573 519	653 000	15 000	2.3	668 000	6.3	710 000	764 000
Translation and records services	225 911	246 000	54 000	21.9	300 000	6.1	318 000	337 000
Data processing services	12 095	25 000	5 000	20.0	30 000	4.0	31 000	33 000
Printing and publishing services	252 114	370 000	(50 000)	(13.5)	320 000	5.5	338 000	357 000
Sub-total: Shared costs	490 120	641 000	9 000	1.4	650 000	5.7	687 000	727 000
TOTAL	1 063 639	1 294 000	24 000	1.9	1 318 000	6.0	1 397 000	1 491 000

Administration
Division of Public Information
Summary of manpower
Table 182

Grade of post	Number of established posts					
	1983 Adjusted	1984	1984 Adjusted	Change		1985
				New posts	Reclassi- fications	
D	1	1	1	-	-	1
P-5	-	-	-	-	1	1
P-4	2	2	2	-	(1)	1
P-3	1	1	1	-	-	1
P-2	1	1	1	-	-	1
Sub-total	5	5	5	-	-	5
GS	8	8	8	-	-	8
TOTAL	13	13	13	-	-	13

Administration
Legal Division
Summary of cost

Table 183

Item of expenditure	1983 Actual obligations	1984 Budget	Programme increase (decrease) %		1985 at 1984 price	Price increase %	1985 Estimate	1986 Preliminary estimate
Salaries for established posts	415 516	497 000	(22 000)	(6.9)	475 000	5.5	500 000	538 000
Temporary assistance	6 886	9 000	(1 000)	(11.1)	8 000	5.0	8 400	9 000
Common staff costs	145 568	164 500	(8 100)	(7.8)	156 400	8.7	170 200	182 500
Common supplies	43	-	-	-	-	-	-	-
Conferences, symposia, seminars	2 982	40 000	(19 000)	(47.5)	21 000	6.5	22 000	-
Technical committees, advisory groups	-	15 000	(15 000)	(100.0)	-	-	-	-
Hospitality	294	2 100	(100)	(4.8)	2 000	5.0	2 000	2 200
Travel	13 321	8 300	2 200	26.5	10 500	7.0	11 200	12 000
Common services	862	1 100	-	-	1 100	5.0	1 200	1 300
Non-shared transferred costs	(154 000)	(240 000)	-	-	(240 000)	-	(254 000)	(270 000)
Other	-	-	-	-	-	-	-	24 000
Sub-total: Direct costs	431 472	497 000	(63 000)	(12.7)	434 000	6.2	461 000	499 000
Conference services	18 952	15 000	(9 000)	(60.0)	6 000	6.3	6 000	6 000
Translation and records services	24 123	29 000	2 000	6.9	31 000	6.1	33 000	35 000
Data processing services	7 443	8 000	1 000	12.5	9 000	4.0	9 000	9 000
Printing and publishing services	29 188	5 000	8 000	160.0	13 000	5.5	14 000	15 000
Sub-total: Shared costs	79 706	57 000	2 000	3.5	59 000	5.1	62 000	65 000
TOTAL	511 178	554 000	(61 000)	11.0	493 000	6.1	523 000	564 000

Administration
Legal Division
Summary of manpower
Table 184

Grade of post	Number of established posts					
	1983 Adjusted	1984	1984 Adjusted	Change		1985
				New posts	Reclassi- fications	
D	1	1	1	-	-	1
P-5	3	3	3	-	-	3
P-4	3	3	2	-	-	2
P-3	-	-	1	-	-	1
Sub-total	7	7	7	-	-	7
GS	4	4	4	-	-	4
TOTAL	11	11	11	-	-	11

Administration
Division of Personnel
Summary of cost
Table 185

Item of expenditure	1983 Actual obligations	1984 Budget	Programme increase (decrease) %		1985 at 1984 price	Price increase %	1985 Estimate	1986 Preliminary estimate
Salaries for established posts	790 978	909 000	6 000	0.7	915 000	5.5	965 000	1 038 000
Overtime	1 267	1 500	500	33.3	2 000	5.0	2 000	2 100
Temporary assistance	22 316	29 800	(18 600)	(62.4)	11 200	5.0	11 800	12 700
Common staff costs	277 103	299 500	2 500	0.8	302 000	8.7	328 800	353 300
Common supplies	118	-	-	-	-	-	-	-
Training	101 991	600 000	(318 000)	(53.0)	282 000	5.5	297 000	-
Hospitality	1 491	1 400	100	7.1	1 500	5.0	1 600	1 700
Travel	1 003	4 400	100	2.3	4 500	7.0	4 900	5 200
Common services	1 803	4 400	(2 600)	(59.1)	1 800	5.0	1 900	2 000
Other	-	-	-	-	-	-	-	310 000
Sub-total: Direct costs	1 198 070	1 850 000	(330 000)	(17.8)	1 520 000	6.1	1 613 000	1 725 000
Translation and records services	49 224	64 000	31 000	48.4	95 000	6.1	101 000	107 000
Medical services	331 670	364 000	6 000	1.6	370 000	-	390 000	418 000
Data processing services	152 578	173 000	119 000	68.8	292 000	4.4	305 000	320 000
Printing and publishing services	70 643	86 000	34 000	39.5	120 000	5.5	127 000	134 000
Sub-total: Shared costs	604 115	687 000	190 000	27.6	877 000	5.2	923 000	979 000
TOTAL	1 802 185	2 537 000	(140 000)	(5.5)	2 397 000	5.8	2 536 000	2 704 000

Administration
Division of Personnel
Summary of manpower
Table 186

Grade of post	Number of established posts					
	1983 Adjusted	1984	1984 Adjusted	Change		1985
				New posts	Reclassi- fications	
D	1	1	1	-	-	1
P-5	2	2	2	-	-	2
P-4	2	2	2	-	-	2
P-3	4	4	4	-	-	4
P-2	-	2	2	-	-	2
Sub-total	9	11	11	-	-	11
GS	24	22	22	-	-	22
TOTAL	33	33	33	-	-	33

APPROPRIATION SECTION 8

GENERAL SERVICES

APPROPRIATION SECTION 8: GENERAL SERVICES

Summary of costTable 187

Item of expenditure	1983 Actual obligations	1984 Budget	Programme increase (decrease) %		1985 at 1984 price	Price increase %	1985 Estimate	1986 Preliminary estimate
Salaries for established posts	1 780 712	2 180 000	(91 000)	(4.2)	2 089 000	5.5	2 204 000	2 336 000
Overtime	10 969	14 000	1 000	7.1	15 000	5.0	15 800	17 000
Temporary assistance	47 447	53 000	22 000	41.5	75 000	5.0	78 800	83 000
Common staff costs	623 836	719 500	(30 500)	(4.2)	689 000	8.7	749 000	794 000
Common equipment	206 788	195 000	37 000	19.0	232 000	4.0	242 000	283 000
Common supplies	575 324	603 000	(23 000)	(3.8)	580 000	4.0	608 000	660 000
Hospitality	418	500	-	-	500	-	500	500
Travel	3 229	3 000	1 500	50.0	4 500	7.0	4 900	5 500
Common services	5 933 826	7 388 000	(390 000)	(5.3)	6 998 000	5.0	7 383 000	7 900 000
Sub-total: Direct costs	9 182 549	11 156 000	(473 000)	(4.2)	10 683 000	5.6	11 286 000	12 079 000
Translation and records services	7 498	9 000	(4 000)	(44.4)	5 000	6.1	5 000	5 000
Data processing services	25 119	60 000	10 000	16.7	70 000	4.0	73 000	76 000
Printing and publishing services	45 685	50 000	(6 000)	(12.0)	44 000	5.5	46 000	49 000
Sub-total: Shared costs	78 302	119 000	-	-	119 000	4.2	124 000	130 000
TOTAL	9 260 851	11 275 000	(473 000)	(4.2)	10 802 000	5.6	11 410 000	12 209 000

APPROPRIATION SECTION 8: GENERAL SERVICES

Summary of manpowerTable 188

Grade of post	Number of established posts					1985
	1983 Adjusted	1984	1984 Adjusted	Change		
				New posts	Reclassi- fications	
D	1	1	1	-	-	1
P-5	2	2	2	-	-	2
P-4	1	1	1	-	-	1
P-3	2	2	2	-	-	2
P-2	1	2	2	-	-	2
P-1	-	1	1	-	-	1
Sub-total	7	9	9	-	-	9
GS	72	70	69	-	1	70
M&O	27	27	27	-	(1)	26
TOTAL	106	106	105	-	-	105

VIC Operating CostsTable 189

	1983 Actual obligations	1984 Adjusted budget	1985 Estimate	1986 Preliminary estimate
Utilities	1 798 388	2 582 000	2 355 000	2 525 000
Operation and maintenance contract	410 000	480 000	490 000	524 000
Contractual maintenance services	700 000	930 700	885 700	947 700
Cleaning	699 474	730 000	825 000	883 000
Building and maintenance staff	930 000	910 000	1 040 000	1 115 000
Security services staff costs	750 000	830 000	890 000	952 000
Building and maintenance supplies	276 005	284 000	295 000	320 000
Building, property and maintenance equipment	55 000	100 000	110 000	128 000
Sinking Fund, major repairs	33 333	33 300	33 300	33 300
TOTAL	5 652 200	6 880 000	6 924 000	7 428 000

GENERAL SERVICES

Costs of common services, supplies and equipmentTable 190

	1983 Actual obligations	1984 Adjusted budget	1985 Estimate	1986 Preliminary estimate
<u>Division of General Services</u>				
<u>Services:</u>				
Communications	539 548	660 000	670 000	717 000
Freight and transportation	21 452	45 000	45 000	48 000
Rental of premises	15 838	38 000	50 000	54 000
Servicing of office equipment	43 366	64 000	65 000	70 000
Other	25 760	85 000	65 000	70 000
Sub-total	645 964	892 000	895 000	959 000
<u>Supplies:</u>				
Office supplies	150 905	175 000	170 000	185 000
Expendable equipment	148 327	140 000	140 000	150 000
Other	87	4 000	5 000	6 000
Sub-total	299 319	319 000	315 000	341 000
<u>Equipment:</u>				
Office furniture and equipment	96 006	75 000	75 000	87 000
Transportation equipment	22 449	20 000	24 000	28 000
Sub-total	118 455	95 000	99 000	115 000
TOTAL	1 063 738	1 306 000	1 309 000	1 415 000

APPROPRIATION SECTION 9

SHARED SUPPORT SERVICES

(COST OF WORK FOR OTHERS)

APPROPRIATION SECTION 9: SHARED SUPPORT SERVICES

Summary of costTable 191

Item of expenditure	1983 Actual obligations AS 17.67=1US\$	1984 Budget	Programme increase (decrease) %		1985 at 1984 price	Price increase %	1985 Estimate AS 16.60=1US\$	1986 Preliminary estimate
Salaries for established posts	8 151 748	9 941 000	(247 000)	(2.5)	9 694 000	5.5	10 227 000	10 841 000
Consultants	28 619	9 500	-	-	9 500	5.0	10 000	10 500
Overtime	107 754	118 400	(42 000)	(35.5)	76 400	5.0	80 400	85 100
Temporary assistance	726 412	922 400	(216 200)	(23.4)	706 200	5.0	737 400	946 100
Common staff costs	2 748 890	3 276 900	(72 300)	(2.2)	3 204 600	8.7	3 477 000	3 686 800
Common equipment	1 364 047	1 415 000	51 500	3.6	1 466 500	4.0	1 484 900	1 528 000
Scientific supplies	606	-	-	-	-	-	-	-
Common supplies	1 576 173	1 567 200	264 400	16.9	1 831 600	4.0	1 909 800	2 024 600
Scientific and technical contracts	104 600	189 500	(27 200)	(14.4)	162 300	5.0	170 300	180 300
Training	41 024	66 200	(2 400)	(3.6)	63 800	5.5	67 200	71 100
Hospitality	475	1 800	(100)	(5.6)	1 700	5.0	1 800	1 900
Travel	22 483	35 100	1 800	5.1	36 900	7.0	39 500	41 900
Common services	2 573 944	2 952 000	17 500	0.6	2 969 500	5.0	3 062 700	3 185 700
Other	9 983	1 000	27 000	-	28 000	3.4	29 000	130 000
Sub-total: Direct costs	17 456 758	20 496 000	(245 000)	(1.2)	20 251 000	5.2	21 297 000	22 733 000
Translation and records services	19 630	33 000	4 000	12.1	37 000	6.1	39 000	42 000
Data processing services	412 750	482 000	(94 000)	(19.5)	388 000	4.1	404 000	317 000
Printing and publishing services	86 761	81 000	39 000	48.1	120 000	5.5	127 000	134 000
Sub-total: Shared costs	519 141	596 000	(51 000)	(8.6)	545 000	4.6	570 000	493 000
TOTAL	17 975 899	21 092 000	(296 000)	(1.4)	20 796 000	5.2	21 867 000	23 226 000
Less : Agency's share	(14 458 729)	(17 416 000)	296 000	(1.7)	(17 120 000)	5.2	(18 016 000)	(19 174 000)
Total Cost of work for others	3 517 170	3 676 000	-	-	3 676 000	4.8	3 851 000	4 052 000

APPROPRIATION SECTION 9: SHARED SUPPORT SERVICES

Expenditure by service

Table 192

Service	1983 Actual obligations	1984 Budget	Programme increase (decrease) %		1985 at 1984 price	Price increase %	1985 Estimate	1986 Preliminary estimate
Contract administration services	171 982	330 000	(20 000)	(6.1)	310 000	6.4	330 000	350 000
Conference services	336 391	478 000	48 000	10.0	526 000	6.3	559 000	593 000
Translation and records services	3 286 812	4 022 000	(129 000)	(3.2)	3 893 000	6.1	4 129 000	4 527 000
Medical services	747 065	781 000	6 000	0.8	787 000	5.6	831 000	890 000
Library	1 469 762	1 773 000	-	-	1 773 000	5.4	1 869 000	1 981 000
Data processing services	5 471 819	6 433 000	(177 000)	2.8	6 256 000	3.8	6 495 000	6 774 000
Printing and publishing	5 727 339	6 326 000	57 000	0.9	6 383 000	5.5	6 735 000	7 123 000
Interpretation	764 729	949 000	(81 000)	(8.5)	868 000	5.9	919 000	988 000
Total	17 975 899	21 092 000	(296 000)	(1.4)	20 796 000	5.2	21 867 000	23 226 000
Less : Agency's share	(14 458 729)	(17 416 000)	296 000	(1.7)	(17 120 000)	5.2	(18 016 000)	(19 174 000)
Services provided to others	3 517 170	3 676 000	-	-	3 676 000	4.8	3 851 000	4 052 000

APPROPRIATION SECTION 9: SHARED SUPPORT SERVICES

Manpower by service

Table 193

Service	1984				1985			
	P	GS	M&O	Total	P	GS	M&O	Total
Contract administration services	2	4	-	6	2	4	-	6
Conference services	5	7	-	12	5	7	-	12
Translation and records services	39	35	1	75	39	35	1	75
Medical services	3	13	3	19	3	13	3	19
Library	4	11	-	15	5	10	-	15
Data processing services	38	23	-	61	34	27	-	61
Printing and publishing	16	108	18	142	16	108	18	142
Interpretation	8	1	-	9	8	1	-	9
Total, Agency posts ^{a/}	115	202	22	339	112	205	22	339

^{a/} In addition, there are 23 extrabudgetary posts (see Table 38).

Contract administration services

Summary of costTable 194

Item of expenditure	1983 Actual obligations	1984 Budget	Programme increase (decrease) %		1985 at 1984 price	Price increase %	1985 Estimate	1986 Preliminary estimate
Salaries for established posts	105 706	210 000	(15 000)	(7.1)	195 000	5.5	206 000	218 000
Common staff costs	37 032	69 000	(5 000)	(7.2)	64 000	8.7	70 000	75 000
Sub-total: Direct costs	142 738	279 000	(20 000)	(7.2)	259 000	6.6	276 000	293 000
Translation and records services	10 144	27 000	-	-	27 000	6.1	29 000	31 000
Data processing services	17 421	24 000	-	-	24 000	4.0	25 000	26 000
Printing and publishing services	1 679	-	-	-	-	-	-	-
Sub-total: Shared costs	29 244	51 000	-	-	51 000	5.9	54 000	57 000
TOTAL	171 982	330 000	(20 000)	(6.1)	310 000	6.4	330 000	350 000

Contract administration services

Summary of manpowerTable 195

Grade of post	Number of established posts					
	1983 Adjusted	1984	1984 Adjusted	Change		1985
				New posts	Reclassi- fications	
D	-	-	-	-	1	1
P-5	1	1	1	-	(1)	-
P-4	1	1	1	-	-	1
Sub-total	2	2	2	-	-	2
GS	4	4	4	-	-	4
TOTAL	6	6	6	-	-	6

Contract administration services

Breakdown of costs by user

Table 196

User/Appropriation Section	1983 Actual obligations	1984 Budget	Programme increase (decrease) %		1985 at 1984 price	Price increase %	1985 Estimate	1986 Preliminary estimate
2. Nuclear Power	8 787	15 000	(3 000)	(20.0)	12 000	6.4	13 000	14 000
Nuclear Fuel Cycle	13 810	25 000	(5 000)	(20.0)	20 000	6.4	21 000	22 000
Nuclear Safety	20 085	35 000	(6 000)	(17.1)	29 000	6.4	31 000	33 000
Sub-total	42 682	75 000	(14 000)	(18.7)	61 000	6.4	65 000	69 000
3. Food and Agriculture	47 703	90 000	6 000	6.7	96 000	6.4	102 000	108 000
Life Sciences	50 214	85 000	5 000	5.9	90 000	6.4	96 000	102 000
Research and Laboratories	22 596	45 000	-	-	45 000	6.4	48 000	51 000
Sub-total	120 513	220 000	11 000	5.0	231 000	6.4	246 000	261 000
4. International Laboratory of Marine Radioactivity	-	5 000	(1 000)	(20.0)	4 000	6.4	4 000	4 000
5. Safeguards	8 787	30 000	(16 000)	(53.3)	14 000	6.4	15 000	16 000
TOTAL	171 982	330 000	(20 000)	(6.1)	310 000	6.4	330 000	350 000

Conference services

Summary of costTable 197

Item of expenditure	1983 Actual obligations	1984 Budget	Programme increase (decrease) %		1985 at 1984 price	Price increase %	1985 Estimate	1986 Preliminary estimate
Salaries for established posts	228 057	362 000	(8 000)	(2.2)	354 000	5.5	373 000	395 000
Overtime	209	-	-	-	-	-	-	-
Temporary assistance	6 604	-	-	-	-	-	-	-
Common staff costs	79 895	116 000	500	0.4	116 500	8.7	127 200	134 800
Common equipment	748	-	1 500	-	1 500	4.0	1 600	1 700
Scientific supplies	606	-	-	-	-	-	-	-
Common supplies	-	-	2 500	-	2 500	4.0	2 600	2 800
Hospitality	140	-	-	-	-	-	-	-
Common services	604	-	1 500	-	1 500	5.5	1 600	1 700
Sub-total: Direct costs	316 863	478 000	(2 000)	(0.4)	476 000	6.3	506 000	536 000
Translation and records services	3 785	-	5 000	-	5 000	6.1	5 000	6 000
Data processing services	8 540	-	15 000	-	15 000	4.0	16 000	17 000
Printing and publishing services	7 203	-	30 000	-	30 000	5.5	32 000	34 000
Sub-total: Shared costs	19 528	-	50 000	-	50 000	6.0	53 000	57 000
TOTAL	336 391	478 000	48 000	10.0	526 000	6.3	559 000	593 000

Conference services

Summary of manpowerTable 198

Grade of post	Number of established posts					1985
	1983 Adjusted	1984	1984 Adjusted	Change		
				New posts	Reclassi- fications	
P-5	1	1	1	-	-	1
P-4	-	-	-	-	-	-
P-3	1	1	1	-	-	1
P-2	3	3	3	-	-	3
Sub-total	5	5	5	-	-	5
GS	7	7	7	-	-	7
TOTAL	12	12	12	-	-	12

Conference services

Breakdown of costs by userTable 199

User/Appropriation Section	1983 Actual obligations	1984 Budget	Programme increase (decrease) %		1985 at 1984 price	Price increase %	1985 Estimate	1986 Preliminary estimate
2. Nuclear Power	30 006	45 000	19 000	42.2	64 000	6.3	68 000	72 000
Nuclear Fuel Cycle	33 165	44 000	(6 000)	(13.6)	38 000	6.3	40 000	42 000
Nuclear Safety	46 589	75 000	10 000	13.3	85 000	6.3	90 000	95 000
Scientific and Technical Information	17 372	8 000	2 000	25.0	10 000	6.3	11 000	11 000
Sub-total	127 132	172 000	25 000	14.5	197 000	6.3	209 000	220 000
3. Food and Agriculture	14 214	24 000	15 000	62.5	39 000	6.3	41 000	43 000
Life Sciences	15 003	23 000	7 000	30.4	30 000	6.3	32 000	34 000
Research and Laboratories	27 638	50 000	9 000	18.0	59 000	6.3	63 000	66 000
Sub-total	56 855	97 000	31 000	32.0	128 000	6.3	136 000	143 000
5. Safeguards	11 845	18 000	1 000	5.6	19 000	6.3	20 000	26 000
6. Policy-making Organs	120 817	175 000	-	-	175 000	6.3	187 000	197 000
7. Executive Management	790	1 000	-	-	1 000	6.3	1 000	1 000
Administration	18 952	15 000	(9 000)	(60.0)	6 000	6.3	6 000	6 000
Sub-total	19 742	16 000	(9 000)	(56.3)	7 000	6.3	7 000	7 000
TOTAL	336 391	478 000	48 000	10.0	526 000	6.3	559 000	593 000

Interpretation

Summary of costTable 200

Item of expenditure	1983 Actual obligations	1984 Budget	Programme increase (decrease) %		1985 at 1984 price	Price increase %	1985 Estimate	1986 Preliminary estimate
Salaries for established posts	372 060	428 000	(18 000)	(4.2)	410 000	5.5	433 000	459 000
Temporary assistance	262 558	380 000	(57 000)	(2.6)	323 000	5.0	339 000	373 000
Common staff costs	129 751	141 000	(6 000)	(4.3)	135 000	8.7	147 000	156 000
Sub-total: Direct costs	764 369	949 000	(81 000)	(8.5)	868 000	5.9	919 000	988 000
Data processing services	360	-	-	-	-	-	-	-
Sub-total: Shared costs	360	-	-	-	-	-	-	-
TOTAL	764 729	949 000	(81 000)	(8.5)	868 000	5.9	919 000	988 000

Interpretation

Summary of manpowerTable 201

Grade of post	Number of established posts					
	1983 Adjusted	1984	1984 Adjusted	Change		1985
				New posts	Reclassi- fications	
P-5	1	1	1	-	-	1
P-4	4	4	4	-	-	4
P-3	3	3	3	-	-	3
Sub-total	8	8	8	-	-	8
GS	1	1	1	-	-	1
TOTAL	9	9	9	-	-	9

Translation and records services

Summary of costTable 202

Item of expenditure	1983 Actual obligations	1984 Budget	Programme increase (decrease) %		1985 at 1984 price	Price increase %	1985 Estimate	1986 Preliminary estimate
Salaries for established posts	2 169 508	2 634 000	-	-	2 634 000	5.5	2 779 000	2 946 000
Overtime	5 395	16 000	5 000	31.3	21 000	5.0	22 100	23 500
Temporary assistance	252 080	395 200	(171 700)	(43.4)	223 500	5.0	231 000	395 000
Common staff costs	756 590	869 500	-	-	869 500	8.7	944 800	1 001 500
Common supplies	9 000	100	12 900	-	13 000	4.0	13 500	14 300
Scientific and technical contracts	31 845	32 500	14 800	45.5	47 300	5.0	49 700	52 700
Hospitality	-	200	-	-	200	5.0	200	200
Travel	2 469	2 500	-	-	2 500	7.0	2 700	2 800
Common services	192	-	-	-	-	-	-	-
Sub-total: Direct costs	3 227 079	3 950 000	(139 000)	(3.5)	3 811 000	6.1	4 043 000	4 436 000
Data processing services	54 130	69 000	-	-	69 000	4.0	72 000	76 000
Printing and publishing services	5 603	3 000	10 000	333.3	13 000	5.5	14 000	15 000
Sub-total: Shared costs	59 733	72 000	10 000	13.9	82 000	4.9	86 000	91 000
TOTAL	3 286 812	4 022 000	(129 000)	(3.2)	3 893 000	6.1	4 129 000	4 527 000

Translation and records services

Summary of manpowerTable 203

Grade of post	Number of established posts					
	1983 Adjusted	1984	1984 Adjusted	Change		1985
				New posts	Reclassi- fications	
D	1	1	1	-	-	1
P-5	4	4	4	-	-	4
P-4	12	12	12	-	-	12
P-3	22	22	22	-	-	22
Sub-total	39	39	39	-	-	39
GS	35	35	35	-	-	35
M&O	1	1	1	-	-	1
TOTAL	75	75	75	-	-	75

Translation and records services

Breakdown of costs by userTable 204

User/Appropriation Section	1983 Actual obligations	1984 Budget	Programme increase (decrease) %		1985 at 1984 price	Price increase %	1985 Estimate	1986 Preliminary estimate
1. Technical Assistance and Co-operation	255 576	348 000	-	-	348 000	6.1	369 000	391 000
2. Nuclear Power	73 348	87 000	(14 000)	(16.1)	73 000	6.1	77 000	82 000
Nuclear Fuel Cycle	63 568	79 000	4 000	5.1	83 000	6.1	88 000	93 000
Nuclear Safety	439 108	447 000	(171 000)	(38.3)	276 000	6.1	293 000	311 000
Scientific and Technical Information	56 723	32 000	29 000	90.6	61 000	6.1	64 000	68 000
Sub-total	632 747	645 000	(152 000)	(23.6)	493 000	6.1	522 000	554 000
3. Food and Agriculture	100 078	135 000	(18 000)	(13.3)	117 000	6.1	124 000	131 000
Life Sciences	42 379	51 000	(17 000)	(33.3)	34 000	6.1	36 000	38 000
Research and Laboratories	58 678	73 000	6 000	8.2	79 000	6.1	84 000	89 000
Laboratory	6 890	15 000	(12 000)	(80.0)	3 000	6.1	3 000	3 000
Sub-total	208 025	274 000	(41 000)	(15.0)	233 000	6.1	247 000	261 000
4. International Laboratory of Marine Radioactivity	978	1 000	-	-	1 000	6.1	1 000	1 000
5. Safeguards	165 928	203 000	(12 000)	(5.9)	191 000	6.1	203 000	215 000
6. Policy-making Organs	1 599 901	2 040 000	7 000	0.3	2 047 000	6.1	2 172 000	2 452 000
7. Executive Management	35 205	60 000	-	-	60 000	6.1	64 000	68 000
Administration	361 324	409 000	69 000	16.9	478 000	6.1	507 000	538 000
Sub-total	396 529	469 000	69 000	14.7	538 000	6.1	571 000	606 000
8. General Services	7 498	9 000	(4 000)	(44.4)	5 000	6.1	5 000	5 000
9. Contract administration services	10 144	27 000	-	-	27 000	6.1	29 000	31 000
Conference services	3 785	-	5 000	-	5 000	6.1	5 000	6 000
Medical services	761	1 000	-	-	1 000	6.1	1 000	1 000
Library	650	1 000	-	-	1 000	6.1	1 000	1 000
Data processing services	520	-	-	-	-	-	-	-
Printing and publishing services	3 770	4 000	(1 000)	(25.0)	3 000	6.1	3 000	3 000
Sub-total	19 630	33 000	4 000	12.1	37 000	6.1	39 000	42 000
TOTAL	3 286 812	4 022 000	(129 000)	(3.2)	3 893 000	6.1	4 129 000	4 527 000

Medical services

Summary of cost

Table 205

Item of expenditure	1983 Actual obligations	1984 Budget	Programme increase (decrease) %		1985 at 1984 price	Price increase %	1985 Estimate	1986 Preliminary estimate
Salaries for established posts	389 354	428 000	-	-	428 000	5.5	452 000	480 000
Temporary assistance	14 612	12 300	10 000	81.3	22 300	5.0	23 400	25 000
Common staff costs	136 402	141 500	-	-	141 500	8.7	153 000	162 100
Common equipment	5 328	-	-	-	-	-	-	-
Common supplies	63 825	78 000	3 000	3.8	81 000	4.0	85 000	96 000
Training	-	2 400	(400)	(16.7)	2 000	5.5	2 000	2 000
Hospitality	335	1 400	(100)	(7.1)	1 300	5.0	1 400	1 500
Travel	4 781	5 400	500	9.3	5 900	7.0	6 200	6 400
Common services	66 338	90 000	4 000	4.4	94 000	5.0	97 000	105 000
Other	1 029	-	-	-	-	-	-	-
Sub-total: Direct costs	682 004	759 000	17 000	2.2	776 000	5.7	820 000	878 000
Translation and records services	761	1 000	-	-	1 000	6.1	1 000	1 000
Data processing services	59 041	17 000	(11 000)	(64.7)	6 000	-	6 000	7 000
Printing and publishing services	5 259	4 000	-	-	4 000	5.5	4 000	4 000
Sub-total: Shared costs	65 061	22 000	(11 000)	(50.0)	11 000	-	11 000	12 000
TOTAL	747 065	781 000	6 000	0.8	787 000	5.6	831 000	890 000
Less : Agency's share	(331 670)	(364 000)	(6 000)	1.6	(370 000)	5.4	(390 000)	(418 000)
Cost of work for others	415 395	417 000	-	-	417 000	5.8	441 000	472 000

Medical services
Summary of manpower
Table 206

Grade of post	Number of established posts					1985
	1983 Adjusted	1984	1984 Adjusted	Change		
				New posts	Reclassi- fications	
D	-	1	1	-	-	1
P-5	1	-	-	-	-	-
P-4	2	2	2	-	-	2
Sub-total	3	3	3	-	-	3
GS	13	13	13	-	-	13
M&O	3	3	3	-	-	3
TOTAL	19	19	19	-	-	19

Medical services
Breakdown of costs by user
Table 207

User	1983 Actual obligations	1984 Budget	Programme increase (decrease) %		1985 at 1984 price	Price increase %	1985 Estimate	1986 Preliminary estimate
Administration	331 670	364 000	6 000	1.6	370 000	5.4	390 000	418 000
TOTAL	331 670	364 000	6 000	1.6	370 000	5.4	390 000	418 000

Library
Summary of cost

Table 208

Item of expenditure	1983 Actual obligations	1984 Budget	Programme increase (decrease) %		1985 at 1984 price	Price increase %	1985 Estimate	1986 Preliminary estimate
Salaries for established posts	583 790	734 000	-	-	734 000	5.5	775 000	822 000
Consultants	3 714	3 600	-	-	3 600	5.0	3 800	4 000
Overtime	1 030	1 400	-	-	1 400	5.0	1 400	1 700
Temporary assistance	5 949	13 800	-	-	13 800	5.0	14 400	15 100
Common staff costs	204 520	242 600	3 000	1.2	245 600	8.7	263 700	279 300
Common equipment	970	13 000	-	-	13 000	4.0	13 500	14 100
Common supplies	483 020	551 100	24 000	4.4	575 100	4.0	602 000	638 000
Training	-	3 800	-	-	3 800	5.5	4 000	4 100
Travel	-	4 700	-	-	4 700	7.0	5 100	5 700
Common services	47 153	52 000	2 000	3.8	54 000	5.0	57 100	61 000
Other	-	-	28 000	-	28 000	3.5	29 000	30 000
Sub-total: Direct costs	1 330 146	1 620 000	57 000	3.5	1 677 000	5.5	1 769 000	1 875 000
Translation and records services	650	1 000	-	-	1 000	6.1	1 000	1 000
Data processing services	97 844	110 000	(56 000)	(50.9)	54 000	3.7	56 000	60 000
Printing and publishing services	41 122	42 000	(1 000)	(2.4)	41 000	5.5	43 000	45 000
Sub-total: Shared costs	139 616	153 000	(57 000)	(37.3)	96 000	4.2	100 000	106 000
Total	1 469 762	1 773 000	-	-	1 773 000	5.4	1 869 000	1 981 000
Less : Agency's share	(800 338)	(940 000)	-	-	(940 000)	5.4	(991 000)	(1 050 000)
Cost of work for others	669 424	833 000	-	-	833 000	5.4	878 000	931 000

Library
Summary of manpower
Table 209

Grade of post	Number of established posts					
	1983 Adjusted	1984	1984 Adjusted	Change		1985
				New posts	Reclassi- fications	
P-5	1	1	1	-	-	1
P-4	-	-	-	-	-	-
P-3	1	1	1	-	-	1
P-2	2	2	2	-	-	2
P-1	-	-	1	-	-	1
Sub-total	4	4	5	-	-	5
GS	11	11	10	-	-	10
TOTAL	15	15	15	-	-	15

Library
Breakdown of costs by user
Table 210

User	1983 Actual obligations	1984 Budget	Programme increase (decrease) %		1985 at 1984 price	Price increase %	1985 Estimate	1986 Preliminary estimate
Scientific and Technical Information	800 338	940 000	-	-	940 000	5.4	991 000	1 050 000
TOTAL	800 338	940 000	-	-	940 000	5.4	991 000	1 050 000

Data Processing services

Summary of cost

Table 211

Item of expenditure	1983 Actual obligations	1984 Budget	Programme increase (decrease) %		1985 at 1984 price	Price increase %	1985 Estimate	1986 Preliminary estimate
Salaries for established posts	1 547 399	1 821 000	(10 000)	(0.5)	1 811 000	5.5	1 910 000	2 025 000
Consultants	24 905	5 900	-	-	5 900	5.0	6 200	6 500
Overtime	6 040	18 000	-	-	18 000	5.0	18 900	19 900
Temporary assistance	125 902	109 100	(10 000)	(9.2)	99 100	5.0	104 100	111 000
Common staff costs	542 099	601 200	(3 000)	(0.5)	598 200	8.7	649 600	688 400
Common equipment	1 287 456	1 402 000	(20 000)	(1.4)	1 382 000	4.0	1 397 000	1 435 200
Common supplies	275 492	389 000	(8 000)	(2.1)	381 000	4.0	396 500	418 500
Scientific and technical contracts	66 580	152 000	(42 000)	(27.6)	110 000	5.0	115 300	122 000
Training	41 024	60 000	(2 000)	(3.3)	58 000	5.5	61 200	65 000
Travel	12 776	19 800	-	-	19 800	7.0	21 200	22 500
Common services	1 506 831	1 823 000	(82 000)	(4.5)	1 741 000	5.0	1 781 000	1 824 000
Other	8 900	-	-	-	-	-	-	-
Sub-total: Direct costs	5 445 404	6 401 000	(177 000)	(2.8)	6 224 000	3.8	6 461 000	6 738 000
Translation and records services	520	-	-	-	-	-	-	-
Printing and publishing services	25 895	32 000	-	-	32 000	5.5	34 000	36 000
Sub-total: Shared costs	26 415	32 000	-	-	32 000	6.3	34 000	36 000
TOTAL	5 471 819	6 433 000	(177 000)	2.8	6 256 000	3.8	6 495 000	6 774 000
Less : Agency's share	(4 414 116)	(5 203 000)	77 000	1.5	(5 126 000)	4.0	(5 331 000)	(5 568 000)
Cost of work for others	1 057 703	1 230 000	(100 000)	8.1	1 130 000	3.0	1 164 000	1 206 000

Data processing services

Summary of manpower

Table 212

Grade of post	Number of established posts					1985
	1983 Adjusted	1984	1984 Adjusted	Change		
				New posts	Reclassi- fications	
P-5	2	3	3	-	-	3
P-4	6	9	9	-	-	9
P-3	15	12	12	-	(1)	11
P-2	9	8	6	-	-	6
P-1	6	6	5	-	-	5
Sub-total	38	38	35	-	(1)	34
GS	23	23	26	-	1	27
TOTAL	61	61	61	-	-	61

Data processing services
Breakdown of costs by user
Table 213

User/Appropriation Section	1983 Actual obligations	1984 Budget	Programme increase (decrease) %		1985 at 1984 price	Price increase %	1985 Estimate	1986 Preliminary estimate
1. Technical Assistance and Co-operation	169 324	273 000	41 000	15.0	314 000	4.0	327 000	343 000
2. Nuclear Power	267 941	390 000	(35 000)	(9.0)	355 000	4.0	369 000	387 000
Nuclear Fuel Cycle	58 612	75 000	11 000	14.7	86 000	4.0	89 000	93 000
Nuclear Safety	91 174	217 000	(11 000)	(5.1)	206 000	4.0	214 000	224 000
Scientific and Technical Information	680 086	877 000	(259 000)	(29.5)	618 000	4.0	643 000	674 000
Sub-total	1 097 813	1 559 000	(294 000)	(18.9)	1 265 000	4.0	1 315 000	1 378 000
3. Food and Agriculture	28 841	43 000	12 000	27.9	55 000	4.0	57 000	60 000
Life Sciences	16 746	29 000	10 000	34.5	39 000	4.0	40 000	42 000
Research and Laboratories	174 906	214 000	-	-	214 000	4.0	222 000	233 000
Laboratory	66 345	55 000	17 000	30.9	72 000	4.0	75 000	79 000
Sub-total	286 838	341 000	39 000	11.4	380 000	4.0	394 000	414 000
5. Safeguards	1 862 560	1 823 000	118 000	6.5	1 941 000	4.0	2 019 000	2 201 000
6. Policy-making Organs	-	7 000	(6 000)	(85.7)	1 000	4.0	1 000	1 000
7. Executive Management	5 582	2 000	-	-	2 000	-	2 000	2 000
Administration	554 490	656 000	109 000	16.6	765 000	4.0	796 000	836 000
Sub-total	560 072	658 000	109 000	16.6	767 000	4.0	798 000	838 000
8. General Services	25 119	60 000	10 000	16.7	70 000	4.0	73 000	76 000
9. Contract administration services	17 421	24 000	-	-	24 000	4.0	25 000	26 000
Conference services	8 540	-	15 000	-	15 000	4.0	16 000	17 000
Translation and records services	54 130	69 000	-	-	69 000	4.0	72 000	76 000
Interpretation services	360	-	-	-	-	-	-	-
Medical services	59 041	17 000	(11 000)	(64.7)	6 000	4.0	6 000	7 000
Library	97 844	110 000	(56 000)	(50.9)	54 000	4.0	56 000	60 000
Printing and publishing services	175 414	262 000	(42 000)	(16.0)	220 000	4.0	229 000	131 000
Sub-total	412 750	482 000	(94 000)	(19.5)	388 000	4.0	404 000	317 000
TOTAL	4 414 476	5 203 000	(77 000)	(1.5)	5 126 000	4.0	5 331 000	5 568 000

Printing and publishing

Summary of costTable 214

Item of expenditure	1983 Actual obligations	1984 Budget	Programme increase (decrease) %		1985 at 1984 price	Price increase %	1985 Estimate	1986 Preliminary estimate
Salaries for established posts	2 755 874	3 324 000	(196 000)	(5.9)	3 128 000	5.5	3 299 000	3 496 000
Overtime	95 080	83 000	(47 000)	(56.6)	36 000	5.0	38 000	40 000
Temporary assistance	58 707	12 000	12 500	104.2	24 500	5.0	25 500	27 000
Common staff costs	862 601	1 096 100	(61 800)	(5.6)	1 034 300	8.7	1 121 700	1 189 700
Common equipment	69 545	-	70 000	-	70 000	4.0	72 800	77 000
Common supplies	744 836	549 000	230 000	41.9	779 000	4.0	810 200	855 000
Scientific and technical contracts	6 175	5 000	-	-	5 000	5.0	5 300	5 600
Hospitality	-	200	-	-	200	5.0	200	200
Representation allowance	-	-	-	-	-	-	-	-
Travel	2 457	2 700	1 300	48.1	4 000	7.0	4 300	4 500
Common services	952 826	987 000	92 000	9.3	1 079 000	5.0	1 126 000	1 194 000
Other	54	1 000	(1 000)	-	-	-	-	100 000
Sub-total: Direct costs	5 548 155	6 060 000	100 000	1.7	6 160 000	5.6	6 503 000	6 989 000
Translation and records services	3 770	4 000	(1 000)	(25.0)	3 000	6.1	3 000	3 000
Data processing services	175 414	262 000	(42 000)	(16.0)	220 000	4.1	229 000	131 000
Sub-total: Shared costs	179 184	266 000	(43 000)	(16.2)	223 000	4.0	232 000	134 000
TOTAL	5 727 339	6 326 000	57 000	0.9	6 383 000	5.5	6 735 000	7 123 000
Less : Agency's share	(4 352 691)	(5 130 000)	43 000	(0.8)	(5 087 000)	5.5	(5 367 000)	(5 680 000)
Cost of work for others	1 374 648	1 196 000	100 000	8.4	1 296 000	5.6	1 368 000	1 443 000

Printing and publishing

Summary of manpowerTable 215

Grade of post	Number of established posts					1985
	1983 Adjusted	1984	1984 Adjusted	Change		
				New posts	Reclassi- fications	
D	1	1	1	-	-	1
P-5	1	1	1	-	-	1
P-4	1	1	1	-	-	1
P-3	5	5	5	-	-	5
P-2	6	8	8	-	-	8
Sub-total	14	16	16	-	-	16
GS	110	108	108	-	-	108
M&O	18	18	18	-	-	18
TOTAL	142	142	142	-	-	142

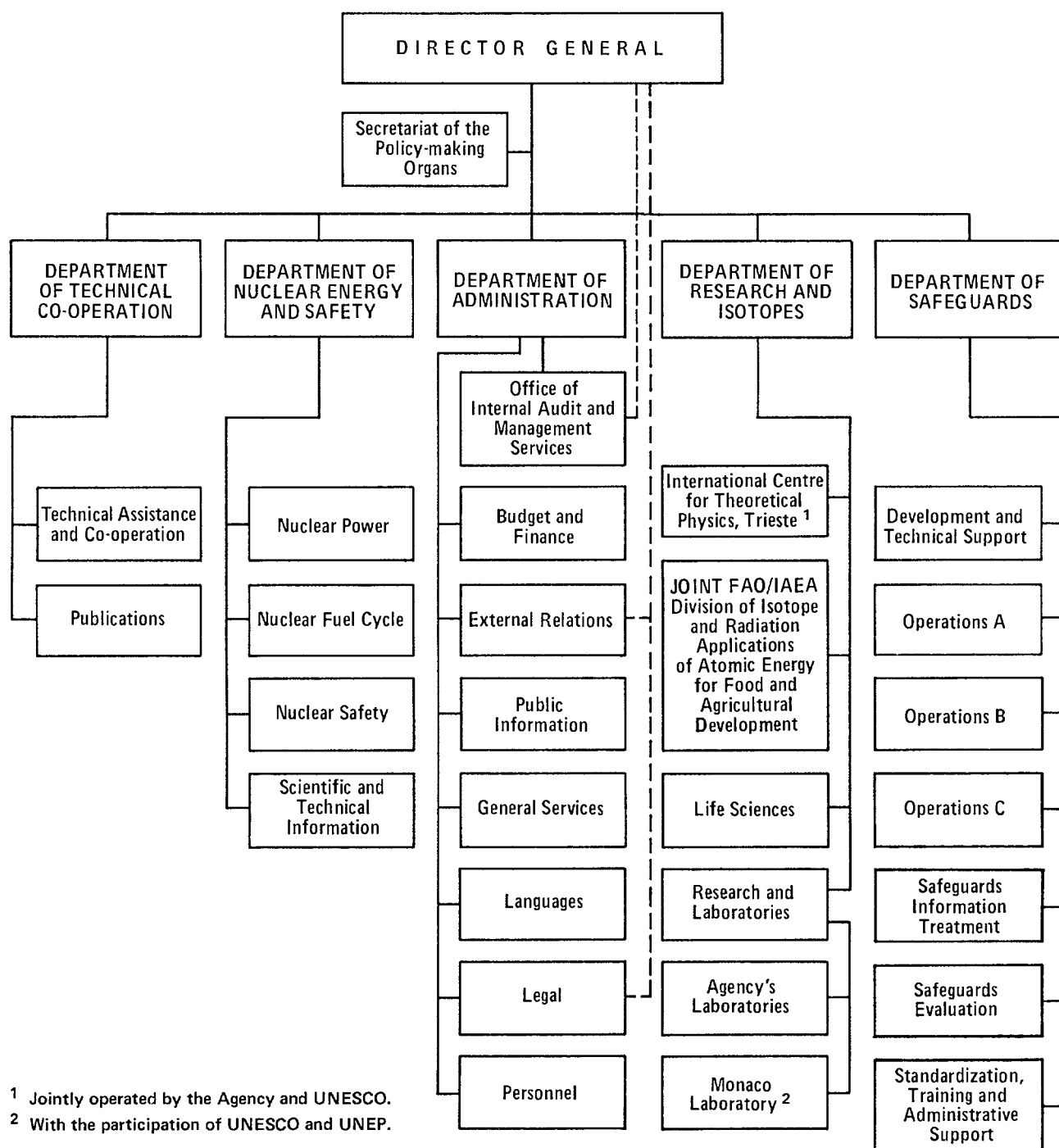
Printing and publishing
Breakdown of costs by user

Table 216

SHARED SUPPORT SERVICES

User/Appropriation Section	1983 Actual obligations	1984 Budget	Programme increase (decrease) %		1985 at 1984 price	Price increase %	1985 Estimate	1986 Preliminary estimate
1. Technical Assistance and Co-operation	125 634	137 000	(10 000)	(7.3)	127 000	5.5	134 000	142 000
2. Nuclear Power	352 790	288 000	(15 000)	(5.2)	273 000	5.5	288 000	305 000
Nuclear Fuel Cycle	304 144	368 000	-	-	368 000	5.5	388 000	410 000
Nuclear Safety	558 796	574 000	(57 000)	(9.9)	517 000	5.5	545 000	577 000
Scientific and Technical Information	740 267	916 000	168 000	18.3	1 084 000	5.5	1 144 000	1 210 000
Sub-total	1 955 997	2 146 000	96 000	4.5	2 242 000	5.5	2 365 000	2 502 000
3. Food and Agriculture	271 995	366 000	(33 000)	(9.0)	333 000	5.5	351 000	371 000
Life Sciences	218 273	135 000	40 000	29.6	175 000	5.5	185 000	196 000
Research and Laboratories	409 474	484 000	(3 000)	(0.6)	481 000	5.5	507 000	537 000
Laboratory	35 831	32 000	(13 000)	(40.6)	19 000	5.5	20 000	21 000
Sub-total	935 573	1 017 000	(9 000)	(0.9)	1 008 000	5.5	1 063 000	1 125 000
4. International Centre for Theoretical Physics	153 130	179 000	(109 000)	(60.9)	70 000	5.5	74 000	78 000
International Laboratory of Marine Radioactivity	1 692	1 000	2 000	200.0	3 000	5.5	3 000	3 000
Sub-total	154 822	180 000	(107 000)	(59.0)	73 000	5.5	77 000	81 000
5. Safeguards	216 158	211 000	(9 000)	(4.3)	202 000	5.5	213 000	226 000
6. Policy-making Organs	385 785	691 000	2 000	0.3	693 000	5.5	731 000	775 000
7. Executive Management	23 688	33 000	(1 000)	(3.0)	32 000	5.5	34 000	36 000
Administration	422 588	584 000	(38 000)	(6.5)	546 000	5.5	577 000	610 000
Sub-total	446 276	617 000	(39 000)	(6.3)	578 000	5.5	611 000	646 000
8. General Services	45 685	50 000	(6 000)	(12.0)	44 000	5.5	46 000	49 000
9. Contract administration services	1 679	-	-	-	-	-	-	-
Conference services	7 203	-	30 000	-	30 000	5.5	32 000	34 000
Translation and records services	5 603	3 000	10 000	333.3	13 000	5.5	14 000	15 000
Medical services	5 259	4 000	-	-	4 000	5.5	4 000	4 000
Library	41 122	42 000	(1 000)	(2.4)	41 000	5.5	43 000	45 000
Data processing services	25 895	32 000	-	-	32 000	5.5	34 000	36 000
Sub-total	86 761	81 000	39 000	48.1	120 000	5.5	127 000	134 000
TOTAL	4 352 691	5 130 000	(43 000)	(0.8)	5 087 000	5.5	5 367 000	5 680 000

ORGANIZATIONAL CHART



Annex B

TABLE OF CORRESPONDENCE BETWEEN PART II AND PART I

Part II Appropriation Section	Part I Programme/Sub-programme
1. TECHNICAL ASSISTANCE AND CO-OPERATION	S.3
2. NUCLEAR ENERGY AND SAFETY	
Nuclear Power	1.1, 1.2, 1.5 (less part of 1.5.3)
Nuclear Fuel Cycle	1.3, 1.4 (less 1.4.5)
Nuclear Safety	3.1, 3.2, 3.3, S.5.3
Scientific and Technical Information	S.5.2, part of 1.5.3
3. RESEARCH AND ISOTOPES	
Food and Agriculture	2.1
Life Sciences	2.2, part of 2.3.6
Research and Laboratories	2.3 (less part of 2.3.6), part of 1.5.3
Agency Laboratory	2.4
4. OPERATIONAL FACILITIES	
International Centre for Theoretical Physics	2.5
International Laboratory of Marine Radioactivity	1.4.5
5. SAFEGUARDS	
Programme Co-ordination	Part of 4.2.3
Operations A, Operations B, Operations C	4.1.2
Development and Technical Support	4.2.1
Information Treatment	4.1.1
Evaluation	4.2.2
Standardization, Training and Administrative Support	Part of 4.2.3
6. POLICY-MAKING ORGANS	S.1.2
7. EXECUTIVE MANAGEMENT AND ADMINISTRATION	
Executive Management	S.1.1
Administration	S.2, S.5.1
Internal audit and management	S.2.3
Budget and finance	S.2.5
External relations	S.2.1
Public information	S.5.1
Legal advice	S.2.2
Personnel	S.2.4
8. GENERAL SERVICES	S.4
9. SHARED SUPPORT SERVICES	
Contract administration services	S.6.1
Conference services	Part of S.6.2
Interpretation	Part of S.6.2
Translation and records services	S.6.3
Medical service	S.6.4
Library	S.6.5
Data processing services	S.6.6
Printing and publishing	S.6.7

