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ONE HUNDRED AND TWENTY-THIRD PLENARY MEETING

Held at the Neue Hofburg, Vienna,
on Friday, 27 September 1968, at 10.45 a.m.

President: Mr. SANDOVAL VALLARTA (Mexico)

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* GC(XII)/390.

The composition of delegations attending the session is given in document GC(XII)/INF/103/Rev.2.

GENERAL DEBATE AND REPORT OF THE BOARD OF GOVERNORS FOR 1967-68 (GC(XII)/380, 389) (continued)

1. Mr. QUIHILLALT (Argentina) said his country wished to acknowledge with gratitude the benefits which it had received from the Agency and which were an example of the results that could be obtained when activities directed towards the same end were combined and co-ordinated.

2. The principal advances made by Argentina would illustrate his point. In May a new 5-MW swimming-pool reactor for research and radioisotope production had gone into operation. As in the case of its predecessors, all the design and construction work had been carried out in Argentina, with the active participation of private industry. The National Atomic Energy Commission had made special efforts to encourage such participation, making available technical advice, designs and special equipment.

3. In addition to that reactor, a number of other installations comprising the first stage in the construction of the fourth Argentine atomic centre had been inaugurated. Those facilities included laboratories concerned with nuclear safety, radiological protection, applications of radiation and large radiation sources, as well as a chemical reprocessing plant.

4. Plans had been made for the gradual transformation of that centre into Argentina's most important nuclear complex, in which scientists from other countries too would have an opportunity to do their work. In that connection he invited the Agency to make use of those new installations for any purpose it deemed appropriate.

5. As the result of a feasibility study for the installation of a power reactor, and following an international competition in which 17 bids had been received, the Argentine Government had authorized the Commission to accept the offer made by the Siemens Company for the construction at Atucha of a 319-MW nuclear power plant with a heavy-water-moderated natural-uranium reactor, which was to be operating at full load by the middle of 1972.

6. In view of the extensive participation of the Commission and Argentine industry, it was expected that the project would call for a considerable effort on the part of the Country's technicians once it was fully under way.

7. Prospecting for raw materials had been continued and evidence of the results could be found in the fact that the joint publication on uranium-bearing resources compiled by the European Nuclear Energy Agency and the IAEA showed that Argentina was among the five western countries with the largest uranium ore reserves.

8. In 1967, for the first time, the number of experts visiting Argentina had been smaller than the number which it had sent abroad. His delegation approved in full the report of the Board of Governors for 1967-68 (GC(XII)/380 and 389). Although technical assistance had been provided by the Agency in a satisfactory manner, it was desirable that that activity should be increased for the benefit of the developing countries. It was a matter for concern that voluntary contributions had not reached even the target figure of $2 million. In that connection, he supported the request made by the Director General in his statement[1], and confirmed that the Argentine contribution would be fixed at the percentage recommended.

9. It would also be necessary to devote particular attention to the generation of nuclear power and to the application of radioisotopes and radiation sources in agriculture and food production.

10. The Argentine delegation emphasized the importance of the International Nuclear Information System (INIS) in connection with the exchange of information.

11. In connection with the Agency's budget for 1969 and programme for 1969-74[2] the Argentine delegation congratulated the Director General on the new presentation of the document, which had required considerable effort but which had succeeded in providing clearer and more detailed information on the scheduled activities and necessary investments and made it easier to evaluate the plans and goals to be achieved during a logical period of implementation.

12. The available evidence indicated a definite increase in studies connected with the peaceful use of atomic energy in nearly every country in the world, the sums invested by Governments for that purpose showing a steady rise. The Agency's staff now had a capacity for action which would enable it, without any increase in numbers, greatly to extend the scope of its activities, especially those aspects concerned with improving living conditions and finding solutions to the problems of power shortages, inadequate food supply and precarious health conditions.

13. In an effort to help find a solution to the problem of insufficient funds, Argentina, together with the Latin American countries participating in

1) GC(XII)/OR.119, para.41.
2) GC(XII)/385 and Corr.1.

the Conference of Non-Nuclear-Weapon States[3]), had submitted a series of proposals designed to obtain, within the framework of the Agency, contributions from the United Nations Development Programme and the International Bank for Reconstruction and Development. Those bodies were able to make financial contributions which the Agency, unfortunately, could not.However, in those bodies atomic energy programmes had to compete with other programmes on the basis of priorities established by the various Governments. It was for the purpose of ensuring a reasonable order of priorities that a request had been made for a full study on all possible contributions of nuclear technology to the scientific and economic progress of the developing countries. Similarly, Argentina had sought at Geneva to prevent the proliferation of international organizations by urging that all international programmes relating to the peaceful uses of atomic energy, including nuclear explosions and an international safeguards system, should be centralized in the Agency.

14. The Agentine delegation had also sought to have consolidated in the Agency one of the basic functions considered by the Preparatory Commission and provided for in the Statute: that of acting as an international supplier of fissionable materials for power reactors.

15. The support which Argentina had given and would continue to give to the Agency was based on the philosophy and spirit reflected in Articles III.C and IV.C of the Statute.

16. In his opinion any services which were set up within the framework of the Agency had to fulfil two basic requirements: they must not be established at the expense of already existing services and they must not infringe the existing rights recognized by the Statute for all Members, without discrimination of any kind.

17. In conclusion, he wished to express his faith in the future of the Agency and his intention to do everything in his power to strengthen it.

18. Mr. SERRANO (Chile) pointed out that at the present session of the General Conference many of the future problems were being considered in the light of the Treaty on the Non-Proliferation of Nuclear Weapons[4]). Chile had joined 94 other States in voting in favour of the General Assembly's resolution commending the Treaty and, prior to that, had signed the Treaty for the Prohibition of Nuclear Weapons in Latin America and other agreements, such as the Treaty of the Antarctic, which banned atomic experiments in that region.

19. His Government had supported those treaties on the understanding that they were milestones on the road to nuclear disarmament, intended to eliminate all forms of aggression and coercion, to put an end to the cold war and the policy of blocs, to further peaceful coexistence and respect for national sovereignty, and to ensure non-interference in the internal affairs of other nations, thereby contributing to the creation of an international order that would make it possible to utilize the resources of mankind, especially in the more technologically advanced countries, for the social and cultural improvement of developing countries. If, on the other hand, the nuclear Powers gave any indication, by their actions rather than their words, that instead of helping to bridge intolerable and hazardous gaps in economic and technological development, those treaties were designed to make those gaps a permanent feature or consolidate the division of the world into spheres of influence, Chile, along with other countries, would be forced to reappraise its policy.

20. His delegation supported the Agency in its dual role as promoter of development and guardian over the legitimate uses of nuclear energy. Without economic development, national and international tensions would not take long to find a violent outlet, and the most elaborate control systems would by themselves be of no avail. Those systems were both necessary and practical in that they created conditions of mutual trust that enabled the bulk of resources to be harnessed for productive purposes.

21. He felt that the Agency should promote a much more ambitious technical assistance programme that would reflect a truer understanding by the more affluent Member States of the fact that the relative backwardness prevailing in one third of the world was an increasingly serious matter. But the assistance should not be channelled into a few sectors that were already fairly well developed, but also into those where nuclear development was still in its first stages. With that end in view, his delegation pledged its fullest support for technical assistance programmes, and drew the Agency's attention to the creation, within the Latin American context, of a Science and Technology Programme in accordance with a declaration made in April 1967 by the Presidents of the American Republics at their meeting in Punta del Este.

22. Chile had begun construction of a scientific-technological complex equipped with suitable facilities for the study and development of the scientific

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3) Held at Geneva from 29 August to 28 September 1968.

4) This Treaty, which is the subject of Resolution 2373 (XXII) adopted by the General Assembly of the United Nations on 12 June 1968, is subsequently referred to in this record as "the Treaty" or "the NPT".

applications of atomic energy. The Agency, and a number of Member States, had assisted in its planning and design. Those facilities would be used in conjunction with ones already in existence or in the planning stage both in Chile and throughout Latin America.

23. The facilities would in due course be placed under the Agency's safeguards system, and the Agency would be called upon to bear the cost involved.

24. The use of atomic energy in Latin America was in a state of transition from the first stage of radioisotopes and research reactors, to a second stage involving power reactors for the generation of electricity and desalination of sea water. In the coming ten years Chile would need to have recourse to such facilities in coping with problems that would inevitably arise in the development of mining, industry, and the social services.

25. His delegation consequently noted with keen interest the concern shown by the Agency and a large number of Member States for the technological development of such concepts as "energy centres" and "agro-industrial complexes", since they were potentially suited to the conditions prevailing in the mining areas and semi-arid region of Chile.

26. The world was treading a path fraught with danger. Never before had the difference between failure and success been so striking. He therefore hoped that both the present session of the Conference, and the work of the Agency, could be instrumental in avoiding a tragedy and creating a super-civilization; for this to happen a larger number of countries would have to be given a chance to take part in the Agency's decisions, and when the time came he would support the resolution envisaging a change in the composition of the Board of Governors[5] so as to guarantee adequate representation of all members of the human family.

27. Mr. FAHMY (United Arab Republic) remarked that it was gratifying indeed to address the twelfth regular session of the Agency's General Conference under the presidency of a well-known scientist from Mexico, a country with which the United Arab Republic and indeed all the countries of the world had cordial and friendly relations, and he was glad to be associated once again with the Agency and the Director General and Secretariat, with whom he had in the past worked in close co-operation.

28. It was further gratifying to note the increase in the Agency's membership, and he took the opportunity of congratulating Liechtenstein, Niger and Zambia on their admission.

29. It was a fact that, under the Statue, many of the responsibilities of the Agency and most of its day-to-day work were entrusted to the Board of Governors and the Secretariat. That was doubtless a necessary arrangement when one was dealing with such a complex problem as atomic energy. The effect had been, however, that the General Conference appeared to have become a routine affair, without much substantive work to do, but that was a regrettable development and one which called for remedial action with a view to revitalizing the Conference's functions.

30. Such action was required in the light of the increasing membership of the Agency, of the increasing interest being taken in the Agency's work, and, above all, of the epoch-making decision of the United Nations to conclude the first international instrument aimed at curtailing the spread of nuclear weapons, namely the NPT.

31. Those considerations would make it necessary, in his Government's view, for the General Conference to undertake, in 1970, a special review of the activities of the Agency since its establishment, and to scrutinize the provisions of the Statute with a view to adapting it to recent developments.

32. He was not proposing that a separate or special session of the General Conference be held for that purpose; it would be sufficient if the fourteenth regular session were suitably expanded, with invitations to participate being extended to all countries.

33. The United Arab Republic was therefore prepared to sponsor a draft resolution convening a session of the General Conference in the autumn of 1970 for the purpose of reviewing the Statute of the Agency and the activities of the organization since its establishment.

34. Many speakers in the general debate had referred to the NPT. That treaty would no doubt place an added burden of responsibility on the Agency and its Members and would demand a substantial effort if its provisions were to be genuinely implemented and widely accepted. After it had come into force the NPT would become part and parcel of international life, international behaviour and international law, and as such would have a universal impact.

35. The NPT had shown the peoples of the world that at last it was possible to make progress towards halting the production of nuclear weapons, and to divert to peaceful ends the effort previously spent on the manufacture of engines of destruction.

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5) See document GC(XII)/397.

36. While the NPT did not force the nuclear Powers to dismantle their nuclear arsenals, it nevertheless indicated that the nations hoped and expected that they would come to an early agreement to do so. His country would, in every appropriate forum, continue to work for the final prohibition of nuclear weapons.

37. Under the NPT the part played by the Agency would not be confined to control and inspection functions, and a substantial role was reserved for it in more positive directions. That was the implication of Article V of the Treaty, and the Agency could and should be ready to fulfil its obligations arising under that article. His delegation fully supported the view of the United States of America that the Agency should be the international organization entrusted with the implementation of Article V, and it therefore supported the draft resolution submitted by the United States requesting the Director General to initiate studies of the procedures to be employed by the Agency in carrying out its role under the article in question[6]. He hoped that, after review by the Board of Governors, the results of those studies could be circulated before the opening of the thirteenth regular session of the General Conference.

38. Emphasis on the peaceful applications of nuclear explosives should of course not lead to a minimizing of the Agency's role in applying the necessary safeguards to ensure that the provisions of the NPT as a whole were fully respected. As was well known, his Government was in favour of a comprehensive and foolproof system of safeguards applied by the Agency to all nuclear energy activities and accepted by States not only as parties to the NPT but as signatories of the Agency's Statute.

39. While on the subject of safeguards, it appeared appropriate to point out that the present Department of the Secretariat responsible for safeguards required futher strengthening so that it could effectively meet its new responsibilities. That was one of the major items to which the Board should turn its attention in the future.

40. Regarding the Board itself, it had become quite clear that its size and composition required adjusting, and that need had been further confirmed by the proceedings of the Conference of Non-Nuclear-Weapon States. The United Arab Republic, together with other countries, therefore intended to submit a draft resolution requesting the Board to review Article VI of the Agency's Statute and to submit to the thirteenth regular session of the General Conference a report on the ways and means by which membership of the Board could be enlarged so as to ensure that it adequately reflected the progress in the peaceful uses of atomic energy achieved by many Members of the Agency, equitable geographical distribution, and the need for the Board, as the executive organ of the Agency, to be fully effective.

41. A great deal was being said about the new role of the Agency following the conclusion of the NPT, and one of the papers submitted to the Conference of Non-Nuclear-Weapon States was entitled: "Submission of Periodic Reports by Countries, to an International Agency, on the Nature and the Extent of Nuclear Technical Assistance and Fissionable Material Supplied by Them to Non-Nuclear-Weapon States for Peaceful Purposes". That paper, which had been prepared by the United Arab Republic Atomic Energy Establishment at the request of the United Nations Secretariat, thoroughly covered all aspects of the exchange of nuclear materials, and since it dealt in a number of ways, direct and indirect, with the prospective functions of the Agency under the NPT, he had forwarded it to the Director General in the hope that it might be found of assistance to the Secretariat, the Board of Governors, and the Members of the Agency[7].

42. He would now refer briefly to a number of activities concerned with isotope applications in the United Arab Republic.

43. In biology and medicine satisfactory progress had been achieved, particularly as regards the results of research on various endemic diseases.

44. In agriculture, the water requirements of various crop plants in different soil and environmental conditions had been investigated using isotopes, as had nutrient supplies and the application of fertilizers. Isotope studies had been carried out on imported cattle with a view to discovering their tolerance of heat and dryness, and useful results had been obtained. In entomology and insect control, attention had been directed towards the eradication of cotton-leaf worm and stored-grain weevils. Groundwater investigations had been performed in co-operation with Libya and Kuwait.

45. In industry, radioisotopes and radioactive sources were being used, sometimes on a routine basis, at oil, glass, paper, and iron and steel plants.

46. The studies on the application of radioisotopes and radiation were being carried out, in close co-operation with the laboratories concerned, in the universities, the ministries, and scientific institutions such as the Middle Eastern Regional Radioisotope Centre for the Arab Countries. Training was carried out on both a centralized and a regional basis, and

6) GC(XII)/COM.1/107.

7) See document INFCIRC/121.

trainees from 13 Arab and some African countries had found excellent training facilities at the Regional Radioisotope Centre in Cairo and at the United Arab Republic Atomic Energy Establishment at Inshas.

47. Turning to the Agency's activities during the past year, he said he believed that the work done in the sphere of health, safety and waste management had consolidated existing achievements in connection with the establishment of health and safety standards and related codes of practice. Good work had also been done on studies and reports on the design and operation of nuclear facilities. While that part of the programme was well balanced on the whole, it was regrettable that the research contract budget in the field of health and safety was to be reduced in 1969.

48. The Agency had an important part to play as an intermediary in the provision of emergency assistance in the event of radiation accidents, and the programme for the following years appeared to cover that aspect quite satisfactorily. However, the Agency was also called upon to provide direct assistance from its own resources, and he considered that the possibility of increasing that assistance in the field of health, safety and waste management should be investigated.

49. The Agency's programme of feasibility studies on the application of nuclear technology to the development of agro-industrial complexes was a sound and balanced one. At that point he considered it appropriate to mention that the competent authorities in the United Arab Republic had completed studies for a dual-purpose nuclear plant for power generation and water desalination.

50. The applications of atomic energy to food and agriculture were of great importance to the developing countries, and the activities of the Joint FAO/IAEA Division of Atomic Energy in Food and Agriculture should therefore receive more support from both its sponsoring bodies. He noted that approximately half the work of the Joint Division was carried out through research contracts or cost-free research agreements, and since research contracts represented a very effective means of rendering aid to developing countries at relatively low cost, that type of activity should be encouraged and further expanded. He felt, indeed, that the developed countries should co-operate with the Agency mainly on the basis of cost-free research agreements, so that the limited funds available could be increasingly devoted to supporting research in the developing countries.

51. The fact that insufficient funds were also available for technical assistance projects was likely to reduce the effectiveness of the latter, and he would put forward the following suggestions as a means of overcoming the difficulties imposed by budgetary limitations:

(a) Wherever the State requesting technical assistance had available a sufficient number of trained experts of its own, equipment should be provided by the Agency without the services of experts;

(b) Better use should be made of the Agency's regular Professional staff by permitting them to undertake short technical assistance assignments in addition to their normal duties;

(c) Greater emphasis should be laid on the award of fellowships and on the organization of training courses as a means of reducing the number of technical assistance assignments; and

(d) Thought should be given to planning technical assistance projects on a regional basis, so that one expert could cover more than one country.

52. In addition, he believed that effective on-the-spot training could be achieved by permitting scientists from developing countries to co-operate in the Agency's Special Fund projects in other developing countries.

53. As regards overall co-ordination, efforts should be made to improve and expand co-operation between the Agency and the other United Nations bodies responsible for managing Special Fund projects which involved the use of isotopes and radiation techniques.

54. In conclusion, he pledged his Government's continued support for the Agency and its programme, whose purpose was to ensure that the atom was employed exclusively in the peaceful service of mankind.

55. Mr. ANDREOTTI (Italy) said that the twelfth session of the General Conference marked a period of transition from a phase of primarily scientific and technical activity to a new phase affecting the most important political problems of our age. In his double capacity as a member of the Italian Government and Chairman of the Italian National Nuclear Energy Committee, he had closely followed the Agency's work and had often participated in the reaching of decisions at the national level arising out of that work. He wished first of all to refer to the satisfactory results achieved in Italy after ten years of effort in sectors concerned with the peaceful uses of nuclear energy: the installed capacity of

nuclear plants in Italy had reached 615 MW, a figure which placed Italy in fourth position in the world, after the United Kingdom, the United States and France; with 14520 million kWh produced by 31 March 1968, Italy became third producer of nuclear power in the world, after the United Kingdom and the United States. By 1975, the installed power in Italy would have reached 3600MW. The figures he had quoted represented an annual plutonium output of 250 kilos in 1968, which would rise to several tons in 1975. Italy had already developed plants for fuel-element fabrication and two pilot plants for the reprocessing of irradiated rods. In the years ahead it was planning to construct a prototype heavy-water reactor, a fast fuel-testing reactor and a nuclear-powered ship. Finally, together with the other member countries of the European Atomic Energy Community (EURATOM) it hoped to participate in the construction of a European uranium enrichment plant.

56. Italy realized that its successful advances imposed some obligations, particularly the duty to share its experience and the fruit of its labour, so far as possible, with the less fortunate nations. It was in that spirit that it had concluded bilateral co-operation agreements in the field of nuclear energy with numerous developing countries and provided them with a considerable number of fellowships for study in Italian nuclear research institutes. However, Italy had recognized and continued to recognize that the main channel for collaboration between it and the developing countries was the Agency. Consequently it intended to support, by all means at its disposal, the studies and research carried out by the Agency in the fields of food, agriculture and biology, with a view to raising food standards in all areas of the world which still had not solved the food shortage problem, and to extending biological knowledge. He wished to refer, in passing, to the considerable effort which his country had made in setting up in Trieste, with the collaboration of the Agency, the International Centre for Theoretical Physics, which, four years after its creation, had already established itself as a meeting place for scientists from the advanced countries and specialists from the developing countries. He consequently welcomed the results of the discussions which had taken place between the Director General and UNESCO with a view to obtaining that Organization's participation in the joint effort.

57. The scale of its participation in the Agency's work had placed Italy, in 1968 and 1969, in ninth place amongst the Member States with regard to contributions to the Agency's Regular Budget and second place with regard to voluntary contributions. It was therefore clear that Italy was amply fulfilling its international responsibilities.

58. When a country respected its international duties in accordance with the principle that the developed countries should aid others to achieve their own development, that country would seem to have acquired certain rights within the organization in which such co-operation was decided upon and carried out. The Italian delegation remained convinced that the Agency was the appropriate body for arranging such co-operation, even though it had some doubts as to whether the Agency's procedures and various bodies were altogether adapted to the requirements of the times. That was in no way surprising, as the decisions taken in 1957 had been adopted by Member States representing only half of the Agency's current membership. It was consequently clear that those decisions should be brought up to date.

59. As far as the Secretariat was concerned, he would merely pay tribute to the outstanding achievements of the Director General and his staff. He had to point out, however, that staff for the Secretariat was almost always recruited from the same countries.

60. On the question of the composition of the Agency's directing body — the Board of Governors — he pointed out that its structure, as provided for in Article VI of the Statute, appeared unsatisfactory for three reasons. The first was that it was no longer representative: the number of Member States, which had been 59 in 1957, had risen to 101 in 1968, whereas the number of seats on the Board had risen from 23 to only 25; to be proportionate to the increase in membership it should have risen to 39. The Board ought to become more representative without losing efficiency, and a balance would have to be established between those two requirements. The same situation had arisen in the Security Council and the Economic and Social Council of the United Nations.

61. The second criticism which could be levelled against the provisions of Article VI of the Statute was that they did not allot an adequate and fair place to certain countries (such as Italy) which were amongst the most advanced in the peaceful uses of nuclear energy. If that situation continued, a point would be reached when it would hardly be tolerable.

62. Since Italy had become a Member of the Agency, it had achieved considerable progress due, no doubt, to the close collaboration with other EURATOM countries and to technical and industrial exchanges with those countries most advanced in the field of nuclear energy. It was those developments that had provided the basis for the work of Italy's scientists, worthy successors to Enrico Fermi, and the successes of her technicians.

63. Finally, there was a third reason why immediate and careful study of the matter of the Board's enlargement was advisable: even before coming into force, the NPT had opened up new prospects of major steps at the international level with a view to securing the peace and happiness of mankind; however, those steps also raised problems and difficulties because of the unprecedented restrictions they would impose on the national sovereignty of almost all the Member States. That was why precise assurances had to be obtained in such matters as the establishment of a new control system, which should, of course, apply only to special fissionable materials.

64. For those reasons, the time had come to undertake a comprehensive study of the structure and composition of the body responsible for running the Agency and to ascertain whether the new tasks were to be carried out by the Agency with its present structure or by new bodies specially set up for the purpose.

65. As the delegate of France had said, the point at issue was not to question the validity of the Agency's existence but rather to reaffirm its role[8]. The Agency had succeeded in triumphing over every difficulty that it had encountered since 1957, and he firmly hoped, and was indeed convinced, that it would continue to do so at present, when all its Members were called upon to play their part with circumspection and enthusiasm, discrimination and confidence.

66. Mr. TAY SIN YAN (Singapore) said that although by comparison with the industrially developed countries, Singapore was a comparative newcomer as regards the application of nuclear energy, and an even more recent newcomer to the Agency, it strongly supported the ideals and work of the Agency in promoting the use of nuclear energy for the betterment of living conditions all over the world and would do everything possible to co-operate with the Agency in the pursuit of those ideals.

67. Until recently his country's interest in the peaceful use of nuclear energy had been confined to medicine. The radioisotope laboratory in Singapore had studied the thyroid, using iodine-131, and it was proposed in the near future to expand those studies to include the use of chromium-51, iron-59 and cobalt-58. A scanner would also be shortly available for kidney, liver and brain scans, using gold-198 and mercury-197.

68. His country was grateful to the Agency for its assistance in expanding the use of radioisotopes for the welfare of the people. Under the 1968 regular programme the Agency had provided the services of a health physicist for a period of six months to advise on health physics facilities in the new radiotherapy department of the General Hospital and train local counterparts in health physics techniques.

69. A clinical biochemist was also to be made available for a period of one year to supervise the utilization of radioisotopes for clinical investigations and to train staff in the study of endocrine, haematological and other diseases.

70. Singapore was a small nation with few natural resources. The maintenance of its national prosperity depended on industrialization and the availability of industrial services, such as ship repair. The Government had embarked upon an integrated industrialization programme, and industrial services facilities were rapidly being built up; to ensure that Singapore's industrial products were competitive in the world market it was intended to take full advantage of the latest technological and scientific developments in the world. He therefore expected that in the near future nuclear energy would play an increasingly important role in the maintenance of product quality in industrial operations and in industrial inspection services. In that connection an industrial concern in Singapore had already started to provide radiographic inspection of high-pressure welds and castings. A physicist from the Industrial Research Unit of the Economic Development Board was taking a specialized course in non-destructive testing under an Agency fellowship.

71. The major difficulty in efforts to encourage wider application of radioisotopes in industry had been that local industrialists were unaware of the magnitude of potential applications of radioisotopes, largely due to the newness of that branch of science. He felt there was need for a Government-sponsored industrial radioisotope consulting service to disseminate basic information to industrialists and to assist in determining in which areas radioisotope techniques could be advantageously applied.

72. A centre of that kind could also run training courses to ensure competent and safe operation of radioisotope equipment. The Science Council of Singapore was working towards that end and would welcome assistance from the Agency. In that connection, he was grateful for the assistance of an IAEA Regional Adviser on industrial applications of radioisotopes who had recently visited Singapore.

73. With regard to the large-scale application of nuclear energy for peaceful purposes, he was fully aware of the tremendous potential of nuclear power in providing electricity and in desalting sea water. The Science Council and the Public Utilities Board

8) GC(XII)/OR.121, para.67.

were keeping constantly abreast of world developments in those fields. A preliminary investigation had recently been made into the use of nuclear energy for electrical power generation but, having regard to the modest base load, it did not appear feasible for some time to come.

74. He was, however, convinced that the peaceful application of nuclear energy would play an ever-increasing role in the industry and welfare of the country, and in that connection the Polytechnic would be introducing a course on nuclear energy for final-year students in mechanical engineering as a basic grounding in that discipline.

75. Although Singapore remained a recipient country from the Agency's point of view, it was ready to co-operate within the limits of its resources with the Agency in promoting the peaceful uses of nuclear energy. Lying at the intersection of air, sea and telecommunications routes, Singapore was ideally suited for international conferences and the location of regional training and information centres. In November 1967 it had been host to an Agency-sponsored research co-ordination meeting on nuclear waste management, and more recently to the eleventh session of the Economic Commission for Asia and the Far East's sub-committee on natural resources and electric power development.

76. In conclusion, he repeated that in its efforts to promote the peaceful use of nuclear energy, his country would continue to look to the Agency and the more industrially advanced countries for guidance, and would itself co-operate with the Agency to the fullest extent in the pursuit of its ideals.

77. Mr. DOSTROVSKY (Israel) said that in the past the emphasis in the Agency's work had been placed on assistance to developing countries — and indeed others as well — designed to make them better acquainted with progress in nuclear science and technology and to obtain for them a share in its benefits. Events had confirmed the value of that work.

78. Unfortunately, an examination of the programme for the years ahead showed the danger of a sharp change in course which might upset the balance of the Agency's activities. Increasingly large resources in money and manpower were to be devoted to safeguards. Unless the income of the Agency were somehow miraculously increased, the new stress on safeguards would occur at the expense of more fundamental programmes, and the latter would then become, so to speak, the Cinderellas of the Agency's future budgets. One solution would be to have separate budgeting for safeguards and for the regular basic programmes.

79. Everything possible should be done to prevent such a shift in balance and emphasis. If anything, substantially increased support should be given to the Agency's substantive work. Perhaps the Scientific Advisory Committee should take upon itself the task of ensuring that substantive programmes were not adversely affected by a diversion of funds and energies in one particular direction.

80. Again, a cursory examination of the budget showed that the sums spent on what were called "policy-making organs" almost equalled those devoted to panels, seminars, symposia, conferences and the dissemination of information — activities which were, after all, the life-blood of the Agency and which provided the technical background for all its decisions and policies. That lack of proportion should be rectified; a more profitable allocation of funds could be ensured by reducing the number of meetings of the policy-making organs, including the sessions of the General Conference.

81. There was another problem which was causing his delegation concern: the activities of the Agency were still marred from time to time by irrelevant considerations of a political nature, in violation of the Statute. If anything, there had been an ominous increase in that tendency during the past year. There must be no discrimination between Member States on political or any other grounds. The introduction of politics into the Agency's affairs was not a propitious augury for future work, nor a good argument in favour of entrusting the Agency with additional functions.

82. That much said, he would turn to matters of a very different nature. At the last session of the General Conference the United States delegation had expounded the idea of "energy centres" or "agro-industrial complexes".[9] At the present session, the Conference had already heard a lecture entitled Nuclear Power in Developing Countries which dealt with related subjects[10]. The idea was to combine, in accordance with a careful and well co-ordinated plan, large nuclear power generators, desalting plants, farms and industrial complexes. Essentially, the plan was to promote the installation of large power and water units, exploiting to the best advantage the benefits derived from an increase in scale.

83. Israel had been fortunate enough to have further discussions with Commissioner Ramey from the United States Atomic Energy Commission, and some Israeli scientists had actually participated in the studies carried out at the Oak Ridge National

9) GC(XI)/OR.112, paras 9-11.

10) Delivered at the Neue Hofburg, Vienna, on 26 September 1968.

Laboratory. Dr. E.A. Mason, the Director of the Oak Ridge project, had visited Israel with one of his colleagues, and thus it had been possible to go into the project in considerable detail.

84. The Israel Atomic Energy Commission was franklx impressed by the prospects which the new concept opened up. Obviously, any reliable evaluation would require a detailed systems analysis taking into account the whole economic situation of the country concerned, as well as its social and demographic structure. A study group had been formed in Israel for that purpose, consisting of scientists, engineers and economists who were in touch with the Ministries of Agriculture and Development as well as with the Atomic Energy Commission.

85. The study group was fortunate in having at its disposal a detailed report on the joint United States/Israel dual-purpose (power and water) project for Israel — the Kaiser-Catalytic Report on dual-purpose nuclear desalting. Taking that report as its point of departure, the study group had examined the effect of increasing the reactor's thermal capacity and adding power-intensive industries to use the extra energy, without changing the net amount of power and water supplied to the network. The main aim of the study, during its first stage, was to submit the various possible systems to a rough economic test under conditions which were highly favourable to the industrial component, which was intended to derive all the benefits accruing from the increased scale of operations.

86. The preliminary report of the working group examined eight types of industrial production: the production of potash by thermal evaporation, magnesium by electrolysis, chlorine and caustic soda, chlorine by electrolysis of HCl, elementary phosphorus by the electrothermal process, ammonia from electrolytic hydrogen, aluminium and, finally, acetylene and ethylene by the electric arc process.

87. To make the analysis more meaningful, only standard reactor sizes (and established costs) had been considered. The largest unit examined had been a 3300-MW(th) reactor producing 300 MW(e) for the network, supplying 400 MW(e) to the industrial complex and yielding 150 million gallons of desalted water per day. The incremental cost of electricity for such a complex would lie between 2.6 and 4.1 mills/kWh, depending on the rate of fixed charges. The preliminary report concluded that four of the processes — potash, magnesium, phosphorus and aluminium — were most relevant to conditions in Israel and recommended that they be studied in greater detail. That study was now in progress.

88. With regard to the agricultural aspects of the project, intensive work was under way in Israel on problems of water economy and irrigation efficiency. Good progress had recently been made with an automated system which released water to the soil only on demand — when a moisture sensor indicated that the water content was too low. That system had made it possible to save as much as 50% of the water available for irrigation with no deleterious effect on crop yield.

89. The Oak Ridge study (ORNL-4291) indicated the desirability of establishing an experimental farm in a warm arid zone, using desalted water, to study "the complex problem of working out optimal year-round crop patterns, using the best available strains and practices...". In the near future there would be two such "farms" — Kibbutzim in fact — in the Negev Desert. Israel would be pleased to share the experience gained in those communities with other countries.

90. Mr. HILL (United Kingdom) said that the annual report of the Board of Governors amply demonstrated the Agency's versatility in responding to the needs of its Member States. There was no doubt about the value of the Agency's work or about the enormous contribution it was making to nuclear science. The Agency had shown itself responsive to new developments and requirements, and it was gratifying to see that its peaceful aims were becoming more and more widely accepted. The steady growth of the Agency's membership was something everyone would welcome.

91. The United Kingdom delegation supported the programme and budget; there were many functions which only an international body with the authority and status of the Agency could fulfil. Many had referred to the Agency's responsibilities in relation to safeguards, but he had in mind also such duties as the elaboration of international standards and codes of practice, without which international trade in nuclear materials could not have made such good progress.

92. The United Kingdom Government would continue to support the technical assistance programmes of the Agency as in the past. It expected to be able to find places for a good number of Agency fellows in institutions of higher learning, and the Central Electricity Generating Board would again make available free training places in its nuclear power stations and laboratories.

93. The United Kingdom would again contribute $110 000 to the General Fund without restrictions as to its use.

94. The Agency's numerous tasks inevitably brought steadily increasing costs. The NPT would now bring new duties. That being so, it seemed that the Agency should not undertake research or other projects which could be carried out just as effectively by national organizations; it should rather concentrate on tasks which no other body could discharge.

95. The United Kingdom Government was happy that the NPT had been commended by the General Assembly of the United Nations, and delighted to note that no less than 80 countries had already signed it. The United Kingdom took pride in the fact that from the beginning it had played an important part in the negotiations leading up to the Treaty.

96. The Agency had a crucial role to play in implementing the provisions of the Treaty. Careful consideration must be given to the ways in which the Agency would discharge its duties, particularly in relation to the safeguards procedures. The present safeguards system had evolved from intensive discussions over a number of years among experts from many countries. Their work deserved a special tribute.

97. He wished to take the opportunity of acknowledging the services of the retiring Inspector General, Mr. Alan McKnight. His delegation agreed with Mr. McKnight that members of the Agency's Inspectorate should be employed on long-term contracts if the safeguards system was to work properly.

98. Delegates were no doubt aware that the United Kingdom and Japan had concluded with the Agency a trilateral agreement providing for the application of Agency safeguards to transfers of nuclear materials and equipment between the United Kingdom and Japan [11]. The agreement, which had already been approved by the Board, was on a reciprocal basis; it would replace without any break the existing trilateral agreement which provided in particular for the safeguarding of the Tokai Mura power station.

99. Article V of the NPT provided that any benefits derived from the peaceful applications of nuclear explosions should be made available to non-nuclear States parties to the Treaty without any discrimination. They were to be made available through an appropriate international body in which the non-nuclear-weapon States had adequate representation, and the United Kingdom Government shared the view that the Agency was unquestionably the best organization to carry out such a task.

11) INFCIRC/125.

100. Atomic energy was developing rapidly, and the United Kingdom authorities, like others, had to adapt to new problems as they emerged. In the United Kingdom nuclear power stations had become fully accepted and already accounted for over 10% of all power generated. Their record of availability and safety was excellent. The last three stations ordered by the electricity authorities were all nuclear, and Hartlepool, the latest, would actually be situated near one of the main coalfields, in an industrialized area having a large population within 10 km of the site. The fact that nuclear power had been selected for such a location indicated that the authorities were completely satisfied with the economics and safety of nuclear systems.

101. The United Kingdom's fuel fabrication and reprocessing plants were working at nearly full capacity and on a commercial basis; at the same time they were being expanded and modified to meet the changing pattern of demand. While the United Kingdom could not yet match the enriched uranium prices of some other countries, the improvements and extensions planned for the Capenhurst factory would substantially increase the overall capacity and eventually reduce costs to a level which, it was hoped, would be internationally competitive.

102. Much thought had been given to ways of integrating the activities of the United Kingdom Atomic Energy Authority (UKAEA) and British industry. In the past the United Kingdom had had four main groups for designing and building nuclear reactors and power stations. Three had been based on private industry, while the UKAEA had had its own team for the design and construction of research and prototype reactors. Those four groups were now being merged into two. Those changes were the desirable and, in fact, essential consequences of technological advances relating to nuclear power. The fuel services of the UKAEA were also to be given greater freedom in their operations, and it was hoped that they would be able to associate more closely with their counterparts in Europe and in countries in other parts of the world.

103. Indeed, the establishment of closer links between the United Kingdom organizations and those in other countries was recognized as a major objective. It was to be hoped that the simplified structure now emerging in the United Kingdom would facilitate closer links with other nuclear engineering organizations and fuel enterprises in Europe and elsewhere. Obviously, while rearranging the domestic structure, the United Kingdom authorities intended to honour the collaborative arrangements with other countries which had been made in past years. The UKAEA would continue to play an important role and would of course implement the co-operative arrangements that already existed.

104. Mr. RANDERS (Norway), referring to the Agency's role in relation to the NPT, said international organizations developed strength and vigour when they faced a challenge, and it was already clear that the Agency was beginning to react to the NPT, becoming stronger, more vigorous and even more adaptable. The existence of a well-defined task was the prerequisite of real success. Probably, other existing, or new, international organizations could also deal with the technical and scientific problems posed by the NPT, but the Agency had already been grappling for seven or eight years with similar problems, and the work it had done in connection with safeguards, for example, would prove invaluable as a basis for undertaking the new tasks.

105. It was no secret that doubts had been expressed in other international forums concerning the Agency's ability to discharge its functions under the NPT, and those functions did indeed extend far beyond the present scope of Agency activities. However, his Government did not share those apprehensions, and believed that the Agency could certainly adapt its procedures to meet the requirements of the new situation. His Government would therefore be very glad to see the Agency entrusted with the new tasks which the NPT would entail, especially the task mentioned by the delegate of the United States [12], that of devising procedures for making available to all States signatory to the NPT experience gained in the peaceful use of nuclear explosions.

106. While the Government of Norway did not favour the creation of new international bodies for the purpose of implementing the NPT, it would be ready to consider amendments to the Agency's working methods. He realized that research on safeguards procedures would lead to simplifications and improvements in the existing system but did not regard that as a reason to delay putting the Treaty into effect. The task of preventing nuclear military catastrophes would be an everlasting struggle: new technical and political problems would arise continually, and use should be made of the best safeguards methods that existed at any given time.

107. One of the most important tasks of the Agency was to provide technical assistance to the developing countries. The Agency had made the best possible use of the limited resources available for its technical assistance programme, and it was to be regretted that many technically sound projects had been turned down owing to the lack of funds. The target for voluntary contributions to the General Fund had never been reached, and he urged all Member States which had not yet done so to contribute to the General Fund.

108. The Agency had contributed greatly to international co-operation in research on thermal reactors. The NORA project, a study of the physics of water-moderated reactor lattices on the zero-power reactor NORA at Kjeller in Norway, was an example of a successful research programme co-ordinated by the Agency. The NORA project had now been terminated after seven years of co-operative effort. The technology of thermal reactors had already reached the stage where further development was being done mainly by commercial firms, so that there was no longer the same scope for international co-operation in that regard. However, certain other technical aspects of nuclear power development still called for international co-operation and co-ordination. The future utilization of thorium was one such aspect, and perhaps it deserved the Agency's particular attention; in that connection he wanted to mention that studies on thorium fuel elements were being considered for the next experiment under the internationally conducted Halden programme in Norway.

109. The rapid increase in the construction of nuclear power stations would lead to a corresponding increase in the transport of radioactive and fissile materials. The need for internationally co-ordinated regulations governing the transport of such materials was obvious. His delegation had noted with satisfaction that almost all international transport organizations had adopted the Agency's Regulations for the Safe Transport of Radioactive Materials. He hoped the Agency would continue its efforts to standardize procedures and equipment for the practical application of the regulations. A symposium or a seminar might serve a very useful purpose.

110. It was generally recognized that internationally accepted principles were needed for the disposal of radioactive waste into the sea and he hoped that the Agency would keep under constant review the possibility of steps towards internationalization in that regard.

111. His delegation continued to support INIS and considered that international centralization was necessary if small States were to be able to cope with the increasing flow of information in all branches of science. He hoped the Agency's initiative would lead to further international standardization of documentation procedures.

The meeting rose at 1 p.m.

12) GC(XII)/OR.120, para.32.