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RECORD OF THE THREE HUNDRED AND THIRD PLENARY MEETING

Held at the Austria Center Vienna
on Monday, 19 September 1988, at 10.20 a.m.

Temporary President: Mr. COLOMBO (Italy)
President: Mr. HALIM (Malaysia)

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[*] GC(XXXII)/834 and Add.1.

The composition of delegations attending the session is given in document
GC(XXXII)/INF/262/Rev.2

OPENING OF THE SESSION

1. The TEMPORARY PRESIDENT declared the thirty-second regular session of the General Conference open.

2. In accordance with Rule 48 of the Rules of Procedure, he invited the delegates to observe one minute of silence dedicated to prayer or meditation.

All present rose and stood in silence for one minute.

3. The TEMPORARY PRESIDENT said that the year since the thirty-first session of the General Conference had seen positive signs of international co-operation. It had also seen the continuing - often emotive - impact on public opinion of the Chernobyl accident.

4. In his opening statement to the thirty-first session he had stressed the importance of international co-operation in solving the problems besetting the nuclear sector. During the year since then, the Agency, under the capable guidance of the Director General, had performed excellently in providing an effective forum for such co-operation. Particularly important activities in the area of nuclear safety and radiation protection had included revision of the NUSS Codes of Practice and the work of the International Nuclear Safety Advisory Group (INSAG) on basic safety principles for nuclear power plants, as well as examination and implementation of juridical means for better defining liability for nuclear risks. The Agency had also paid increasing attention to the problems of the Third World, including work on the development of nuclear technology for non-energy uses and the growing applications of nuclear technology in medicine, industry, food and agriculture; and it had given increased priority to health and environmental protection. He hoped that that trend would continue so as to avoid any short-term check to global economic growth, to the detriment particularly of the developing countries.

5. Looking at the more distant future, he was happy to note the Agency's important initiatives in nuclear fusion and welcomed the launching of the International Thermonuclear Experimental Reactor (ITER) programme.

6. In order to achieve the short-term and long-term objectives, it would be necessary to strengthen the climate of mutual trust and so dispel fears of a nuclear threat. He hoped for a constantly widening and improving safeguards system, and was convinced that rigorous and universal application of the

non-proliferation regime, both horizontally and vertically, was an essential condition for greater diffusion of nuclear power throughout the world. There had been encouraging results in the past year in respect of vertical proliferation, which should help to strengthen the non-proliferation regime. If the Agency was to play a really significant role, as many countries as possible should be involved in its decision-making process and make contributions to its policy-making organs, to ensure that they reflected the trends and issues that made up the many-faceted international energy picture.

7. The present session would have to face complex problems, and he urged that every effort should be made to overcome conflicts and tension by adopting the spirit of goodwill which was essential in international relations. He trusted that the search for co-operation and constructive dialogue which had characterized the thirty-first session, and had facilitated the Agency's activities during the past year, would not suffer the deadening effects of excessive politicization, but would inspire the current session as well.

8. The spirit of constructive co-operation was encouraged by the climate of reciprocal understanding now being established between the great Powers. It was heartening to see the growing role of the United Nations in ensuring world peace. The untiring efforts of the Secretary-General, Mr. Pérez de Cuéllar, in bringing two of the Agency's Member States to the negotiating table, after years of armed conflict, merited the highest praise.

9. At a difficult and delicate moment, when humanity's future was under discussion and when all countries would have to take decisions that would affect the living conditions of generations to come, participants must concentrate on the really relevant problems, brushing aside differences which could have a negative influence on their work. On the basis of experience during the thirty-first session and from many contacts, both with the Agency and with a number of Member States, he believed that the broader vision - the spirit of tolerance and reciprocal understanding - could be realized. He hoped that it would continue to flourish and that the thirty-second session of the General Conference would take place in an atmosphere of mutual trust and productive co-operation, in the interests of all Member States. He wished the President, the other officers and the delegates the most fruitful and constructive work.

ELECTION OF THE PRESIDENT

10. The TEMPORARY PRESIDENT invited nominations for the office of President of the Conference.

11. Mr. WILSON (Australia), speaking on behalf of the South East Asia and the Pacific regional group, proposed Mr. Abdul Halim bin Ali, delegate of Malaysia, as President of the General Conference at its thirty-second regular session. Mr. Halim was Resident Representative of Malaysia to the Agency and a distinguished and senior representative of his country, having served in diplomatic posts in India, Indonesia, and Japan. He had been Malaysia's Deputy Permanent Representative to the United Nations in New York, Ambassador to Viet Nam, and, until his arrival in Vienna in the present year, a Deputy Secretary-General of the Malaysian Ministry of Foreign Affairs. He would bring to the Presidency a wealth of experience and outstanding personal qualities which would be essential in steering the Conference through its demanding agenda.

12. He represented a country which had a significant programme of research into the non-power applications of nuclear energy in hydrology, agriculture, medicine and other fields, and was an active participant in the Regional Co-operative Agreement for Asia and the Pacific Region.

13. Mr. BAEYENS (France), speaking on behalf of the Western countries in Europe and elsewhere, seconded the nomination of Mr. Halim.

14. Mr. GUEVAS CANCINO (Mexico), speaking on behalf of the Group of 77 of which he was Chairman, and Mr. SOWINSKI (Poland), speaking on behalf of the countries of Eastern Europe, supported the nomination.

15. Mr. Halim (Malaysia) was elected President of the General Conference for its thirty-second regular session by acclamation.

16. The TEMPORARY PRESIDENT congratulated Mr. Halim on his election.

17. Mr. Halim (Malaysia) took the Chair.

18. The PRESIDENT expressed his sincere appreciation to all delegations for the honour conferred on him and his country. He would do his utmost to fulfil the responsibility placed upon him.

19. He also, on behalf of the General Conference, commended Mr. Colombo for his skill and guidance as President of the thirty-first regular session of the Conference.

20. At its thirty-second session the General Conference would be considering a number of issues related to the Agency's role as the central forum for scientific and technical co-operation in the peaceful use of nuclear energy, and he earnestly hoped it would reach decisions that would further enhance the Agency's contribution to a better, safer and more prosperous world.

21. The rapid development of nuclear technology in the past few decades had resulted in a myriad of peaceful uses of nuclear energy, such as electricity generation, the development of resources including food and agriculture, medical sciences and other projects designed to improve the quality of life. Today, thanks to the Agency's technical co-operation programme, nuclear technology was no longer the preserve of the rich industrial societies, but was available to developing countries. The Agency's efficient handling of the technical co-operation programme was a matter of great satisfaction to Member States, and it was to be hoped that it would continue to receive the high priority and support that it deserved, so that it could carry out the transfer of technology that was needed to fulfil the Agency's objective of accelerating and enlarging the contribution of atomic energy to peace, health and prosperity throughout the world. In that context, he appealed to recipients to ensure, at a time when financial resources were scarce, that the assistance they received was used as efficiently as possible.

22. Members of the Agency were proud of the establishment of an effective system of safeguards to verify that nuclear material and installations designed for peaceful use were used only for that purpose. It was reassuring that the safeguards system, coupled with the Treaty on the Non-Proliferation of Nuclear Weapons (NPT), provided a barrier to the spread of nuclear weapons, but it would be even more so if all members of the international community could accept full-scope safeguards and accede to NPT. The international community must continue to seek ways and means of strengthening the non-proliferation regime so as to make it truly universal and thus help to remove doubts and fears about the nuclear intentions of individual States.

That, of course, was no substitute for global nuclear disarmament, but it was to be hoped that the current dialogue between the superpowers and the momentum created by the signing of the Treaty between the United States of America and the Union of Soviet Socialist Republics on the Elimination of their Intermediate-Range and Shorter-Range Missiles (INF) would bring that goal closer. Meanwhile, the international community should support any effort by regional States to establish nuclear-weapon-free zones, as for example in South East Asia, and should respect any such treaties already entered into by other regions.

23. The spreading applications of nuclear energy for development - already a fact of life - placed an ever increasing demand on the Agency to elaborate and promote further safety and radiation protection standards to cope with the rising number of nuclear installations that would be in operation and the growing volume of nuclear material to be handled internationally. Demand for safeguards and the need for better management of nuclear waste would likewise increase, and a mechanism must be found for dealing with those who polluted the environment and endangered life through non-compliance with established procedures or through illegal dumping of waste. There was a compelling need for all Member States to ensure that the Agency succeeded in meeting the challenge. Failure would increase support for those who continued to cast doubts on the advantages of nuclear energy.

24. The heavy agenda before the Conference reflected the vast role and task of the Agency. He hoped that the spirit of understanding, goodwill and co-operation that had prevailed among members in the past would continue at the present session.

ELECTION OF OFFICERS AND APPOINTMENT OF THE GENERAL COMMITTEE

25. The PRESIDENT said that, while informal consultations were still in progress on the appointment of the General Committee, some area groups had already put forward nominations. On the basis of those nominations he proposed that the delegates of the following Member States be elected as Vice-Presidents of the General Conference: Norway, Tunisia, Union of Soviet Socialist Republics and United States of America.

26. He also proposed, pursuant to Rules 34 and 40 respectively of the Rules of Procedure of the General Conference, that Mr. Laviña of the Philippines should be Chairman of the Committee of the Whole, and that the delegates of the following Member States should be elected as additional members of the General Committee: Bulgaria, Canada, Ireland, Liechtenstein and Nigeria.

27. The General Conference accepted the President's proposals.

28. The PRESIDENT suggested that further consideration of the matter be deferred until the informal consultations had been completed.

29. It was so agreed.

PROCEDURAL REMARKS BY THE PRESIDENT

30. The PRESIDENT said that document GC(XXXII)/INF/263, entitled "Statement of financial contributions to the Agency as at 16 September 1988", contained a list of those Member States to which Article XIX.A of the Statute had applied on 16 September 1988. Article XIX.A stated that any Member in arrears in the payment of contributions should have no vote if the amount of the arrears equalled or exceeded the amount of contributions due for the preceding two years, but that the General Conference could permit such a Member to vote if it was satisfied that failure to pay was due to conditions beyond the control of the Member. He drew attention in that connection to document GC(XXXII)/INF/258, a communication from the Resident Representative of Panama, requesting that Article XIX.A not be applied to Panama during the current session of the General Conference. A similar request had been received from Lebanon in document GC(XXXII)/INF/261.

31. He suggested that, in accordance with Rule 42(b) of the Rules of Procedure, the matter be referred to the General Committee for consideration.

32. It was so agreed.

33. He further suggested that, as in previous years, pending the report of the General Committee on the agenda, the Conference take up items 2, 3, 5 and 6 of the provisional agenda, which were formal items or items specified in the Statute.

34. It was so agreed.

MESSAGE FROM THE SECRETARY-GENERAL OF THE UNITED NATIONS

35. Ms. SELLAMI-MESLEM (Representative of the Secretary-General of the United Nations) said that she wished to convey to the General Conference a message from the Secretary-General of the United Nations.

36. The Secretary-General had great pleasure in extending greetings to the participants in the thirty-second regular session of the General Conference of the International Atomic Energy Agency.

37. During the coming days the Conference would be working its way through a heavy agenda, reflecting the specific mandate of its important agency. Much of the work would have a direct bearing on aspects of the general questions of peace and economic and social advancement of peoples, also to be discussed at the United Nations General Assembly starting the following day.

38. Some of those issues were of crucial importance for the future of humanity: preserving the natural environment, providing the energy needed for economic and social development, containing the spread of nuclear weapons, curbing the arms race and bringing about genuine disarmament.

39. In 1983 the United Nations had set up the World Commission on Environment and Development (WCED) as an independent body to propose a long-term strategy for achieving lasting development sustained by the environment. The Commission's report, the "Brundtland Report", issued over a year earlier, had attracted wide attention and become the subject of serious review in many forums, including the 1987 United Nations General Assembly. It emphasized the environmental consequences of energy production and stressed that development must have enough energy at reasonable cost.

40. Discussion of that important subject by the Conference would be most welcome. There was no single, simple solution. The noxious consequences of burning fossil fuels were known; renewable sources of energy were not at present adequate; nuclear energy also presented threats to the environment; and the resulting lack of public confidence in nuclear energy made its further expansion difficult. Thus, there was much work still to be done by scientists, engineers, administrators, politicians and the mass media. The

Agency must continue to provide an objective, impartial framework for that international co-operation and discussion which alone could safely realize the potential of nuclear energy.

41. In June 1988 the United Nations General Assembly had held its third Special Session Devoted to Disarmament, preceded by the ratification by the United States of America and the Soviet Union of an important arms reduction agreement. The recent gains in international understanding and progress towards resolving some important regional conflicts should further improve the conditions for success in disarmament. The Agency's contribution to disarmament lay not only in its essential verification role under NPT, but also in its development of a safeguards system which constituted the world's first multilateral on-site inspection programme, whose practical importance to disarmament had been described by the Director General at the Special Session of the General Assembly.

42. There were significant parallels between the safeguards system and United Nations peace-keeping operations. Both could be used only with the agreement of the States on whose territories they were to act; neither the blue helmets nor the safeguards inspectors were meant to intervene directly - they were international observers with a duty to report; and the work of both should be regarded not as an expression of distrust but rather as a measure to build and instil confidence. Thus, both were important examples of the unique contribution of the United Nations system to peace, world-wide security, and the sense of international confidence on which they depended.

43. In peace-keeping and inspection, in the complementary work of the General Conference and the General Assembly, the value could be clearly seen of a strong system of mutually reinforcing international organizations. In that spirit, he wished the Conference a fruitful session with much progress on the problems and goals to which all were devoted.

STATEMENT BY THE DIRECTOR GENERAL

44. The DIRECTOR GENERAL said that the year since the Agency's thirtieth anniversary had seen some steady progress in the nuclear field and also some turmoil. During 1987, 22 new plants had come on-line in 9 Member

States, bringing the total to 417 operating nuclear power plants in 26 countries. The installed nuclear capacity had increased by 8% to almost 300 000 MW(e), and generation had amounted to 1650 TW·h. As a result, the contribution of nuclear power had increased to more than 16% of the world's total electricity production, and 13 countries now produced more than 25% of their electricity with nuclear power. Operating statistics showed an increase in the overall average nuclear plant availability to 71.3%. In some countries the improvement in performance had been remarkable, with high plant availability, a low number of unplanned stoppages, and low exposure of personnel to radioactivity; but the world situation was still uneven, with some plants performing much better than others, indicating a need to learn from the best performers. That was precisely what the Agency sought to achieve through its programme, which was designed to promote the exchange of experience and data through meetings, data banks and documents with a view to transferring the best existing practices. The Agency therefore also welcomed the fact that the nuclear industry itself was now instituting exchanges through the new Worldwide Association of Nuclear Operators (WANO), which he was sure would help achieve high safety standards and good performance.

45. Thus, nuclear power globally showed consistently improving results in respect of economics and safety; nevertheless, attacks on the use of nuclear power had increased in many countries - and that was not the only apparent paradox which could be found in the nuclear energy field. For example, some opinion polls showed that majorities of those interviewed were concerned about nuclear safety, but at the same time convinced that nuclear power would be a primary source of electricity in coming decades. Another example was that of a country where nuclear power operations were prohibited, although nuclear-generated electricity continued to be imported from a neighbouring country in which new nuclear power plants were still being built. Similarly, nuclear experts might be convinced that there were no major scientific or technical problems standing in the way of safe disposal of radioactive waste for many thousands of years - indeed, they might even think that if other industries had emulated the high standards set for nuclear waste disposal, the environments today and tomorrow would have looked very different; nevertheless, the man in the street, asked whether the nuclear waste issue was solved, would

most probably say "No!". The issues of waste and safety - like those of cost and proliferation - were not exactly new in the discussion of nuclear power, but there was now a far greater public and political awareness of environmental problems connected with other sources of energy, notably the enormous emissions of carbon dioxide inevitably associated with the burning of fossil fuels, but absent in nuclear power.

46. The report of the World Commission on Environment and Development (WCED) - mentioned in the Secretary-General's message - which had been drafted in the period immediately following the Chernobyl accident, was articulate on the grave consequences for forests, lakes and global temperatures of sulphur dioxide, nitrogen oxide and carbon dioxide emissions from the burning of fossil fuels, but failed to mention that nuclear power did not give rise to any of those problems. What it did offer was a long catalogue of issues relating to nuclear power on which it said international agreement must be reached, suggesting in addition that all States should undertake to accept safeguards in accordance with the Statute of the Agency. The Commission concluded its discussion by stating that the generation of nuclear power was justifiable only if there were solid solutions to the as yet unsolved problems to which it gave rise, and that the highest priority should be accorded to research and development on environmentally sound and economically viable alternatives and to means of increasing the safety of nuclear energy. The Commission also advocated the vigorous promotion of energy-efficient practices in all energy sectors.

47. While the WCED had concerned itself with all environmental consequences of energy production, the recent World Conference on the Changing Atmosphere, held in Toronto under Canadian sponsorship, had focused on the risks of global warming, and had adopted the recommendation that an initial world-wide goal should be to reduce carbon dioxide emissions by approximately 20% of 1988 levels by the year 2005. In pursuing that goal, according to the Toronto Conference, the industrialized nations would clearly have to lead the way, both through their national energy policies and through their bilateral and multilateral assistance arrangements. Apart from efficiency measures, the desired reduction would require: switching to lower carbon dioxide emitting fuels; reviewing strategies for the use of renewable energy, especially

advanced biomass conversion technologies; and considering the nuclear power option, which had lost credibility because of problems related to nuclear safety, radioactive wastes and nuclear-weapon proliferation. If those problems could be solved, through improved engineering designs and institutional arrangements, the Toronto Conference could see a role for nuclear power to play in lowering carbon dioxide emissions.

48. He would not comment in detail on the points made by the WCED and the Toronto Conference, but it seemed worth noting, firstly, that a consensus existed that the current level of burning of fossil fuel for energy production raised alarming environmental problems, notably that of global warming, secondly, that nuclear generation of electricity did not contribute to those problems, and thirdly, that nuclear fission, according to the WCED and the Toronto Conference, did raise other grave problems.

49. If the situation was as serious as depicted by the Toronto Conference - and an increasing number of scientific reports seemed to confirm that it was - the time would appear ripe for discussions between the "Greens", those who favoured the use of nuclear power, and others who were unsure where they stood, to consider without acrimony what practical measures could be taken to avert disaster.

50. There was nothing wrong with a critical examination of such questions as to how much energy would be needed in the coming decades for industrial and social development in both advanced and developing countries; how far efficiency gains in energy production and use could offset increased needs; how far sulphur dioxide and nitrogen oxide could be eliminated from fossil fuel emissions and at what cost; what realistic contribution renewable sources such as solar energy, wind power and biomass could make to global and regional energy balances, and at what cost; how far away nuclear fusion was; or what alleviation of the problems of sulphur dioxide, nitrogen oxide and carbon dioxide could be achieved by wider use of natural gas and nuclear power. The problems that the WCED and the Toronto Conference saw in nuclear power should be discussed in depth to determine whether those concerns were justified and whether they were susceptible of settlement.

51. There was no world authority that could adopt global energy policy decisions by majority and enforce them, however much that might be necessary for global survival. The essential concerted action could come only from common conviction and mutual accommodation emerging from discussion between the world's governments, perhaps in a non-specialized forum such as the United Nations General Assembly or the Economic and Social Council. The Agency had a role to play in contributing expert knowledge to such a discussion, of which the main issues might be the following.

52. The first and fundamental question concerned the magnitude of future world energy needs. An extrapolation based on past trends and expected population figures would be generally considered unrealistic. Many saw a scope for energy saving, and there was no disagreement on the need to produce and use all energy as efficiently as possible. Considerable progress had already been achieved in that regard, for instance in motor vehicles, refrigerators, and light bulbs. Except for the cost aspect, that was hardly a controversial subject.

53. It was also an established fact that in OECD countries - not in developing countries - there had been a levelling out of primary energy consumption, especially in the form of oil and coal. The recession brought about by higher energy prices had led to lower industrial activity and to more efficient utilization. As a result, the energy used per unit produced had gone down.

54. An important breakthrough had been the switch in many industrial processes from oil to electricity, which was both cleaner and more efficient in end use. Thus, electricity consumption was not levelling out, but increasing with growing gross national products. Moreover, conservation scenarios for the future relied on expanded electricity use. In developing countries, which had three quarters of the world's population but only one third of its energy consumption, no such levelling out could be expected - indeed, the demand for electricity there would accelerate.

55. It was thus clear that world electricity generating capacity would have to be expanded. In addition, many of the existing electricity generating plants were getting old and needed to be replaced. A key question, therefore,

was how all that electricity should be generated: by solar cells, wind power, biomass, hydroelectric or nuclear plants, or by new plants burning fossil fuels? Account must be taken of costs, the energy independence factor and the safety and environmental factors.

56. If the global burning of fossil fuels had to be reduced over a longer period, and if the developing countries could not reasonably be expected to reduce their consumption, but rather must increase it, tightening up on the use of fossil fuels must fall to the industrial countries - which were also the greatest consumers. Utilities and governments had the unpleasant task of planning the future energy mix in the face of a public opinion that was divided and bewildered. A factor that might ease their task was that until it had to choose, the public naturally showed a negative attitude to all energy options in which it saw a risk, and since all significant energy options carried some risk, little guidance could be expected from the public before a decision had to be made. But when it finally came to choosing a concrete option or mix of options, whether coal, nuclear, biomass or savings, the public would make its comparisons and show its preference. Comparative studies of the available options were thus clearly vital for an intelligent choice to be made. In that connection, the Agency had joined with the United Nations Environmental Programme (UNEP), the United Nations Industrial Development Organization (UNIDO) and the World Health Organization (WHO) in an inter-agency project on assessing and monitoring health and environmental risks from energy and other complex industries. That project had met with great interest, and 15 countries were preparing case study proposals and wished to participate in the project.

57. Although hydroelectric power was by no means free of environmental consequences and safety risk, it would evidently continue to be exploited and accepted where it was economically reasonable, since it did not add to atmospheric pollution or the greenhouse effect. Fossil fuels would necessarily continue to be used extensively, not only for heating and transport, but also for electricity production. However, the awareness that a drop in global consumption below present levels must be achieved had increased drastically during the past year.

58. Experience showed that, with the exception of hydroelectric power, new and renewable sources of energy - solar, biomass, wind - were not easily harnessed for large-scale economic production of electricity. However, it should not be difficult to reach a consensus in favour of more research into and experimentation with those sources, as no one was against them. Advances in photovoltaics were most welcome, and even if biomass was not ideal for electricity production, it might play a role in replacing the burning of fossil fuels for purposes other than electricity generation. While deforestation added to atmospheric carbon dioxide, and for that and other reasons was disastrous, the use of biomass combined with continuous replanting was neutral with respect to the carbon dioxide balance of the atmosphere. Massive reforestation would certainly be necessary, and that, over a longer period, would bind carbon and thus help to limit carbon dioxide. That aspect of the atmospheric carbon dioxide balance should not be ignored, nor should the other gases which together with carbon dioxide were responsible for the warming effect be forgotten.

59. While new and renewable resources were not without prospects, with the exception of hydroelectric power they did not offer significant and economically viable answers to the need for increased electricity generation in the immediate and intermediate term. It was becoming increasingly plain that most authorities and utilities seeking sources of expanded electricity production looked chiefly to fossil fuels, notably coal, and to nuclear power.

60. The nuclear power issues that had been mainly of concern to the WCED and the Toronto Conference, namely safety, waste disposal and proliferation, were in fact central to the Agency's activities, together with radiation protection, non-power applications of nuclear energy, and transfer of technology, and so his discussion of them could form part of his report on the Agency's work.

61. To begin with nuclear power safety, it was frequently suggested in international discussions on that subject that nuclear power would be more acceptable if new reactors with greater "inherent" or "passive" safety were developed. However, if such a discussion was to be realistic, it must from the outset recognize that for a long time to come, the issue of nuclear power

safety would be largely identical with the issue of safe operation of the more than 400 nuclear power reactors already working - to which a growing part of the Agency's activity was devoted. Especially since the Chernobyl accident, a large number of international measures had been taken through the Agency in addition to those adopted by individual countries.

62. The WCED had suggested that an international regulatory function was required, including international inspection of reactors, and that that function should be quite separate from the role of the Agency in promoting nuclear energy. The idea that an organ responsible for nuclear safety should be separate from those which actually operated nuclear power plants was generally accepted by governments, and indeed established in the Agency's safety codes. However, the Agency was an intergovernmental organization which neither sold nor operated any nuclear plants, nor was it associated with any other branch of the nuclear industry, and so it was questionable whether any organ outside the Agency would offer greater independence. If such a regulatory function was intergovernmental - and it was hard to imagine any other structure - then the same governments and governmental experts who now governed and advised the Agency would be involved, whether the function was placed within the Agency or elsewhere. It was true that under its Statute the Agency was to promote the peaceful uses of nuclear energy. It did so in the same way as the International Civil Aviation Organization (ICAO) promoted civil aviation and the International Maritime Organization (IMO) promoted shipping. No one had so far claimed that those organizations could not be regulatory because they were promotional. The argument was simplistic, since in reality public regulation was a form of promotion.

63. In the post-Chernobyl discussion there had been suggestions in favour of binding international safety regulations coupled with inspection, but it had become abundantly clear that that was not acceptable to governments. That did not mean there could be no harmonization of national rules, no international standards or no international review of operational safety at the national level. The system evolving in the Agency was more subtle than a mere copy of the national model of legislative, supervisory and executive functions.

64. First, there were the five NUSS Codes of Practice, whose revision and updating had now been completed so as to make them reflect current thinking and experience in accident prevention and management. They were being supplemented by a number of safety guides (on siting, design, operation, etc.) which were in process of being updated. While the Codes were not legally binding on Members, they had considerable authority and had been much used in the elaboration of national regulations. China, for example, was adopting the NUSS standards as the sole basis of its national regulatory requirements to govern its emerging nuclear programme. Member States had recently been asked to provide information - or, in some cases, had volunteered it - on the consistency between their national regulations and NUSS. Most important were the new Basic Safety Principles for Nuclear Power Plants (INSAG-3), a pioneering exercise which the International Nuclear Safety Advisory Group (INSAG) had completed during the present year. Through those principles, INSAG had established exacting but realistic safety targets for existing and future plants, and its work should stimulate discussion and suggestions on the next steps to be taken by the Agency and its Member States - for safety should never be a static concept.

65. The nuclear safety standards did not constitute binding international regulations, nor was their observance subject to international inspection. While under the Non-Proliferation Treaty and the Tlatelolco Treaty safeguards inspection was mandatory on all nuclear plants in non-nuclear-weapon States, inspection of safety was a national function - for the simple reason that no one could be more interested in the safety of a plant than the authorities of the country in which it operated. Yet, after the Chernobyl accident there had been a growing interest in the safety of nuclear plants, wherever located. Operational safety review teams (OSARTs) had been established within the Agency to visit nuclear plants at the invitation of Member States and as a service to them. Their recommendations were not mandatory, but could be expected to command the same respect as competent expert advice. To date, the Agency had sent 25 OSART missions to more than half the countries which operated nuclear power plants. The fact that several countries had invited two or more OSART missions showed that they were found valuable. They helped to promote good operating practices all over the world, and enabled a country

to show a certain openness to international interest in the safety of its reactors. After an initial period of experience with OSARTs, Member States might wish to consider inviting those missions at regular intervals. It would also be helpful if Member States continued their generous provision of experts for participation in them.

66. While on the subject of nuclear reactor safety, it seemed worth mentioning also the Agency's efforts to promote operational safety in the 326 research reactors now operating in 55 countries. More than 70% of them were at least 20 years old, and until recently there had been little international safety guidance to help national efforts. The Agency was now updating many of its safety publications which were relevant to research reactors, for instance those dealing with siting and design, modification and emergency planning. It also intended to revise the Code of Practice for research reactors (Safety Series No. 35). A programme offering Members an integrated safety assessment of research reactors had been initiated and had proved very useful.

67. Although the international framework within which States operated nuclear power installations thus did not constitute binding safety regulations, governments had concluded binding conventions in a number of areas relating to safety. The Convention on the Physical Protection of Nuclear Material, incorporating rules that applied mainly to international transport, had entered into force in 1987 after 21 States had ratified it - an example he would urge others to follow. Whether internationally binding rules regarding physical protection should be applied to nuclear material in the domestic sphere as well was a question that needed serious consideration: while so far there had been some reluctance to approach it, there was no doubt that all States had an interest in the universal observance of satisfactory standards for the protection of nuclear material in their territories.

68. The Convention on Early Notification of a Nuclear Accident had entered into force, and the Agency's emergency response system should be fully operational and able to ensure fast global communications under the Convention by 1989. Before the end of 1988, an Emergency Notification and Assistance Technical Operations Manual should also be available. In that context he wished to thank Member States which had helped to prepare guidance for

operating the system, and also the World Meteorological Organization (WMO) for its generous assistance in making the Global Telecommunication System available for fast transmission of data. Also in that context, the Soviet authorities had informed him, in connection with the uncontrolled re-entry of the Cosmos-1900 satellite, that they would observe the requirements of the Early Notification Convention, should it be applicable.

69. The Convention on Assistance in the Case of a Nuclear Accident or Radiological Emergency had been invoked by Brazil in connection with the radiological accident at Goiania in September 1987, and the existence of an international focal point for offers of contributions in support of the competent action taken by the Brazilian authorities had proved very useful. A data base on national resources that could be mobilized for emergencies would enhance the efficacy of the Agency's emergency response unit, and he urged Member States to co-operate in supplying such information. He also appealed to governments to accelerate the process of ratification of the two Conventions. Of the 72 States which had signed the Early Notification Convention, only 30 had ratified it; in the case of the Emergency Assistance Convention, the corresponding figures were 70 and 30 States; in that connection, he welcomed the fact that the United States Government had recently deposited its instruments of ratification.

70. Where damage from nuclear installations had occurred despite accident prevention and mitigation, liability must exist under both national and international rules. It was therefore gratifying that the Joint Protocol to the Paris Convention on Third Party Liability in the Field of Nuclear Energy and the Vienna Convention on Civil Liability for Nuclear Damage had been drafted, extending the benefits of each Convention to the parties to the other and eliminating problems that might arise from simultaneous application of both. He trusted that the Joint Protocol would be adopted by consensus at the international conference to be held during the week for that purpose and that it would help to attract wider adherence to the two Conventions. The question of an instrument establishing State liability in the event of nuclear accidents was still before the Board of Governors, and might perhaps be dealt with more actively now that a major problem pertaining to the civil liability conventions had been removed.

71. Just as motor cars and aeroplanes were made safer and more reliable through new designs and inventions, the safety technology of nuclear power reactors must continuously be developed. It was a common misunderstanding that the current types of nuclear power reactor were so complicated that operating them safely would require unattainable human perfection; but in fact the current designs tolerated many human errors, since much redundancy was built into their safety systems. All the same, that was no reason for neglecting the search for designs which incorporated more "inherent" or "passive" safety. Their emergence might facilitate greater reliance on nuclear power in many countries where substantial new electricity generating capacity would soon be needed. Developing countries in particular might be attracted by advanced versions of current, tried and tested types of reactor offering standardized and simpler designs, more passive safety features and smaller sizes. Working groups existed within the Agency to carry on an information exchange on that subject, and a first report on the status of advanced light-water reactor design and technology was now in print.

72. The further development, simplification and improvement of current types of nuclear power reactor should not stand in the way of the designing, construction and testing of new reactor types, however. There was no doubt that the "nuclear recession", with new orders for power plants being reduced and public opposition to the nuclear option being expressed in many countries, had affected national research budgets for nuclear power, and it was scarcely surprising if the nuclear industry moved only slowly in a climate where both governments and public showed reluctance or indifference to the further development of nuclear power. All the same, a number of existing or emerging reactor designs had attractive features which might spark renewed interest on the part of governments and public, and - although commercial competition might make it difficult to establish joint international projects on them - it would be desirable for governments to discuss how they might promote research and development on those new types of reactor. Working groups had already been set up within the Agency for the discussion and exchange of experience on such reactors and governments would do well to make greater use of those groups.

73. For several reasons, the development of breeder reactor technology was not receiving very high priority in the United States and in Western Europe. Considering the long-time perspectives and uncertainties faced in the energy fields, it seemed unfortunate that that technology option, which made very efficient use of the energy content of uranium, was not being examined more broadly. The world might yet come to need that option. On the other hand, it was gratifying that a joint design effort pooling the resources of the world's four major fusion research programmes had been launched under Agency auspices in 1988: the International Thermonuclear Experimental Reactor (ITER) project. It was evident that the design and construction costs of some modern technologies, including nuclear technology, were often of such dimensions that projects jointly pursued by several governments or industries or a combination thereof were the most economic and reasonable avenue to success.

74. The issue of nuclear waste management and disposal still loomed large in the public mind. The WCED had noted that nuclear waste technology had reached an advanced level of sophistication, but nevertheless held that the problem of nuclear waste disposal remained unsolved, chiefly because the technology had apparently not been fully tested or utilized. That was clearly a question of judgement and perspective; while it would not be true to say that there were no problems in the field of nuclear waste management and disposal, it could confidently be stated that, unlike the users of other fuels, the civilian users of uranium had been fully conscious from the outset of the need to isolate the waste products from the biosphere, and had acted on that knowledge. The Agency served as a major centre for the exchange of information, for agreeing upon prudent standards, and for assistance and advice in relation to nuclear waste management and disposal.

75. The most recent major meeting organized by the Agency in the field of waste management had been the International Symposium on Management of Low- and Intermediate-Level Radioactive Wastes held jointly with the Commission of the European Communities in May 1988 in Stockholm. That meeting had confirmed earlier assessments that safe management of low- and intermediate-level radioactive waste was not a real technical problem. The participants in the

symposium had been given an opportunity to visit the sub-seabed Swedish Final Repository for Reactor Wastes which had just been commissioned at the Forsmark power station.

76. One of the Agency's most important functions was to work out internationally agreed standards and criteria. In 1985, such criteria had been established for low- and intermediate-level waste. A document on safety principles for the underground disposal of high-level radioactive waste was in the final review stage. Like the NUSS, it would not be binding, but it might be expected to have considerable authority as the first fully international document setting basic criteria for the disposal of high-level waste.

77. The issue relating to radioactive waste that had attracted the most public attention during the past year had been reports that toxic wastes, including nuclear wastes, were being dumped in developing countries. Those reports had sparked protests by the Organization of African Unity (OAU), and the Agency had circulated the OAU's resolution on the subject. At the request of a Member State, the Agency had also sent an expert to examine whether dumped waste actually contained radioactive material: the result in that case had been negative. The Agency would continue to assist Members that had reason to believe they had been the subject of such dumping and did not have adequate resources of their own for checking. A first basic principle was evidently that each State generating radioactive waste should ensure that it was disposed of in accordance with acceptable safety standards; the transfer of such waste to any country that lacked the technical or administrative capacity to handle it safely was patently irresponsible. Initiatives had been taken to establish principles for the export of hazardous non-radioactive wastes, and Member States might wish to consider the idea of developing some Agency guidelines for international radioactive waste transactions.

78. The Agency devoted considerable attention to the problems faced by developing countries in the safe handling and disposal of spent radioactive sources. A Waste Management Advisory Programme (WAMAP) had been initiated in 1987; so far five missions had been carried out, four more were scheduled for the current year, and ten further missions were planned for 1989. The role of the missions was to advise on the establishment of an adequate

regulatory framework and infrastructure for the management of radioactive wastes. Several accidents involving spent radioactive sources had occurred in the past, the latest and most severe of them being the Goiania incident in Brazil; thanks were due to the Brazilian authorities for hosting a post-accident review meeting during which it had been possible to draw lessons from that accident for the benefit of the international community. It was desirable that any accidents of significance involving radioactive materials should be followed by such an international review.

79. The safety of nuclear power and of nuclear waste disposal were significant parts of the much broader question of radiation protection. In that context, he wished to pay tribute to the 60 years of work of the International Commission on Radiological Protection (ICRP), the non-governmental scientific body whose recommendations underlay all the radiation protection standards adopted by the Agency. It was somewhat paradoxical that the well-developed and prudent thinking of that respected body had not been translated into public understanding - for public perceptions of the risks of radioactivity were very far from the reality with which mankind lived and with which the ICRP, the Agency and governments had to contend.

80. According to the latest report by the United Nations Scientific Committee on the Effects of Atomic Radiation (UNSCEAR), 75% of the radiation dose received by the world's adult population came from natural sources, with more than half of that dose being derived from the indoor inhalation of radon-222 and its short-lived decay products. Exposures from medical irradiation amounted to 20-50% of the natural radiation, with about 95% being attributable to diagnostic X-rays, mainly for populations in the industrialized world. A nuclear power plant in normal operation at full power released only negligible amounts of radioactive materials to the environment. Although the installed electricity generating capacity of nuclear reactors in the world had more than doubled since the 1982 UNSCEAR report, the present annual radiation doses per capita received by the world's adult population from all activities in the nuclear fuel cycle still represented only a tiny fraction, namely 0.1%, of the natural radiation doses to the population. According to UNSCEAR, moreover, the average dose commitment for all future

time for the population of Europe and the European part of the Soviet Union due to the Chernobyl accident was equivalent to some 40% of the radiation doses which that population received each year from natural sources. For the most highly exposed population in Byelorussia, the first-year average dose had been of the order of one year's exposure to natural radiation. Elsewhere in Europe, first-year doses had varied, representing 25-75% of the doses people would receive in one year from natural sources. Those figures were reassuring and deserved dissemination. A wealth of such information had also been provided at a conference organized in Kiev on the medical aspects of the Chernobyl accident. The very large epidemiological study which was being undertaken by the Soviet Union in consultation with WHO and the Agency could be expected to yield valuable knowledge in the long term.

81. Those figures were not in the least intended to obscure the fact that individuals and groups who had been subjected to very high doses of radiation in connection with accidents, such as those in Chernobyl and Goiania, ran special risks, but fortunately the number of such individuals was not very high.

82. Consequences of considerable economic and practical significance must be drawn from the available scientific information about radiation levels: for example, reducing radon in houses was a very important task, and X-rays should be used with some restraint in the medical field.

83. While in the immediate post-Chernobyl period different countries had established widely diverging levels of radioactive contamination as making foodstuffs unfit for human consumption, WHO and the Food and Agriculture Organization of the United Nations (FAO), in co-operation with the Agency, recently had jointly proposed values for radionuclides in food below which no health hazard was thought to exist and therefore no restrictions need be applied in international trade. Those levels had been considered in July 1988 by the Codex Alimentarius Commission - the body setting international food standards - and were being finally reviewed for acceptance in 1989. It was to be hoped that one of the more confusing and least confidence-inspiring features of government action after the Chernobyl accident would thereby be laid to rest. There should be no reason for any country to adopt national levels lower than those laid down by the Codex Commission.

84. During the International Conference on Radiation Protection in Nuclear Energy, held in April 1988 in Sydney, Australia, radiation protection principles and policy issues had been discussed in the light of the latest scientific knowledge. Concern had been expressed about the practical implications of excessive reliance on the linear dose relationship. It had been warned that resources which might do much to avert or reduce real and known health risks if employed elsewhere might instead be devoted to the entirely hypothetical risks of low-level radiation effects. The much-publicized calculations of future cancer cases to be expected as a result of radioactive fallout from the Chernobyl accident also were based on the linear-dose hypothesis, not on empirically proven knowledge.

85. Another important event of the past year had been the consensus reached by the Agency and the OECD Nuclear Energy Agency (NEA) over the principles for deciding what types of radiation source and practices should be exempt from regulatory control because they represented only trivial hazards.

86. The Agency provided a significant service to Member States in helping to implement the radiation protection standards. Radiation protection advisory teams (RAPATs) had visited more than 35 Member States to review existing infrastructures and practices and advise on how they could be strengthened. Technical assistance and co-operation programmes supplemented those advisory missions.

87. Co-operation with and transfer of technology to developing countries formed a large part of the Agency's activities; two thirds of the resources used for such purposes were devoted to non-power-related nuclear techniques. For example, almost 1000 crop varieties derived from radiation-induced mutations were grown world wide. Over 50 technical co-operation projects aimed at improving water supply and water resource management in developing countries were under way. Assistance was also being given in the field of nuclear medicine: the fact that every second patient in industrial countries was benefiting from one or another diagnostic nuclear technique showed how important those techniques had become and how necessary it was to ensure that developing countries could also employ them.

88. A nuclear technique of potentially great benefit to developing countries was food irradiation, and many of them had already experimented extensively with it. The Codex Alimentarius Commission had cleared the use of the technique, and prudent limits had been set for the doses to be applied to different foodstuffs. However, the post-Chernobyl concern regarding food and radioactivity had raised new obstacles to the adoption of the technique, which used radiation to disinfect and preserve foods. Wider use of the technique would also help to protect health in the industrialized countries. Thus, a number of salmonella cases in Sweden in the past year had been traced to the use of contaminated spices, and would not have arisen if the spices had been irradiated. In December 1988, the Agency would be co-sponsoring together with a number of other United Nations bodies, an international conference on the acceptance, control of and trade in irradiated food, with the aim of producing an internationally agreed document on food irradiation recognizing the process's potential to reduce the incidence of food-borne disease and to cut down on post-harvest food losses.

89. As could be seen from the document which had been prepared to show what Agency activities were relevant to sustainable development (document GC(XXXII)/COM.5/62), a considerable proportion of technical co-operation was concerned with protection of the environment, for instance against overuse of fertilizers or pesticides, or with the optimum utilization of resources, as in food irradiation. One large project to which the Agency was providing assistance in that connection was a Brazilian one involving the use of isotope techniques to investigate the effect of changing land use on the ecology and climate of the Amazon Basin. It was of prime importance to Brazil to know what exploitation of the forest resources and agricultural potential of that region could take place without having an impact on the rainfall, destroying fragile soils and affecting the river systems of the area.

90. The Regional Co-operative Agreement for Asia and the Pacific (RCA) continued to develop well: resources were being provided by the United Nations Development Programme (UNDP) and by five Member States in the region: Australia, China, India, Japan and the Republic of Korea. While the RCA had traditionally centred on the application of isotope techniques in industry,

medicine, agriculture and basic nuclear science, there had recently been an expansion of activities into energy and nuclear power planning, and radiation protection.

91. The Regional Co-operative Arrangements for Latin America (ARCAL) now had 14 participating countries. In 1988, 11 projects had been under way in such fields as radiation protection, nuclear instrumentation, nuclear information, radioimmunoassay in animal reproduction studies, and food preservation. ARCAL was also exerting a strong influence on the upgrading of laboratories for local nuclear instrument maintenance and repair. The experience gained from RCA and ARCAL would be applied when possibilities were assessed for similar arrangements in other parts of the world, notably Africa.

92. Although the Agency's technical co-operation programme was small in size compared with those of other United Nations organizations, it was closely monitored and, despite occasional failures, achieved a great deal. There was an increasing number of well-functioning local institutions - partly thanks to the Agency's assistance - and an increasing number of nationals of developing countries now served as Agency experts. Only 4 out of 23 training courses, or 17%, had been held in developing Member States in 1980. By contrast, in 1987, 44 out of 66, or 66% of such courses, had been organized in the developing world. That achievement alone indicated that technology transfer was taking place at quite a rapid pace.

93. The General Conference provided an opportunity for all Member States to demonstrate their commitment to technical co-operation through the Agency, by pledging and paying their contributions. The adoption by consensus of a new schedule of indicative planning figures during the June 1988 meetings of the Board of Governors was a welcome development. The indicative planning figure system brought a measure of stability and predictability to the planning of the technical co-operation programme. In 1988, however, there had been a shortfall of US \$4.2 million in pledges against the target of US \$34 million. Fifty-one Member States had made no pledge at all, and 14 had pledged a contribution that was below their share of the target. He appealed to Member States to make a special effort so that the Agency could reach the target for 1989.

94. The safeguards verification performed by the Agency had long been a unique case of international on-site inspection. It offered countries which allowed the transfer of nuclear technology or material verification of the pledges given that such technology would be used exclusively for peaceful purposes. It was worth noting that countries importing nuclear technology or material might be just as anxious as exporters to invite safeguards verification in order to avoid any misunderstandings about their activities. Without such a system of verification, nuclear trade could hardly have developed to its present level.

95. The value of safeguards depended entirely on their credibility. Only a system with high credibility could provide the confidence it was meant to give, and for that purpose co-operation by the Member States hosting the verifications, and competence and efficiency on the part of the Agency in operating the safeguards, were required. Where national systems of accountancy were excellent, co-operation between the Secretariat and the national authorities was smooth and the Secretariat's activities were efficient, confidence would be high and costs low. The ambition must be to operate a system that gave a maximum of confidence at a minimum cost. Development and improvement of the safeguards system was facilitated by advice from the eminent experts who formed the Standing Advisory Group on Safeguards Implementation (SAGSI) and by the large volume of work performed under national support programmes on constructing very specialized instruments or designing new approaches.

96. Naturally, in an undertaking of the magnitude and complexity of international safeguards, delicate matters sometimes arose, involving trade-offs between efficiency and intrusiveness, or costs and confidentiality, for example, and in the last resort difficulties often had to be settled by the Board of Governors on the basis of facts presented by the Secretariat in its annual Safeguards Implementation Report (SIR), in its draft programme and budget, or in separate proposals and suggestions. The members of the Board had invariably shown confidence in the conclusions outlined in the SIR, and he regretted that the 1986 and 1987 issues of the report - which was written exclusively for scrutiny by governmental experts - had become public:

selective quotations and misconstructions had been used in an attempt to undermine confidence in safeguards. Member States and the Secretariat must evidently make a better effort to explain safeguards to the public and to dispel misunderstandings and erroneous conclusions.

97. A more serious difficulty lay in the resource problem. In times of budgetary stringency, governments were naturally unhappy to increase funding for safeguards, and urged that efficiency gains should be made in that area. That was a reasonable request, but it must be recognized that the number of nuclear facilities and the quantity of nuclear material to be safeguarded - and in many instances the sophistication of the facilities as well - had steadily increased, while the safeguards budget had remained at zero growth for a number of years. The Secretariat was engaged in a perpetual search for greater efficiency through innovative techniques and organizational change, but in the long run efficiency gains could not offset the need for additional resources to fulfil the Agency's new obligations under agreements already entered into. He therefore urged Member States to do everything in their power to facilitate the inspection task and thereby reduce costs.

98. It was gratifying that Agency safeguards were serving as a source of inspiration for the establishment of other on-site inspection systems; conversely, it would be desirable for useful innovations made in such new systems to be considered for adoption in the safeguards system.

99. The Board of Governors had just approved the voluntary offer agreement between China and the Agency. Such agreements had now been reached with all five nuclear-weapon States, and so all countries in which a nuclear reactor was operating had now accepted Agency safeguards on all or part of their nuclear activities.

100. In 1989, the formal preparations for the fourth NPT Review Conference, to be held in 1990, would begin, and the Agency was ready to make its contribution by preparing papers on how it applied safeguards within States parties to the Treaty and on the extent to which the Agency's technical assistance programme was affected under Article IV of the Treaty.

101. The Agency's role under NPT was limited but clear, and gave it a particular interest in the outcome of the fifth Review Conference, which would be deciding whether the Treaty should continue in force indefinitely or be extended for an additional period or periods. That decision would affect the very basis of much of the Agency's safeguards responsibility, since Clause 26 of INFCIRC/153, the model for NPT-type safeguards agreements, laid down that such agreements should provide for their remaining in force as long as the State was party to NPT.

102. Turning to the portions of the agenda which were not directly related to the Agency's main working areas, but which had important and difficult non-technical aspects, he drew attention to the comment by the Resident Representative of Israel, reproduced in document GC(XXXII)/849 (Appendix 1, Annex 1, Attachment 2), that the issue of full-scope safeguards could be satisfactorily settled within a nuclear-weapon-free zone. He trusted that, in view of the new and hopeful trend in the world towards solution of many long-standing conflicts, Members of the Agency would want to consider, not only how an agreement on such a zone could be negotiated, but also how full-scope safeguards might be established and operated in such a zone.

103. Another issue which the General Conference would tackle related to South Africa and its possible adherence to NPT; some information on contacts between the South African Government and the depository States for NPT on that subject was given in document GC(XXXII)/844. He had made it clear on behalf of the Secretariat that an agreement on full-scope safeguards following South African adherence to NPT should follow the same lines as the safeguards agreements negotiated by the Secretariat with other parties to NPT. The latest statement by the Government of South Africa on the subject had been circulated as document GC(XXXII)/848.

104. On the whole, the Agency had been functioning well during the past years, and it was pleased and proud at its reputation for efficiency and competence, although it was aware that further improvements were always possible. The reality in which the Agency operated was continuously changing, and so were the needs of Member Governments. That called for continuous adjustments in the programme of the Agency and its modes of operation.

105. The major challenge facing the Agency in the past few years had been to cope with increased demands, especially in operating safeguards, expanding nuclear safety and radiation protection and promoting the transfer of technology, while living with a Regular Budget at zero real growth. With some shortfalls, and by often operating within dangerously narrow margins, that challenge had been successfully met. One major reason had been the increase during that period in resources contributed outside the Regular Budget, in particular for technical co-operation and in support of the safeguards programme; also, the Agency had been offered more cost-free experts. A further major reason had been a continuous transfer of budget resources from the administrative side to the programme side, and a third very important reason was the hard work of the Agency's loyal staff.

106. When efficiency could be improved purely by internal streamlining, so much the better, but further savings were also obtainable through more co-operative measures being taken by Governments and their authorities and fewer demands being made for some administrative services. Simplification in the procedure for designation of safeguards inspectors could save both time and money, as could greater co-operation by States in the negotiation of facility attachments under safeguards agreements. A reduction in the amount of administrative and financial reporting would also relieve pressure on the Secretariat. The Agency was trying to meet the growing number of requests from Member States for ever more comprehensive and transparent documentation. The Secretariat was usually praised for producing those documents - but not for presenting the bills for them. Similarly, Member Governments liked extensive consultations to be arranged with them about the programme and budget, beginning a year in advance. Such procedures certainly enabled all to participate fully and, perhaps, facilitated a consensus in the end, but it must be remembered that such procedures were costly.

107. It was somewhat paradoxical that after a year-long period of consultation and the adoption by consensus of a programme and budget, one of the first things the Secretariat had to do was to work out a contingency plan to meet cash shortages caused by the failure of some Member States to pay and by persistent patterns of late payment by others. While the budget was at

zero real growth, paid contributions showed negative growth. Inevitably, when stop-go-type administration became necessary, efficiency was lost, delivery suffered, margins became narrow and cash crises threatened. The Agency now had no reserves to pre-finance operations in situations of temporary cash shortage. For 1989, the Board had recommended an increase in the Working Capital Fund by US \$2 million to a level of US \$4 million. As a Working Capital Fund of that size could only bridge the gap for slightly more than a week, the Agency would be obliged to request a further increase for 1990 up to a level which deserved to be called a working capital.

108. A gradual trimming back of the Agency's programme might not result in a calamity, but it did have that potential. The Agency's fundamental missions were to create confidence that no diversion of (fissionable) material was taking place, to help reduce the risks of nuclear accidents, and to promote development in the Third World. Reducing the Agency's ability to accomplish those missions at the levels to which Members had laboriously agreed was a serious matter.

109. While the past few years had brought awareness of potentially alarming changes in the atmosphere and global climate, a great improvement in the world's political atmosphere and climate could be observed. Real disarmament measures affecting nuclear weapons had been agreed upon and even more significant ones were being negotiated; long-standing disputes and dreadful armed conflicts were being ended, and the increasing interdependence of the world was being recognized. In that new situation, with its perils and possibilities, the world would need its international organizations. Governments would find that the instruments they had created for their international co-operation were there when they wanted to co-operate. Member States had been making increasing use of the Agency: they knew the value of the instrument and its further potential, and he trusted that they would want to keep it in good shape.

110. Finally, he thanked the Government of Austria and the city of Vienna for the hospitality shown to the Agency and the support given to its activities.

VOLUNTARY CONTRIBUTIONS TO THE TECHNICAL ASSISTANCE AND CO-OPERATION FUND
FOR 1989

111. The PRESIDENT reminded Members that the early pledging of voluntary contributions considerably facilitated the Secretariat's work in planning the Agency's technical assistance programmes. He urged all delegations that were in a position to do so to notify the Secretariat during the current session of the voluntary contributions their Governments would be making to the Technical Assistance and Co-operation Fund in 1989. At the end of the session, under agenda item 23, he would report on the voluntary contributions pledged so far, and he was confident that, in response to his appeal, a considerable percentage of the 1989 target figure of US \$42 million recommended by the Board of Governors would by then already have been pledged.

GENERAL DEBATE AND ANNUAL REPORT FOR 1987 (GC(XXXII)/835)

112. Mr. SALGADO (United States of America) read out the following message from the President of the United States, Mr. Ronald Reagan:

"On behalf of the United States, I would like to take this opportunity, the last of my administration, to reflect on a number of important themes which provide the foundation for United States participation in the vital work of the International Atomic Energy Agency.

"The IAEA is an institution of singular importance to world peace and to the economic and technological advancement of many nations around the globe. Members and non-Members alike have benefited from the effective implementation of its programmes. IAEA safeguards, far from being essentially restrictive in nature, have been a key factor in building the confidence necessary for peaceful nuclear co-operation among nations. The safeguards programme has thus helped to make peaceful atomic energy available to all countries as envisioned in the Nuclear Non-Proliferation Treaty, while at the same time promoting international peace.

"Given the diversity of its membership, the degree of international co-operation achieved by the IAEA is outstanding. Working together, IAEA members have found more efficient ways to apply safeguards and more effective means of using the peaceful atom for social and economic development. Recently, in the aftermath of the tragic accident at Chernobyl, renewed emphasis has been placed on nuclear safety and on finding new ways for States to strengthen co-operation in this all-important endeavour. On behalf of the United States, I want to applaud this progress. In order to fulfil its mission in world affairs, the IAEA must always preserve its integrity as a technical and scientific organization. This requires a clear

perception by all Members of the Agency's technical and scientific mandate as set forth in the IAEA Statute. Such an understanding is essential to the continued building of the international consensus on which the non-proliferation regime and the IAEA rest.

"In the years to come, the IAEA will assume even greater importance as nuclear technology becomes more sophisticated and as more and more countries realize the benefits of the peaceful atom. The strong and continuing commitment of all Members to the Agency's goals will be needed in order to meet those challenges. As I most recently pledged during the May 1988 Summit Meeting with General Secretary Gorbachev, the United States has, and will continue, to provide its strong support for the IAEA and to the principles for which it stands.

"In closing, may I extend to you my best wishes for a successful session of the General Conference, one that strengthens and deepens the commitment of all Members to the vital mission of the IAEA in world affairs."

113. He (Mr. Salgado) joined President Reagan in saluting the Agency for the important work it did. The year 1988 marked the twentieth anniversary of the signing of the Non-Proliferation Treaty - the hallmark of the Agency's efforts to prevent the spread of nuclear arms. Adherence to the Treaty was now almost universal. The Agency's accomplishments in recent years included the expansion and enhancement of its technical assistance activities, nuclear safety programme and safeguards system, and the new arms negotiations called for by NPT.

114. With regard to the safeguards system, he wished to underscore his country's firm commitment to that invaluable component of world stability - a commitment that had been demonstrated from the very beginning. In 1962, the United States had volunteered a reactor at the Brookhaven National Laboratory for the Agency's first safeguards inspection based on fully-developed procedures which had subsequently become routine for research reactors around the world. It had contributed valuable resources, both financial and scientific, to Agency safeguards over the years. It was fully committed to maintaining the effectiveness of the safeguards programme, under which it had continued to develop state-of-the-art equipment for measuring special nuclear material and to devise containment and surveillance devices.

115. The United States was also fully committed to the physical protection of nuclear material handled throughout the world, and had ratified the relevant Convention.

116. The United States recognized that, together with other nuclear-weapon States, it bore a special responsibility, under Article VI of NPT, to work towards disarmament. In June 1988, President Reagan and Mr. Gorbachev had exchanged instruments of ratification for the INF Treaty - the first treaty ever to reduce, rather than merely to limit, the nuclear arsenals of their respective countries. The INF Treaty had been the culmination of many years of work, involving several summit meetings and protracted negotiations in Geneva. The first step had been the President's proposal for a "double-zero option", and despite fears that complete elimination of INF missiles could never be achieved, the events of the past seven years had borne out the wisdom of that proposal.

117. Great strides had also been made in reducing strategic nuclear arms through the so-called "START" negotiations. The first breakthrough had come in Geneva in 1985, when President Reagan and Mr. Gorbachev had agreed on the concept of a 50% reduction in strategic nuclear arms. At the Reykjavik Summit in 1986, the two leaders had agreed on specific numerical limits for warheads and delivery vehicles.

118. President Reagan and Mr. Gorbachev had met again in Washington in December 1987 to sign the INF Treaty. They had agreed to work intensively towards completing the "START" Treaty, and had also agreed to comprehensive verification provisions for inclusion therein.

119. In addition, the two leaders had given their agreement to the holding of joint experiments in both countries to improve verification under two nuclear test limitation treaties that were awaiting ratification. Those experiments represented an unprecedented step forward towards the laying of a new foundation for nuclear testing limitations embodied in bilateral treaties. The United States looked forward to further work with the Soviet Union, in a spirit of co-operation, in regard to those critical matters.

120. In addition to its safeguards programme, and the work being done to build on the success of NPT, the Agency's technical activities had done much to promote the peaceful uses of nuclear energy among developing countries. Between 1981 and 1987, annual payments to the Technical Assistance and Co-operation Fund had grown from just over \$8 million to more

than \$29 million, an increase of more than 350%. He was proud to say that the United States, as the largest contributor to the Fund, had provided nearly 30% of the previous year's total.

121. The Agency's activities served the interests of all its Members by helping to resolve countless global problems, ranging from pest control in agriculture to environmental monitoring. Its research programmes also helped to expand the frontiers of basic science, reinforcing efforts to promote better health, to increase the world's food supplies, and to develop new energy sources for the future.

122. The Agency had long been active in promoting international co-operation in nuclear safety around the world through its safety and radiation protection programmes. The United States was proud to have contributed to the strengthening of the Agency's safety regime: indeed, its efforts had led to the improvement of safety guidance for commercial nuclear power reactors. While the United States wholeheartedly supported the intensified safety programme begun the previous year, it continued to believe that the fundamental responsibility for safety and regulatory functions rested with Member States.

123. He was delighted to announce that the United States Senate had approved ratification of the Conventions on Early Notification and on Emergency Assistance on 7 September, and that he had just deposited the instruments of ratification of those Conventions with the Director General. The United States would support the Agency in carrying out its specific responsibilities under those two carefully-negotiated Conventions, and would be pleased to contribute the services of its experts to that end.

124. Although some progress had been made, nuclear power could not achieve anywhere near its true potential until government and industry successfully tackled the problem of lack of public confidence in nuclear safety. Members must continue to be vigilant in ensuring that safety continued to be the first priority for nuclear power users around the world.

125. Since 1980, about 14 new reactors had begun operation in the United States. The largest of them was the Palo Verde Nuclear Generating Station in Arizona, capable of producing 3810 megawatts of electrical power, enough to

meet the needs of 4 million Americans - a symbol of what could be achieved with vision and persistence. On the other hand, plants such as Shoreham and Seabrook had not been allowed to operate, due in part to public concern about safety, despite the fact that a majority had been shown to be in support of nuclear power whenever proposals to abandon it had been put forward.

126. There was growing appreciation in the United States of the role nuclear power could play in strengthening energy security by diversifying the energy resource base. Because nuclear power was a proven, environmentally clean energy resource, it offered a promising means of allaying mounting international concern about the consequences of the "greenhouse effect".

127. The President had recently signed legislation raising the level of compensation in the event of a nuclear accident to more than \$7 billion, ten times the previous level. That legislation marked a major step forward in restoring confidence in the credibility of nuclear power as a predictable and safe investment. However, there was still need for a more effective and efficient licensing process in the United States, in order to ensure continued protection of public health and safety through the early and decisive resolution of power plant safety issues. That could be achieved by improving mechanisms for public participation, and by reducing construction time and costs, without sacrificing safety. His administration was pressing for speedy action on proposals now before Congress to reform the licensing process, and the United States Nuclear Regulatory Commission, for its part, was making such improvements in the process as lay within its power.

128. Safe, permanent disposal of high-level active waste was crucial to the progress of nuclear power, and the passage of the Nuclear Waste Policy Act and its amendments marked a milestone in that connection. The Department of Energy was now evaluating the suitability of a site in Nevada as a first geological repository; it was hoped to receive construction authorization by 1988, and to begin initial operations by 2003. The other two elements of the United States integrated waste management system were a monitored retrievable storage facility (MRS) for packaging and short-term storage, and transportation operations to move the waste to the facility concerned.

129. Congress had authorized the siting, construction and operation of one such MRS facility, subject to certain conditions. It was hoped to select a suitable site in 1994, and to begin construction in 1998.

130. Steps had been taken to ensure that the United States would be a reliable and economic supplier of enriched uranium. There was support in Congress for restructuring the enrichment services sector as an independent Government corporation, which it was hoped would keep that sector competitive in the world market.

131. Progress had also been made in fostering the future growth of reactor technology. The United States nuclear industry continued to seek improvements in the quality of electricity generated, as well as to initiate programmes to extend the life of existing reactors. It was also working with the Nuclear Regulatory Commission to pave the way for the introduction of a new generation of safe, standardized reactors. Safety remained the overriding concern, and the efforts of the Institute of Nuclear Power Operations to strengthen and expand programmes of safety enforcement and training were noteworthy in that regard. New initiatives - such as the proposal to form a Worldwide Association of Nuclear Operators - would do much to ensure that the best safety experience available could be utilized.

132. Nuclear power was a critically important large-scale technology, capable of meeting a sizeable portion of the energy needs not only of the United States but of the world as a whole. It already supplied the United States with 20% of its electricity, and its contribution to the country's energy security was beyond question.

133. With the increasing energy demands resulting from the expansion of the world economy, diversification of energy supplies would become critically important. There was no doubt that nuclear power would come to play a more prominent role in meeting energy needs, and it might also prove useful in the effort to solve complex environmental problems, such as that posed by the warming of the earth's atmosphere.

134. The importance of nuclear power could be clearly seen in the fact that 420 reactors were now in operation in 26 countries, together supplying one sixth of the world's electricity. Many Agency Members generated a major

portion of their electricity from nuclear power: France obtained more than 70%, other European nations 40% or more, while Japan expected to double its capacity over the next four decades.

135. Much of the success achieved by nuclear power worldwide could be attributed to the Agency's tireless efforts. The United States was encouraged to see the significant progress made in resolving many of the problems that had hampered nuclear energy's growth and acceptability in the past.

136. President Reagan had stressed the IAEA's unique role in fostering international co-operation through the programme activities carried out under its mandate. The success of those activities depended on a spirit of understanding and mutual confidence. That spirit had guided the Agency in the past, and would continue to guide it in the future - a future ripe with opportunities for productive, peaceful uses of the atom. Only by working together as a community of nations, laying politics aside and remaining faithful to the IAEA's original Statute, could Member States hope to ensure that the Agency would continue as a world champion of peace and progress.

137. Mr. SRINIVASAN (India) said the General Conference offered an opportunity for reflection on the trends being pursued by the Agency, and on its relevance to the evolving needs of Member States. The main expectation of a large number of those States was that the Agency should fulfil its statutory obligations to help them harness nuclear energy for economic development.

138. The major challenge to the spirit and dedication of the nuclear community in recent times had been the problems posed by safety and the environment. Although all Members knew that nuclear safety was safer and environmentally more benign than many other sources of energy currently in use, they should never cease their efforts to provide the maximum assurance regarding public safety and protection of the environment. He congratulated the Director General and the Agency on the work done in that connection in the post-Chernobyl period. The link-up with the WMO's Global Telecommunication System was a significant step in strengthening the Early Notification Convention. The Emergency Assistance Convention was also designed to facilitate international co-operation in the event of a nuclear accident. Those developments were confirmation of the advanced state of preparedness of

the nuclear community to tackle an emergency situation. The completion of a concise, integrated statement of basic safety principles for nuclear power plants by INSAG, and the review of the NUSS Codes, reflected the Agency's responsiveness to the sophisticated safety requirements of a nuclear world.

139. His delegation had been greatly impressed by the comprehensive and thought-provoking opening statement made by the Director General. In that statement, the Director General had urged that the Agency be entrusted with an international regulatory role in the interests of promoting nuclear safety. While that was a laudable objective, it should be borne in mind that sovereign governments regarded the regulatory function - whether affecting the operation of nuclear facilities, or their physical protection in situ or in transit - as an area of exclusive national responsibility.

140. He welcomed the many initiatives already taken by the Agency with regard to the management and disposal of low- and intermediate-level radioactive waste, as well as of high-level waste. That was an important problem that had to be competently tackled in order to gain public confidence in the present and future safety of nuclear energy production, as well as to allay unfounded fears of a possible blight on the lives of countless generations yet unborn. In that connection, he had been pained to learn of a deplorable practice that had given the OAU grounds for deep concern, namely the dumping of all kinds of toxic wastes on unsuspecting countries, by institutions that could be expected to know the consequences of such malpractices. It was not yet clear whether that dumping had included nuclear wastes, but he welcomed the initiative proposed by the Director General in the matter.

141. He had been glad to learn from the Safeguards Implementation Report for 1987 that there had been no diversion of nuclear material from peaceful activities safeguarded by the Agency to non-peaceful activities. Both the Secretariat and Member States concerned deserved credit for ensuring the efficacy of the system within existing budgetary constraints. At the same time, it was vital to restore the enthusiasm and dedication with which the Agency's technical co-operation programme had been initially conceived. If the regulatory function was allowed to dominate the Agency's programme and budget, it would only hamper efforts to turn nuclear technology into a

universally acceptable tool for development. He wished to take the opportunity to pledge India's assessed share of voluntary contributions to the Agency's Technical Assistance and Co-operation Fund for 1989.

142. India continued to regard the Regional Co-operative Agreement (RCA) as a valuable instrument for promoting regional co-operation among developing countries. It supported human resource development activities in RCA member States by conducting training courses, workshops and seminars. During 1988, India had held regional training courses on isotope production in research reactors and on neutron activation analysis for mineral resource prospecting and material characterization, and more activities were planned for 1989. Activities under the RCA should also be expanded to include areas such as mineral prospecting, power planning, reactor safety, health, and waste management. The RCA seminar held in Jakarta in June 1988 had been useful in assessing progress achieved, and in identifying how activities should be oriented in the future. In view of the need for manpower training in RCA member States, India recommended that the Agency might consider creating an institution within the region for providing training facilities in different areas of nuclear science and technology. Such an institution could be built around an existing nuclear centre in a region that was receiving Agency assistance.

143. The year 1988 marked the completion of four decades of existence of the Indian Atomic Energy Commission. During that period, India had accumulated a considerable wealth of manpower and expertise in all areas of the nuclear fuel cycle. Its nuclear power programme continued to make steady progress, and there had been a 13% increase in nuclear power generation over previous years. An important development had been the decision taken by the Indian Government to start work on nuclear power units with an aggregate capacity of about 6000 MW(e).

144. Safety considerations continued to be given high priority at all levels of nuclear plant operation. Emergency preparedness plans had been evolved to deal with emergency situations that might arise from an accident at any of the nuclear installations in the country. A number of seminars had been held to educate the public, and to clear up misunderstandings or apprehensions about nuclear energy.

145. Where research and development were concerned, the main emphasis in reactor engineering during the year had been on the design of 500 MW(e) PHWRs, and on further refinements of the 235 MW(e) PHWR, in addition to the setting up of various experimental facilities at the 100 MW(th) Dhruva reactor. The design of a 500 MW(e) prototype fast breeder reactor was progressing, and India's long-term plan was to build fast breeder reactors to make optimum use of nuclear fuel. He agreed with the Director General's comment that fast breeder reactors were an important energy option that the world might yet come to need in future years.

146. The Director General had rightly drawn attention to certain omissions in the report of the World Commission on Environment and Development, notably the fact that nuclear energy production did not contribute to global warming or to the "greenhouse effect". The report recommended that, since the NPT had not proved sufficient to halt the spread of nuclear weapons, an effective international regime should be set up to deal with the problem, and that both nuclear-weapon States and non-nuclear-weapon States should undertake to accept safeguards in accordance with the Agency's Statute.

147. However, 1988 had witnessed the conclusion of the first-ever disarmament agreement, in the form of the INF Treaty between the United States and the Soviet Union. India welcomed that agreement as an important step in the right direction. While the treaty might appear modest, it nevertheless represented a major breaking-down of psychological and political barriers that had proved formidable in the past. He sincerely hoped that that process would be carried forward, and would lead to the eventual elimination of nuclear weapons.

148. India was deeply committed to the cause of disarmament, and had submitted to the United Nations General Assembly's Special Session Devoted to Disarmament an action plan calling on the international community to negotiate a commitment to general and complete disarmament.

149. In conclusion, he reiterated his country's support for activities of the Agency designed to realize the aims and ideals enshrined in its Statute. India had immense faith in the contribution that nuclear energy could make towards economic development. The significance of the Agency's activities

would continue to depend on the extent to which it could assist those Member States which were assigning a vital role to nuclear energy used for peaceful purposes. He was sure the Agency would strive to fulfil the hopes placed in it in that regard.

150. Mr. PROTSENKO (Union of Soviet Socialist Republics) said the Agency was highly valued in his country as a truly unique international organization which was seeking both to promote international co-operation in the peaceful uses of atomic energy and to secure non-proliferation of nuclear weapons and the safe development of nuclear power. He commended the dynamism of the Agency's activities, and its ability to respond promptly and effectively to new challenges.

151. The current session of the General Conference was being held at a time when international relations had reached a turning point. During the past year, there had been a noticeable easing of the nuclear threat. The signing of the INF Treaty between the Soviet Union and the United States, together with negotiations for an agreement on a 50% cut in strategic nuclear weapons, were both significant steps towards nuclear disarmament and towards eliminating the threat of the destruction of civilization by nuclear weapons.

152. Progress had also been made towards halting nuclear-weapon testing. The Soviet Union's commitment to an early solution to that problem was demonstrated by its declaration of a unilateral moratorium on all nuclear-weapon testing - a step which had not, unfortunately, been reciprocated. However, his country was currently conducting bilateral negotiations with the United States on the limitation and eventual cessation of nuclear-weapon testing, and considerable progress had been made in the first stage of those negotiations. The two parties concerned had carried out a successful joint experiment on verification, and he hoped that eventually more radical measures could be adopted which would limit the extent and number of nuclear tests with a view to eventually eliminating them completely.

153. One of the essential conditions if disarmament was to be achieved was a strengthening of NPT. He urged that those countries which had not yet acceded to that Treaty should do so as soon as possible, as requested by the 1985 NPT Review Conference. In particular, both the Republic of South Africa and

Israel should accede to the Treaty without delay, and should agree to place all their nuclear activities under Agency safeguards.

154. The Soviet Union greatly appreciated the Agency's contribution to the creation of an atmosphere of trust and mutual co-operation between Member States, notably through its regulatory functions. The Agency safeguards system was an effective bar to the diversion of nuclear materials from peaceful uses to the manufacture of weapons, and he was pleased to note from the annual report that, as in previous years, the Secretariat had not detected any violations in that regard in the course of 1987. That was proof of the success of the safeguards system, as applied both within the framework of NPT and outside it.

155. As could be seen from the annual report and from the opening statement by the Director General, the regulatory activities of the Agency had been expanded during the period under review, and the safeguards system had been systematically improved. His country was making its own contribution to the development of Agency safeguards; in the course of 1989-1990, 4 million roubles would be made available to help finance the next stage of research and development under the safeguards programme. In addition, a voluntary contribution of 300 000 roubles had been made to the programme of staff training in the field of safeguards being carried out in the Soviet Union, with the participation of Agency experts.

156. In order to maximize the effectiveness of the existing safeguards system, it was important to resolve difficulties that had arisen over the designation and accreditation of inspectors. The Soviet Union had always shown a flexible approach in that connection, and was prepared to receive Agency inspectors without prior agreement, on condition that such inspectors were nationals of States with which it had diplomatic relations. His country supported the Director General's proposal that the Agency should be entitled to appoint inspectors without the prior consent of States, and called on other Members to give their support to that proposal.

157. His delegation could support the Agency's Programme and Budget for 1989 and 1990 (document GC(XXXII)/837), which provided the necessary funding for all those scientific and technical programmes which were of benefit to its

Member States. In particular, the Soviet Union attached importance to such programmes as nuclear power, the nuclear fuel cycle, nuclear safety and radiation protection, safeguards, and the International Nuclear Information System (INIS). It also supported the Agency's activities in the field of controlled thermonuclear fusion, including the ITER project.

158. His country also attached importance to the promotion of technical co-operation with developing countries, and hence supported an expansion in the Agency's role in the transfer of technology to such countries to help them develop nuclear energy for peaceful purposes. The steady growth of the Technical Assistance and Co-operation Fund was proof that the system of voluntary contributions to that Fund had been a success, and his delegation considered that that system should be maintained. He was glad to be able to announce an increase in his country's own contribution to the Fund of a sum equivalent to \$4 237 800 in 1989. It was intended that such contributions should be used to help supply developing countries which were Members of the Agency and which were also parties to NPT with equipment and materials for research purposes, as well as to finance training programmes being carried out in the Soviet Union. His delegation wished to express its satisfaction at the work being carried out by the Agency's Division of Technical Assistance and Co-operation, and to assure the Director General that in matters relating to its own voluntary contributions, he could rely on the Soviet Union's understanding.

159. The rapid advance of social and technological progress in the Soviet Union called for a corresponding expansion in energy supply, and in that area nuclear power was playing an ever-increasing role. There were currently some 50 power reactors in operation in the Soviet Union, with a total capacity of 35 million kilowatts; in 1987, those reactors had generated 187 billion kilowatt-hours of electricity out of the total of 1665 billion kilowatt-hours, achieving an average capacity factor of 70%.

160. The serious accident at Chernobyl, although it had raised a number of issues concerning the safe operation of nuclear power stations, had not altered the fundamental position of the Soviet Union in regard to the use of nuclear power. Much had now been done to ensure reliable stopping of the

nuclear chain reaction, to diagnose the state of the reactor, and to improve the design and coolant systems of such reactors. Under normal operating conditions nuclear power plants had little or no effect on the environment, and they were thus one of the most acceptable sources of power.

161. Improvements in the training of personnel were also of the utmost importance if safe operation was to be guaranteed. At Chernobyl itself, all operating personnel had been subjected to retraining, and work with simulators was being increased in order further to improve their qualifications. Such personnel were now also being given psychological tests. In addition, training of personnel in the operation of WWER power units was being upgraded in the Training Centre at the Novovoronezh power plant, and advanced training in the operation of RBMK reactors was being given in the Training Centre at the Smolensk power plant. In all, 2000 nuclear power workers would be undergoing special training in the course of the year.

162. As a result of those measures, RBMK reactors were now just as safe to operate as other types of reactor used in the nuclear power industries of other countries. Further development in Soviet nuclear power would see an increase in the use of WWER-1000 MW power units.

163. Research and development institutions in the Soviet Union were now in the process of developing new power units, with enhanced safety, for power and heat generation. That development encompassed the whole cycle from siting and design to construction and operation. The goal was to ensure the safe and uninterrupted development of nuclear power as one of the most reliable and economically sound sources of energy.

164. His delegation was concerned at the difficult financial situation of the Agency caused by delays in the payment of contributions by a number of Member States. Lack of resources would have a negative impact on activities which were of importance to all countries, notably the Agency's regulatory functions. He urged that all Member States should comply strictly with their statutory obligations, and should make good their arrears of contributions in the near future.

165. His delegation joined with others in approving the Agency's Annual Report for 1987. He was sure that in the future the Agency would continue to be a reliable instrument for promoting the development of international co-operation, both in the peaceful uses of nuclear energy and in ensuring the non-proliferation of nuclear weapons.

166. Mr. ITO (Japan) said that his country, which was poor in energy resources, had designated nuclear power as a key energy source, and was actively promoting research into nuclear energy as well as its development and utilization.

167. Japan had at present 36 nuclear power reactors, which supplied approximately 30% of the total electricity generated in the country. In June 1988 Japan's Atomic Energy Commission had launched a new long-term programme for the development and utilization of nuclear energy, designed to improve levels of safety, reliability and economy, and to establish the nuclear fuel cycle by promoting uranium enrichment, spent fuel reprocessing, and development of the fast-breeder reactor and radioactive waste management. It also intended to promote research and development in more creative and innovative areas at the leading edge of nuclear technology. The new agreement between Japan and the United States in the field of nuclear energy, which had entered into force in July 1988, would be a notable contribution to that effort.

168. Japan would shortly be acceding to the Convention on the Physical Protection of Nuclear Material. It hoped that the existing system of international co-operation for physical protection would be further enhanced through the accession of more countries to that Convention.

169. Research and development into nuclear fusion was important not only because it offered mankind the possibility of a lasting energy source, but also because it involved many areas of advanced technology. His country intended to participate actively in the joint conceptual design activities under the ITER project initiated by the Agency.

170. As a country well advanced in the peaceful uses of nuclear energy, Japan was ready to accept its share of responsibilities in regard to international co-operation. Together with other advanced countries, it was

prepared actively to promote a number of international activities, taking into account the need to ensure non-proliferation, as well as the need to meet the individual requirements of each country. It would aim to expand bilateral or neighbourly co-operation, while also enhancing multilateral co-operation through such international bodies as the IAEA and the OECD/NEA. In particular, it was prepared actively to promote co-operation with developing countries in the field of nuclear energy.

171. The Agency had played a central role in international co-operation in the peaceful uses of nuclear energy, and great progress had been made during the past year. In the area of nuclear safety, for example, INSAG had issued a set of new basic safety principles for nuclear power plants; extensive work had been carried out on the amendment of the nuclear safety standards; and work was advancing steadily on the implementation of the two Conventions on Early Notification and on Emergency Assistance. Those achievements were highly appreciated by his country.

172. For its part, Japan had co-operated actively with the Agency in the safety field. In February, an International Conference on the Man-Machine Interface in the Nuclear Industry had been held in Tokyo, and in October Japan would be receiving an OSART mission from the Agency. Japan intended to make an active contribution to the Agency's activities in the field of nuclear safety.

173. The guaranteeing of the peaceful uses of nuclear energy was no less important than the guaranteeing of nuclear safety. The year 1988 marked the twentieth anniversary of the signing of NPT. It was a matter of pride that over the past 20 years the number of parties to NPT had gradually increased, and he hoped that further accessions would expand and strengthen the universality of the NPT regime.

174. The Agency's safeguards system had played an important role in ensuring effective nuclear non-proliferation. That system had hitherto functioned effectively, in that no diversion for purposes of nuclear proliferation had been discovered. On the other hand, a more efficient implementation of safeguards, involving the introduction of new technical methods, was needed in order to respond to the increase and diversification of nuclear facilities

under safeguards. He hoped that discussions to that end would make good progress in such forums as SAGSI. He congratulated the Agency on the Safeguards Seminar held the previous day, and said Japan intended to co-operate positively in that effort by such concrete contributions as the Japan Support Programme for Agency Safeguards (JASPAS).

175. The Agency's technical co-operation activities had been crucial in disseminating nuclear technology in developing countries. In addition to its contribution to the Technical Assistance and Co-operation Fund, Japan was prepared to make a further contribution in terms of manpower resources for technical activities. As for the proposed expansion of the Fund, he hoped that careful consideration would be given to the importance of technical co-operation on the one hand, and to the financial capability of each Member State on the other.

176. The RCA was one of the most successful examples of regional co-operation in the field of nuclear energy. His country intended to co-operate as fully as possible in meeting the needs of the region.

177. There were now more than 400 nuclear power reactors in operation throughout the world, indicating that there had been a steady increase in peaceful uses of nuclear energy. It could be said that that increase, combined with efforts to conserve energy, had not only ensured a stable energy supply in the countries concerned but had also, when accompanied by restricted oil consumption, helped stabilize demand for oil and thus for energy in general throughout the world.

178. In order to promote the peaceful uses of nuclear energy it was vital to obtain the understanding and co-operation of the public. Now that the safety and benefits of nuclear power had attracted attention throughout the world, it was important for the Agency to respond by bringing the peaceful uses of that power to public notice. At the same time, co-operation at the international level should be strengthened by, for example, the exchange of information between countries. He hoped that by such means, public understanding of the need for nuclear power would be increased, and Japan would be ready to co-operate to the full to that end.

179. The efficiency and soundness of the Agency's administration was well known, and he paid tribute to the efforts of the Director General and his staff in that regard; it was imperative that Member States should support those efforts. He hoped that a satisfactory solution for improving the Agency's financial liquidity could be found with the understanding and co-operation of Member States.

180. In conclusion, he was pleased to note that the Agency had so far successfully fulfilled its role of promoting the peaceful uses of nuclear energy while also contributing to nuclear non-proliferation. Japan would spare no efforts in contributing positively to the Agency's work.

The meeting rose at 1.10 p.m.