



International Atomic Energy Agency

GENERAL CONFERENCE

GC(XXXIII)/OR.313

10 October 1989

GENERAL Distr.

ENGLISH

THIRTY-THIRD (1989) REGULAR SESSION

RECORD OF THE THREE HUNDRED AND THIRTEENTH PLENARY MEETING

Held at the Austria Center Vienna,
on Monday, 25 September 1989, at 10.25 a.m.

Temporary President: Mr. ALI (Malaysia)

President: Mr. CHUNG (Republic of Korea)

CONTENTS

<u>Item of the provisional agenda*</u>		<u>Paragraphs</u>
-	Opening of the session	1 - 6
-	Election of the President	7 - 19
1	Election of officers and appointment of the General Committee	20 - 23
2	Message from the Secretary-General of the United Nations	24 - 29
3	Statement by the Director General	30 - 78
5	Voluntary contributions to the Technical Assistance and Co-operation Fund for 1990	79 - 81
7	General debate and annual report for 1988	82 - 128
-	Statements by the delegates of:	
	United States of America	82 - 92
	Japan	93 - 100
	Union of Soviet Socialist Republics	101 - 115
	Chile	116 - 128

[*] GC(XXXIII)/871 and Add.1-3.

OPENING OF THE SESSION

1. The TEMPORARY PRESIDENT declared the thirty-third 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 General Conference was meeting at a time when the international political climate had greatly improved and thus provided an opportunity for Member States not only to review the Agency's past performance, but also to engage in constructive dialogue aimed at further strengthening international co-operation in the peaceful uses of nuclear energy.

4. The year since the thirty-second session of the General Conference had been on the whole another successful year for the Agency, which had carried out the decisions of the Board of Governors and the Conference in a satisfactory manner. The increased delivery of technical co-operation projects, the efforts undertaken to establish better and more effective safety standards, the successful conduct of numerous scientific and technical meetings and the drafting of a code of practice to prevent indiscriminate dumping of nuclear wastes were only some of the Agency's achievements during the year. He wished, therefore, to pay special tribute to the Director General, Dr. Blix, under whose able leadership and guidance the Secretariat had been able to carry out its tasks with admirable efficiency. He hoped that the Conference would take the appropriate decision in accordance with the Board's recommendation to enable Dr. Blix to continue to direct the Agency during the coming term.

5. Of the many enormous challenges facing the Agency, he wished to mention two in particular, the first being the technical co-operation programme. The value of that programme, which had benefited a large number of developing countries over the years, was evident. However, even more should be done to extend the benefits of nuclear applications to those countries. In that regard the developed and industrialized Member States had a special

responsibility to provide greater financial support so as to enable the Agency to step up its technical co-operation activities in order to meet the increasing needs of the developing countries. At the same time, the latter should in equal measure fulfil their own responsibility of ensuring that the assistance provided was efficiently used and managed.

6. Secondly, practical action was necessary to instil public confidence in nuclear power. Such action should not only include an effective public information programme but should also be aimed at winning the early acceptance by all members of the international community of common standards for nuclear safety and the establishment and universal acceptance of civil and State liability regimes. Those aims were by no means easy to achieve, but were vital in order to retain public confidence in nuclear energy and to counter effectively the pressure from quarters opposed to it.

ELECTION OF THE PRESIDENT

7. The TEMPORARY PRESIDENT invited nominations for the office of President of the Conference. He reminded members that, in accordance with established practice, the President that year should be elected from a Member State in the Far East Group. He had been informed by the Chairman of that Group that it had decided to transmit to the General Conference the candidatures of Ambassador Choi Gi Chol of the Democratic People's Republic of Korea and Professor Kunmo Chung of the Republic of Korea, as consultations within the Group had failed to produce a single nomination. He therefore suggested that the Conference proceed to vote on the matter.

8. Mr. CHOI (Democratic People's Republic of Korea) said that despite the efforts of his delegation and the Far East Group it had not been possible to reach a consensus on the nomination of a candidate for the office of President. Therefore, in order to avoid the necessity of a ballot, which was against most Member States' wishes and would waste valuable time while also undermining a 30-year-old tradition of consensus and thus creating an undesirable precedent, his delegation had decided to withdraw its own candidature. He wished to thank those Member States which had done their best to find a reasonable solution to the problem.

9. The TEMPORARY PRESIDENT thanked the delegation of the Democratic People's Republic of Korea for its understanding and co-operation, which would enable the Conference to proceed without delay.

10. Mr. Chung (Republic of Korea) was elected President of the General Conference for its thirty-third regular session by acclamation.

11. The TEMPORARY PRESIDENT congratulated Mr. Chung on his election.

Mr. Chung (Republic of Korea) took the Chair.

12. The PRESIDENT expressed his deep gratitude to all delegations for their support and conveyed his sincere compliments to Ambassador Abdul Halim bin Ali for the skill and wisdom he had shown as President of the thirty-second regular session of the Conference.

13. Today's world was one of rapid technological change. The number of creative scientific findings had been accelerating exponentially. In 1987 alone, there had been more than 830 000 basic research papers published in reputable international journals. Those scientific findings were converted directly into technological innovations, which were in turn translated into new services and improved products and facilities. There were very good grounds for hoping that scientific and technological advances would resolve the hardships suffered by so many people throughout the world. More than 75% of factors contributing to economic and societal activities were dependent on science and technology. Thus, only advances in those two areas of endeavour could offer solutions to the problems facing the world, including starvation, disease and threats to the environment. Breakthroughs in information technology, genetic engineering, new materials and advanced energy systems were awaited with high hopes and were essential in promoting economic and social development.

14. The reconciliation of science and technology with society's needs should be pursued diligently and more aggressively. The problem of energy was the most serious one facing the technological society and should be tackled squarely. How could civilization be sustained without the adverse consequences of its high energy consumption, namely acid rain, the greenhouse effect and the excessive burning of valuable raw materials which represented resources for other industries? A week previously many participants at the

Fourteenth World Energy Congress in Montreal had agreed that world energy consumption would double within 30 years and that the demand for electricity would grow at double the growth rate of the total energy demand. Economists and engineers agreed that only nuclear energy could promise an ultimate solution for a cleaner, more economical, central-station electric power supply. More and more people were beginning to grasp that truth and it was to be hoped that the public could be educated more widely on the subject of nuclear power and that the world's nuclear generating capability could be developed in a more conciliatory way, in developing as well as developed countries. Nuclear energy was an invaluable resource which could supply the demand for electricity both now and in the foreseeable future.

15. Nuclear technology also provided an instrument for pioneering work in new scientific and technological fields. Radioisotope applications, for example in medicine, agriculture and industry, were already an integral part of daily life. The Agency was proud to have been responsible for organizing and directing such exciting special scientific programmes.

16. Notwithstanding the Agency's good record to date, there was still much to be done. It had to maintain the complete integrity of its safeguards regime and to continue helping the operators of nuclear power plants to improve their safety records. Furthermore, the nuclear power option had to be revitalized as soon as possible. In that regard there were two problems which the Agency was uniquely qualified to handle and which called for the co-operation of all Member States.

17. The first of those problems was public acceptance of nuclear power. The Agency had by now become the internationally recognized authority on nuclear safety and safeguards. Agency documents such as "Basic Safety Principles for Nuclear Power Plants" had become the standard works of reference on the subject. The Agency's safeguards system was highly respected by the public. If the Agency became involved in actively disseminating correct information on nuclear energy and provided Member States with services designed to increase public understanding of nuclear technology, it would eliminate groundless anxieties on the part of the public and help create an environment conducive to more rational energy policies. During the present session, the Agency's Member States should, either formally or informally,

consider its enhanced role in promoting public acceptance of nuclear energy and each country should also look into ways and means of assisting the Secretariat in its efforts to win such acceptance.

18. The second issue was closely related to that year's special scientific programme, entitled "The New Generation of Nuclear Power", at which highly qualified experts would review and discuss the needs of and development strategies for the new generation of nuclear power plants. Member States should seriously consider ways of co-operating internationally to introduce the technology for such plants. Speaking as an engineer who had worked on nuclear power plant design and nuclear safety, he was convinced that a much better, safer and more economical plant could be designed once the appropriate institutional framework had been established. The next generation of nuclear power would be the result of intensive international co-operation, and the Agency could provide the leadership necessary for sharing resources and co-ordinating development activities in a synergetic way. An international research and development effort of that kind was necessary for the sake of future generations.

19. Finally, he appealed to all delegations to work together harmoniously to consolidate the Agency as a truly significant international co-operative body in the field of science and technology and to promote peace and welfare throughout the world. The future belonged to those who had a vision and worked towards it. Today's work should therefore be directed towards and reconciled with tomorrow's vision, the spirit of reconciliation being one which he hoped would distinguish the entire Conference.

ELECTION OF OFFICERS AND APPOINTMENT OF THE GENERAL COMMITTEE

20. The PRESIDENT said that from the consultations that had taken place a consensus seemed to have emerged that the General Conference should elect eight Vice-Presidents, a Chairman of the Committee of the Whole and, exceptionally suspending part of Rule 40 of its Rules of Procedure, six instead of the usual five additional members of the General Committee, which would then have 16 members instead of the usual 15. While two regional groups had yet to agree on their nominations of candidates to serve on the General Committee, the remaining 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: Egypt, Indonesia, Lebanon, Philippines, Union of Soviet Socialist Republics, United Kingdom, United States of America and Uruguay. He further proposed that the delegates of the following Member States be elected as additional members of the General Committee: Czechoslovakia, German Democratic Republic, Luxembourg, Nigeria and Switzerland.

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

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

23. It was so agreed.

MESSAGE FROM THE SECRETARY-GENERAL OF THE UNITED NATIONS

24. Ms. ANSTEE (Representative of the Secretary-General of the United Nations) said that she had pleasure in conveying to the General Conference a message from the Secretary-General of the United Nations.

25. The General Conference was meeting at a specially important time for the Agency and for its contribution to international relations. The past few years had seen unprecedented changes in the international political climate, with a renewal of confidence in multilateralism, collective approaches to solving world problems, and encouraging progress towards resolving some long-standing conflicts. In the field of disarmament, arms limitation and confidence-building, some important agreements had been reached and others appeared to be on their way to conclusion. The international community was now seriously concerned over such emerging critical problems as the need to preserve the environment while sustaining and expanding economic development. The General Conference would deal with many aspects of that issue, especially the search for safe, clean and affordable energy.

26. The Agency played a vital part in providing technical assistance to developing countries; its indispensable contribution to creating sustainable economic development included over one thousand technical co-operation projects in, for example, food production, medicine, mining and hydrology. The Agency's promotion of nuclear safety in the design, construction and

operation of nuclear facilities and in the management of radioactive wastes was essential for improving the benefits of nuclear energy and minimizing its dangers. Its experience in elaborating procedures for accident notification and assistance, in co-operation with other organizations of the United Nations system, had been invaluable.

27. The Agency's safeguards system and its verification role under the Treaty on the Non-Proliferation of Nuclear Weapons (NPT) were essential to that important aspect of arms limitation. So far, no anomaly had been detected that would indicate the diversion of a significant amount of safeguarded material to the manufacture of nuclear weapons, and the Agency's application of safeguards had thus created confidence among the Parties to the Treaty that it was functioning as intended to prevent any one of them from acquiring nuclear weapons. However, as the number of safeguards agreements with the Agency increased, the safeguards system must be expanded and strengthened.

28. That and other aspects of the Treaty would be examined at the Fourth NPT Review Conference in August-September 1990, which would be especially important because its outcome was expected to have a profound impact on the 1995 Review Conference, when the Parties would have to decide on the future of the Treaty. It now remained to strengthen the NPT regime further by still wider adherence to it, by early and significant reductions in the numbers of nuclear weapons, and by other essential control measures.

29. The General Conference had before it a broad agenda covering many of the major international issues of the day, from economic development to disarmament, and the Secretary-General was confident that it would effectively carry forward the task of leading the Agency as it moved into the 1990s, including planning the ways in which it would meet altered circumstances and new demands. That would be challenging work of great importance and he wished the Conference a stimulating and productive meeting.

STATEMENT BY THE DIRECTOR GENERAL

30. The DIRECTOR GENERAL said that one of the most prominent issues at the centre of public discussion in the world during the past year had been the environment. It was seventeen years since the United Nations Conference on

the Human Environment had been held at Stockholm, and the world was becoming painfully aware that, despite all efforts, environmental problems had escalated from local to regional level and now posed global threats - as in the case of the thinning of the ozone layer and the greenhouse effect. In the public eye, nuclear power and energy had so far been associated with environmental problems rather than with their alleviation. In particular, the need to dispose of waste remaining radioactive for thousands of years and the risk of accidents leading to radioactive contamination had led to those attitudes. However, there were signs that some individuals and groups which in the past had been committed to anti-nuclear positions for environmental reasons were taking a cautious new look at nuclear power because they feared that successful resistance to nuclear power might in practice have the result of accelerating the use of fossil fuels and thus exacerbating the environmental consequences of burning such fuels. Other groups had consistently been of the view that nuclear power was an environmentally benign source of energy, emitting no sulphur dioxide, nitrogen oxides or carbon dioxide and adding very little radioactivity to the biosphere. Yet other groups continued to oppose nuclear power and to contend that energy saving or conservation and expansion in the use of renewable sources of energy should be the answers to the world's energy needs and environmental problems. Although the new and intensified concern about the grave environmental impacts of the use of fossil fuels had thus begun to affect the psychological climate for nuclear power, it did not alter the Agency's work in that field, which placed emphasis precisely on the areas which had given rise to fears, namely safety against radioactive releases whether from power plants or disposal sites.

31. Some 50% of the greenhouse effect was traced to the increase in atmospheric carbon dioxide which resulted from the burning of fossil fuels and deforestation. Since fossil fuels were the most important source of primary energy in the world, a number of questions regarding energy had to be answered in order for a strategy to be shaped in response to the greenhouse threat. The most fundamental question was how to limit the emissions of carbon dioxide. Further questions could be derived from that fundamental one, namely how much energy, in particular electricity, would be needed in the future; how far increased energy demands could be offset by higher energy efficiency and conservation; what contribution renewable energy sources, like solar and

wind energy, could make and by when; how significant a continued or expanded use of nuclear power would be in providing energy without contributing carbon dioxide; and which supply mixes would best respond to the world's needs for energy taking into account the environment and economic questions. The forum in which the community of States was considering those issues was the Intergovernmental Panel on Climate Change (IPCC), sponsored by the World Meteorological Organization (WMO) and the United Nations Environment Programme (UNEP). Viable strategies for responding to the greenhouse threat could be expected from those discussions only if scientific experts on the atmosphere were joined by experts on energy. The reports of the IPCC were still outstanding, but it could already be seen from the public discussion of the matters before the Panel that a variety of conflicting views existed on them.

32. Many of the groups and conferences discussing the greenhouse threat had only two recipes for action to reduce carbon dioxide emissions, namely energy conservation and the accelerated development of renewable energy sources, notably solar and wind power. When advanced in general terms, such proposals could be supported by all, but the crucial question was what reduction of carbon dioxide emissions could realistically be expected in the foreseeable future if such methods alone were followed, and there was little in the world today to support the contention that they would offer an adequate response. Over the past 15 years, world primary energy consumption had increased by 2.2% a year, and in developing countries by more than double that figure. Informed organizations agreed that those trends would continue, in spite of conservation measures, and forecast increases up to the year 2005 of some 2% per year for the world as a whole and 2-3% a year for the developing countries. Demand for electricity was expected to rise at an even higher rate. Barring some dramatic development leading to drastic government action, and judging from past experience, additional conservation policies were unlikely to offset much of the further increased demand.

33. Various calculations had been made as to how much renewable sources of energy - apart from hydroelectric power - might contribute in the future. Today, those sources contributed 0.3%, most of which was geothermal, and there was little to suggest anything but a modest contribution in the coming two decades. The Executive Director of the International Energy Agency in Paris

had estimated that they might at the most contribute 5% of world energy consumption by the year 2010, a view echoed by the recent Fourteenth Congress of the World Energy Conference in Montreal, which had concluded that it must be recognized from a realistic point of view that alternative and renewable energy sources were not likely to provide a major part of the world's future energy requirements in the foreseeable future - except for hydropower, which was likely to play a major role in some areas, although the potential had largely been exploited in others. Regarding conservation, the World Energy Conference had concluded that it was an important issue, but that it was necessary to be realistic about it inasmuch as few subjects had been or were the object of so much wishful thinking.

34. As to the potential significance of continued and expanded use of nuclear power in restraining carbon dioxide emissions and the greenhouse effect, views differed rather widely. Some suggested that the electric power production sector was a small contributor to the greenhouse gases and that greater use of nuclear power for electricity generation would therefore not be very helpful. However, the following data should be noted. At the present time, the generation of electric power contributed about 25% of the world's carbon dioxide emissions, and nuclear power provided 17% of that electricity without any carbon dioxide - only a few percentage points less than hydropower, also free of carbon dioxide, which provided 20%. The amount of approximately 63% of electricity generated by fossil-fuelled power stations thus contributed 25% of the world's carbon dioxide emissions. Given the predominant view of competent organizations that the demand for electricity would double within the next 15-20 years, it would clearly matter whether nuclear or fossil-fuelled power was used. The summit meeting of seven industrialized nations in Paris in July 1989 had clearly recognized that. In their concluding declaration, the leaders of Canada, the Federal Republic of Germany, France, Italy, Japan, the United Kingdom and the United States and the President of the Commission of the European Communities had stated:

"We are committed to maintaining the highest safety standards for nuclear power plants and to strengthening international co-operation in safe operation of power plants and waste management, and we recognize that nuclear power also plays an important role in limiting output of greenhouse gases."

Also in July, President Gorbachev of the Soviet Union had said:

"An opinion has grown in the world, and I share this opinion, that one cannot do without nuclear energy. What place it is to take in our overall electricity production is another question. And, naturally, safety should be guaranteed. But we won't survive without nuclear power."

35. A brochure issued recently by the French Government about global warming indicated that emissions of carbon dioxide in France for 1973 had been 450 million tonnes. In 1985 they had been 325 million tonnes, with 110 million tonnes indicated as having been avoided through energy saving and 140 million tonnes through the use of nuclear power. During 1988, 14 new nuclear power stations had been connected to the grid world-wide, while some 100 more remained under construction. It was clear that in the future as at present the world's energy supply would be a mix. What mattered, however, was how that mix would be composed. The conclusions of the Paris summit, apart from recognizing the relevance of nuclear power in the face of the greenhouse threat, reflected the understanding that the viability of nuclear power was dependent upon safe operation of power plants and safe waste management.

36. The awareness that nuclear safety must be uniformly high around the world had led to additional safety measures at the national level and to a remarkable increase in international co-operation. Where the Agency's work in those areas was concerned, two approaches were being adopted simultaneously to the strengthening of safety: one through technological change, and the other through attention to operational safety. In its pioneering report entitled "Basic Safety Principles for Nuclear Power Plants", the Agency's International Safety Advisory Group (INSAG) had formulated a coherent and rational safety approach, encompassing both technological and operational requirements and designed to provide significant strengthening of safety, which seemed likely to become an important reference work for designers, constructors, regulators and operators.

37. In the field of technical change the modifications to all RBMK-type reactors in the Soviet Union should be noted, as also the introduction in a number of countries of filtered venting of containments in existing plants. Much discussion and much work were centred on the development and design of new reactor models and systems with enhanced safety features. Governments should perhaps consider whether some new type or types of power reactor could

be designed and developed by a group of Member States in a scheme under Agency auspices, on the lines of the International Thermonuclear Experimental Reactor (ITER) in the field of fusion. High development costs and the scarcity of government resources were arguments for an international pooling of effort. In that connection, the General Conference would be discussing the issue of new reactors under the scientific programme.

38. There was increasing activity in the area of strengthening operational safety, which involved over 400 existing plants. He welcomed the creation of the World Association of Nuclear Operators (WANO), whose main purpose was to promote direct exchange of experience between plant operators to enhance performance and safety. The first Chairman of the Governing Board of WANO, Lord Marshall of Goring, would be explaining the working of that organization in the course of the general debate. Arrangements had already been put in place for continuous co-operation between WANO and the Agency.

39. Since the start of the Agency's programme of Operational Safety Review Teams (OSARTs) in 1983, 38 OSART missions to 22 countries had been completed. The continuing usefulness of the programme was evidenced by expanding governmental support and growing demand for OSARTs. Safety advisory services had for many years been offered to Member States requesting assistance in reviewing various safety aspects of nuclear installations. In June 1989 work had begun on the initial phase of a comprehensive safety review of the nuclear district heating plant in Gorky in the Soviet Union, which would cover safety design, probabilistic safety analysis and operational safety. A safety advisory mission focusing on design issues had also been undertaken for the KNU-11 and -12 units in the Republic of Korea.

40. In January 1989, the Agency's Emergency Response System (ERS) had been formally put into operation. However, in many Member States parties to the Conventions on Early Notification of a Nuclear Accident and on Assistance in the Case of a Nuclear Accident or Radiological Emergency the necessary arrangements for emergency response had not yet been completed, and he urged that action be taken so that the system could work if it was needed. The Emergency Assistance Convention now had 37 parties and the Early Notification Convention 42 parties.

41. A general problem with the promotion of nuclear energy was poor public understanding of matters relating to radiation. There was often excessive concern about small additional doses of radiation from the normal operation of nuclear power plants or about small and unlikely leakages of radioactive substances from waste disposal sites in the distant future. On the other hand, the public was frequently unaware that radiation was and always had been ubiquitous, that it was stronger at high altitudes than at low ones, and stronger in some geological locations than in others.

42. The public was unaware that the additional radiation to which it was now subjected through man-made activities was a small fraction of what it received naturally, and that the medical sector was a much bigger contributor to that fraction than was nuclear power. Radiation protection standards had wide safety margins. They were unique in assuming that any additional dose of radiation, however small, might be harmful and they prescribed that today's various nuclear activities must be carried out in such a way that future generations were as well protected against radiation as the present generation. The public was not well informed about those matters and without better public understanding rational attitudes could hardly be expected to develop regarding the use of nuclear power or the disposal of nuclear waste. Any information provided should include the significant fact that the scientific, medical and industrial communities using radiation had followed stringent regulations almost from the outset and that as a result additional doses to the public had been kept very low. It was interesting to note that, while the carbon dioxide concentration in the atmosphere had increased by 25% through the normal combustion of fossil fuels since the pre-industrial era, all normal activities associated with nuclear power - from mining to waste disposal - now contributed an additional collective dose of less than 0.1% of the dose received from natural sources.

43. Rules requiring that additional exposure to radiation should be prevented or very severely limited would be an advantage only if the costs were not too high. Moreover, it must be understood that, within certain limits, actual exposure in excess of the preventive standards set need not be a source of concern. Decisions about costly or difficult post-accident measures, for example regarding food intake or evacuation, should certainly be

adopted on a basis that was independent of such preventive standards. In his opinion, international discussion was needed on what attitudes could reasonably be adopted in the face of radiation levels for which individual risk was very small.

44. While the radiation protection standards adopted had very wide margins of safety, many countries using radiation sources actually lacked the necessary infrastructure for implementing a safety policy based on international recommendations. That had led to an increasing interest in international expert advice on long-term strategies for the use and control of ionizing radiation. The Agency was responding fully to that interest, and since 1986 Radiation Protection Advisory Teams (RAPATs) had been invited to provide such advice in 44 countries, and three more missions were planned for the current year.

45. He had recently received two proposals from the Soviet Union which deserved careful consideration by the General Conference. The first concerned the establishment of a centre for international research at Chernobyl, which could offer interested Member States and their nuclear institutions unique opportunities to study important biological and technological questions related to nuclear accidents. He was examining with the Soviet authorities how the proposal could be carried out without major budgetary implications for the Agency, and he intended to arrange for a meeting of interested countries in the near future. Apart from yielding specific research gains, such a centre might help to improve the accuracy of the information reaching the world news media about the Chernobyl aftermath, which currently was often erroneous.

46. The second proposal was for an international research project on waste disposal at a site in the Soviet Union; such a project could be of great benefit to the Soviet Union and to many Member States which would have to dispose of such waste in their own territories and lacked underground research facilities, or which wished to supplement their own research. In that connection, the Soviet authorities had made available to the Agency in July a report on the effects of the accident which had occurred in 1957 at a military production facility at Kyshtym in the Southern Urals. The report deserved considerable attention since it provided unique information about the impact

of a serious radiological accident on health and agriculture over a period of 30 years. The report and additional information to be provided by Soviet experts would be discussed at the Agency's symposium on accident recovery operations to be held in Vienna in November 1989.

47. It was a common public view that viable methods did not yet exist for the safe disposal of high-level radioactive waste. It was important, however, to correct that view, and responsibility for that task lay mainly with national governments and authorities.

48. An increasing number of international activities relating to radioactive waste disposal were being pursued through the Agency. In order to provide advice and guidance on the Agency's entire waste management programme a new international standing group, known as the International Radioactive Waste Management Advisory Committee (INWAC) had been established, composed of experts from 18 Member States representing both developed and developing countries.

49. During the past year the scattered publications on safety aspects of waste management in the IAEA Safety Series had been replaced by a more formalized series of safety documents covering the entire field of radioactive waste management. The new series, inspired by NUSS, would be entitled "Radioactive Waste Safety Standards" (RADWASS). He hoped that the publication of those standards in a separate series would more clearly demonstrate the existence of coherent systems for safe waste management and would contribute to international harmonization. In that connection, the Board of Governors had recently authorized him to issue a safety standards document entitled "Safety Principles and Technical Criteria for the Underground Disposal of High-Level Radioactive Wastes", which set out the basic safety philosophy for the planning of underground waste disposal, the main objective of course being to isolate the waste from the human environment for extended periods of time. The basic requirements laid down in the document arose directly from radiation protection principles covering events and processes which could occur in a deep underground repository in the distant future. For example, it stated that repositories should be designed so that future generations would be guaranteed the same protection as people living today, and that the repositories should be constructed so as to be independent of the need for any

action or controls by future generations. It had been agreed by experts from Member States that the document represented a common set of objectives for repository design. There was thus an international consensus on the way in which underground waste repositories should be designed and on the levels of safety which should be achieved. The document would be supplemented later by guidance and recommendations on more specific technical criteria.

50. The Agency had also been active in assisting Member States in implementing national waste management programmes. Since the establishment of the Waste Management Advisory Programme (WAMAP) in 1987, WAMAP mission teams had been invited to 22 countries to provide advice on the establishment of programmes for safe management of radioactive wastes arising from both nuclear applications and power programmes. In 1989, seven countries had been visited by WAMAP teams and an additional mission was planned before the end of the year.

51. Another service established recently provided for peer reviews of selected aspects of national waste management programmes.

52. In April 1989 a meeting had been held at the Agency's Headquarters at which trade union representatives from many countries had discussed their interest in enhancing international co-operation on the safety of civilian nuclear facilities. Invitations to the meeting had been issued through the International Labour Organisation (ILO). He warmly welcomed the interest of the trade unions, as they represented large groups of employees at nuclear installations, were interested in the safety of those employees as well as in the provision of energy to industry, and had an understandable and legitimate interest in the generation of electricity through safe nuclear methods. The main comments and proposals made during the meeting had been summarized by its Chairman in a statement issued as Annex C to document GOV/INF/567. According to those conclusions, the prime responsibility for developing an effective nuclear safety regime must lie with the utilities operating nuclear facilities and with the relevant State authorities. Nevertheless, the meeting had taken the view that there was a need for independent scrutiny at the international level over the functioning of national safety regimes, and a number of specific recommendations had been addressed to the IAEA. He recommended that Member Governments should consider the ideas and proposals advanced.

53. Nuclear power plants were in operation or under construction in only 31 of the Agency's 113 Member States, most of the others being interested mainly in the applications of radioisotopes and radiation, for example in medicine and agriculture. The economic value of such applications might not be far from that of the nuclear power industry - quite apart from the great benefits for human health and welfare. For example, on average, one out of every four hospital patients in the Western industrialized world would at some time be subjected to a nuclear technique in diagnosis or therapy. Some 50-60% of all cancer patients were treated by radiotherapy. Also, the application of nuclear techniques often directly supported environmental assessments. The work of the Agency's laboratories at Monaco and Seibersdorf was most important in that connection. For instance, the measurement of variations in the naturally occurring isotopes in water was indispensable in hydrological investigations for water resource development. Essentially the same type of measurement had also been used in a major environmental project which the Agency was executing in the Amazon. One significant finding from that project was that 48% of the rainfall in the region was derived from local water sources. An exhibition in the Conference Centre showed some of the results of that project. In agriculture, radioisotope applications had made it possible to optimize the use of nitrogen fertilizers in rice production, potentially achieving savings of 50% on fertilizers and thereby also reducing the runoff which could have serious consequences for groundwater, rivers and lakes. In 1987 the dramatic news had been received of the appearance of the New World screwworm in the Libyan Arab Jamahiriya. That insect pest, which had so far only existed in the Americas and which had devastating effects on cattle, could become extremely serious if it were to spread through Africa and affect wildlife. The only practical eradication method currently available was the sterile insect technique, which had proved very successful in the eradication of the screwworm from the southern United States and most of Mexico. He was glad that the Food and Agriculture Organization of the United Nations (FAO), which must have the primary responsibility, had decided to attempt an eradication campaign in the Libyan Arab Jamahiriya and to co-operate with the Agency in using the sterile-insect technique.

54. For the most part nuclear applications were accepted by the public, but the preservation of food through irradiation had been opposed by consumer groups in several countries. Irradiation was a uniquely well suited method of preserving and disinfesting foodstuffs. Through decades of studies, it had been shown to have no negative health consequences and it had been accepted by the Codex Alimentarius Commission without reservation up to a maximum dose of 10 kilogray. In December 1988 the International Conference on the Acceptance, Control of and International Trade in Irradiated Food in Geneva had accepted a document recommending registration and licensing, regulation and inspection of food irradiation facilities and labelling of irradiated food. The document stated that food irradiation was a valuable preservation technique if the correct controls were exercised. Food irradiation would not replace established large-scale preservation methods, like canning, drying and freezing, but it was potentially very valuable for particular foodstuffs such as spices, shellfish and some fruits, and it might be of special importance for developing countries. It would be a great pity if that technique were to be discarded as a casualty of poor understanding and misleading campaigns.

55. He was glad to report that the ITER project had successfully completed the definition phase of its work. The project, which would complete the conceptual design of the next step tokamak fusion experiment by the end of 1990, was of major importance to the international fusion community, and preliminary discussions would now start about a possible second phase. The information generated by the project was useful to all Member States which maintained an interest in fusion as a potentially inexhaustible source of energy. In order to make that material readily available to Member States, a special ITER publication series had been initiated.

56. The International Centre for Theoretical Physics (ICTP) in Trieste would be celebrating its 25th anniversary in October. It was jointly operated by the Agency and the United Nations Educational, Scientific and Cultural Organization (UNESCO) with a major financial input from the Government of Italy. Under the untiring guidance of its Director, Abdus Salam - Nobel Prize Winner for Physics in 1979 - it had grown from a small institution to a large complex of interrelated and integrated activities for research and training-for-research at the highest level, covering a vast range of

disciplines. More than 4000 physicists and mathematicians now came to Trieste each year, nearly 60% of them being from developing countries. Since 1964, when his predecessor had launched the centre, it had welcomed 40 000 scientists from all over the world.

57. With regard to safeguards, in 1988 the Board of Governors had expressed the wish that the Safeguards Implementation Report (SIR) should be drafted in clear and simple language and the Secretariat had developed a substantially new format which had been submitted to the Board in June 1989. There had been no change, of course, in the overall objective of the report, namely to provide information that would enable the Board to evaluate fully the effectiveness and efficiency of the Agency's safeguards. The SIR for 1988, in the new format, had been generally welcomed by the Board of Governors.

58. In order to maintain maximum efficiency and effectiveness of safeguards operations, which were inevitably growing and involving ever more complex and delicate tasks, he had in 1988 requested the Department of Safeguards to adjust the organization of the Department; to develop and document unified criteria governing safeguards implementation and evaluation; and to investigate possibilities of transferring certain tasks arising from Member States' support programmes to the Member States themselves in order to free some Secretariat posts for other functions.

59. The changes made in the organization of the Department of Safeguards should result in greater efficiency and effectiveness; for instance, some posts would be saved in the development and support areas and shifted to the Divisions of Operations.

60. Using detailed advice from the Standing Advisory Group on Safeguards Implementation (SAGSI), a unified set of criteria was now being worked out governing all safeguards implementation activities in the field and at Headquarters as well as the evaluation of inspection goal attainment. It was foreseen that the new criteria would be introduced in 1991 and updated periodically. A vital condition for further improved effectiveness and efficiency remained the co-operation of Member States with the Inspectorate. In most cases such co-operation was good, but not infrequently the Secretariat was unable to apply the most advanced safeguards techniques because some States would not accept any change in arrangements reached earlier. The

Agency could, of course, continue to use old techniques - at a cost in effectiveness and resources. Safeguards agreements and subsidiary arrangements concluded many years earlier often failed to reflect the present level of technology and the conditions now prevailing in nuclear facilities. He therefore urged all Member States to co-operate with the Secretariat in making use of more than 20 years of experience in a constructive manner to work out new and revised subsidiary arrangements and facility attachments. He thanked the 20 Member States which had accepted simplified procedures for the designation of safeguards inspectors. Quick responses to requests for inspector designations and acceptance of a large number of inspectors facilitated scheduling and optimum use of inspector travel. He appealed to Member States which had not yet done so to respond to the Agency's proposals.

61. In the past few years the Agency had succeeded in accepting growing safeguards responsibilities without increasing the overall budget. The safeguards budget must, however, be expected to expand in the future, when new equipment would be needed and a number of large and complex fuel cycle facilities would come under safeguards. In that context, he wished to inform the General Conference, as he had informed the Board of Governors the previous week, that the Secretariat was negotiating several new safeguards agreements. It had recently received comments from the Democratic People's Republic of Korea on a draft safeguards agreement under the NPT and had responded to those comments and suggested further discussions, in which the Secretariat would bear in mind the hope expressed by many Governors that the agreement would be ready in time for the February 1990 Board meetings and that it would follow the pattern of other NPT safeguards agreements.

62. Understanding had also been reached with the Socialist Republic of Viet Nam on a safeguards agreement under the NPT which was to be submitted to the Board of Governors for approval the following week.

63. He had also informed the Board that he had received a message from the Ambassador of South Africa stating that her Government, in line with its past statements on the matter, was giving serious consideration to its current commitments to the Agency and the possibility of accession to the NPT. Her Government would take part in a further round of consultations with the depositaries of the NPT early in December, and he had since received a message

from the Ambassadors of the United Kingdom, the United States of America and the Soviet Union confirming that a meeting with South Africa would take place at that time. At the request of the three Ambassadors he had circulated the text of the message.

64. With reference to the 1988 General Conference resolution GC(XXXII)/RES/487 concerning the nuclear capabilities and threat of Israel, he referred to the information given in documents GC(XXXIII)/886 and 887. The Secretariat was ready to assist any Member States in the region which might wish to consider the technical matters discussed in those documents.

65. As on earlier occasions, the Agency had been requested to provide background papers for the Fourth NPT Review Conference to be held in Geneva in 1990. Drafts of such papers had been considered in the Preparatory Committee which had met during the present month in Geneva. The 1990 Review Conference would be the last of its kind, as the meeting in 1995 would have to consider the future extension of the NPT.

66. The Third NPT Review Conference had declared that the Agency should take full advantage of the co-operation offered in the safeguards agreements voluntarily concluded with the Agency by four of the nuclear-weapon States and evaluate further the economic and practical possibility of extending the application of safeguards to additional civil facilities in nuclear-weapon States. The Secretariat was ready to follow the recommendation when the necessary resources were made available. It had made some calculations of the cost of safeguarding all non-military nuclear facilities in nuclear-weapon States and had raised with those States the possibility of their reporting to the Agency on materials in facilities offered for safeguards - without the verification of such reports through the more costly inspection part of safeguards. Such reporting was in fact provided by one nuclear-weapon State, namely the United Kingdom. Several of the supplier States now emerging had stated that it was their policy to ensure that exported nuclear material or equipment would be subject to Agency safeguards. The Board of Governors had already approved a number of safeguards agreements resulting from those policies. To achieve optimal functioning of the safeguards system it would be desirable for all new suppliers to follow such policies. He would also ask

all supplier States, whether old or new, to assist the Agency by informing it in advance of all intended exports and specific shipments so that safeguards could be applied in good time.

67. Pursuant to General Conference resolution GC(XXXII)/RES/491, the Board of Governors in February 1989 had established an open-ended Working Group on Liability for Nuclear Damage to study all aspects of the question. The first meeting, held from 29 May to 1 June 1989 under the chairmanship of the Governor from the Netherlands, had made an inventory of gaps and other problems in the existing liability regime and had agreed on a list of issues that needed further consideration. That list included several central issues, such as the concept and definition of nuclear damage and the financial limitation of liability. The Working Group was to hold its second meeting in October 1989. In that context, Mexico and Hungary had acceded to the Vienna Convention on Civil Liability for Nuclear Damage on 25 April and 28 July 1989, respectively, and the Board had been informed in June that Poland was proposing to adhere to the Convention.

68. Pursuant to resolution GC(XXXII)/RES/490 on dumping of nuclear wastes, a group of experts on radioactive waste transactions had met in Vienna from 22 to 25 May to draft a code of practice. The group had reviewed a working paper prepared by the Secretariat and containing basic principles for inclusion in such a code of practice, and had adopted recommendations concerning the structure of a code. The group would be meeting again in January 1990 and had asked the Secretariat to prepare a draft code of practice on the basis of the guidance given. In the light of the progress achieved at the first meeting he was hopeful that the group would be able to complete its task in time for submission of a draft code to the Board in June 1990 and to the General Conference in the same year.

69. Recent statements by members of the Board of Governors had strengthened his feeling that more emphasis should be placed on public information. Although the budget for that activity imposed severe constraints on what could be done, efforts would be made over the coming 12 months to respond to requests by a number of Member States for co-operation in arranging seminars providing factual information on nuclear energy, safety and waste management. The extrabudgetary funds pledged by the Government of Japan for additional

efforts in the public information area were particularly welcome at the present juncture and he hoped that other interested Member States would come forward with similar support.

70. Technical co-operation between the Agency and its developing Member States remained a continuously expanding activity. In the past five years, when the Regular Budget had been practically at zero growth in real terms, technical co-operation funds had expanded considerably and technical co-operation had become an increasingly important part of the Agency's work. The transfer of knowledge and technology was no longer largely a North-South operation. During 1988 40% of all fellows, training course participants and visiting scientists had received their training in developing Member States and 43% of all experts carrying out technical co-operation assignments had come from developing countries. Through existing regional co-operation agreements, RCA in Asia and ARCAL in Latin America, resources were pooled so that individual technologies already in place in one country could be shared with others in the region. There had been encouraging initiatives in the past year by Member States in Africa exploring the possibility of similar regional arrangements and the Agency would assist in every way in bringing such efforts to fruition.

71. There had been a growing feeling that some of the annual publications dealing with the Agency's work previously issued mainly to highly specialized groups would be of interest to a wider audience and it had therefore been decided to combine those publications with annual reviews of specific topics in the other main areas of the Agency's programme into a yearbook which would provide a comprehensive view of the nuclear world and the Agency's contribution to it. The first issue of the new Yearbook was now available, and he hoped it would become recognized as an easily accessible source not only for the nuclear community but also for a broader audience interested in the peaceful uses of nuclear energy and international co-operation activities related thereto.

72. He wished to express his particular concern about the continuous deterioration in the conditions of employment of staff in the Professional and higher categories. For more than five years they had received no cost-of-living adjustment and as a result Professional staff had suffered considerable

losses in income, both in real terms in local currency and in purchasing power. For example, a staff member at grade P-4 step V in Vienna had seen take-home pay decrease by about 7.4% over the period 1984-89, and if inflation was taken into account, the loss in purchasing power was as high as 17%. Not surprisingly, that was having an impact on the Agency's ability to attract and retain staff of the required calibre. Since November 1986, one third of Professional staff members resigning from the Agency had given as their reason the deterioration in salaries and pensions or the limited career prospects. About 7% of applicants offered Professional appointments declined the offer. The main reason was the unattractive salaries. Although large numbers of applications were still received in response to many vacancy notices, the Agency's ability to attract highly qualified candidates from some countries seemed to have declined.

73. The Secretariat staff was a resource that was vitally needed for the Agency's work. If no remedial action was taken, the Agency's ability to fulfil its tasks would eventually be affected. Furthermore, if the salaries paid by the Agency were not competitive enough to attract highly qualified candidates from all States, including those with higher national remuneration levels, an adequate geographical balance in the composition of the Secretariat would be difficult to achieve and maintain.

74. He regretted having to call attention once again to the precarious financial situation in which the Agency sometimes found itself. Until a few days earlier it had been feared that the Agency was heading for another cash crisis because a majority of Member States, including the three largest contributors, had not met their financial obligations on time. Fortunately, the danger had now disappeared - for the time being. However, when Member States, and especially major contributors, failed to pay their assessed contributions or fell behind their usual payment schedule, the Agency was placed in financial jeopardy and its reputation as a well-managed, efficient and reliable international organization was at stake. Since 70% of the Agency's budget represented staff costs, its ability to adapt disbursements to the cash inflow was very limited.

75. The Agency had been fortunate for most of its existence in basing its work on broad common interests of East and West, North and South, but it was not of course immune to world tensions, global or regional, and even less so to attitudes taken in or by Member States to nuclear energy. As an instrument for co-operation between Member States the Agency must at all times be able to respond to what they needed and wanted. Where interests were divergent, accommodation, compromise and consensus were often possible, otherwise there was inaction until consensus could be achieved or, more rarely, majority direction. While some regional or other political conflicts, such as those in the Middle East and in southern Africa, continued to present the Agency with problems, the general climate of East-West and North-South co-operation between Members was excellent and improving. Regarding the problems he had mentioned, constructive efforts were being made which might, one day, yield welcome results. A great deal could be achieved in a positive climate.

76. The foregoing report would have given some impression of the great volume and variety of work that went on under Agency auspices. It might indeed seem amazing that so much could be done with a Regular Budget of US \$150 million and technical co-operation resources of an additional \$45 million. The explanation of course was that the Agency's budget and technical assistance resources covered only a small part of the co-operation effort. Other major parts were played, and paid for, by Member States individually. Representatives and experts were sent to Agency meetings at the direct expense of Members. The heavy homework was performed in capitals and national authorities. Research contracts covered only a fraction of the cost of the research that was co-ordinated thereby. Technical co-operation resources contributed foreign equipment and expertise to national projects. Increasingly also, Members engaged the Agency in missions for which they paid all or a large part of the costs, as in OSARTS.

77. The diplomatic missions accredited to the Agency were the antennae of Member Governments for picking up and sending messages on co-operation, they were instruments assisting their Governments in shaping positions, and they were remote-control tools of the Governments in reaching international action. The Agency's Secretariat, drawn in large measure from national administrations and with a fair amount of staff rotation between national

structures and the Agency, served Members as impartial experts, providing ideas for possible beneficial co-operation, and as executors of action to which Members had agreed. The Secretariat welcomed the successes achieved and, like the Members, was determined to tackle and solve the difficulties encountered.

78. In conclusion, he thanked the Government of Austria and the City of Vienna which acted as host to the Agency. His thanks were particularly appropriate now, when it was ten years since the Agency had moved to the Vienna International Centre premises which the Government of Austria had made available, and when a start had been made on the construction of an additional wing to the Seibersdorf laboratories through the support of several Governments, including that of Austria. He also thanked the Government of the Principality of Monaco which had provided new and modern premises for the Agency's Laboratory for Marine Radioactivity, inaugurated the previous autumn.

VOLUNTARY CONTRIBUTIONS TO THE TECHNICAL ASSISTANCE AND CO-OPERATION FUND FOR 1990

79. The PRESIDENT said that for a number of years, beginning with 1982, the Agency's policy-making organs had observed the practice of recommending indicative planning figures to serve in fixing annual targets for voluntary contributions to the Technical Assistance and Co-operation Fund. In accordance with an agreement at the Board of Governors in 1985, subsequently forwarded to the General Conference, the indicative planning figure for 1990 was US \$45.5 million, and in the draft resolution relating to the Fund in Annex III to document GC(XXXIII)/875 the Board of Governors recommended that figure as the target for voluntary contributions to the Fund for the following year.

80. Early pledging of voluntary contributions greatly facilitated the work of the Secretariat in planning the Agency's technical assistance programmes and he urged all delegations that were in a position to do so, but had not done so as yet, to notify the Secretariat during the current session of the voluntary contributions that their Governments would be making to the Technical Assistance and Co-operation Fund in 1990.

81. He would report at the end of the session, under a later agenda item, on the voluntary contributions so far pledged and was confident that he would be able to report that a considerable percentage of the 1990 target figure had been pledged.

GENERAL DEBATE AND ANNUAL REPORT FOR 1988 (GC(XXXIII)/873)

82. Mr. WATKINS (United States of America) extended his Administration's greetings and best wishes to Mr. Chung, the President of the Conference, to the representatives of Member States present, and to the Director General and the Secretariat. He congratulated the President on his election, and saluted the Director General, pledging support during his new term of office. He then read out the following message from the President of the United States, Mr. George Bush:

"Shortly after I assumed office, I vowed to the United States Congress that I would work to strengthen the IAEA. It was a commitment based on a recognition of the Agency's vital role in preventing the spread of nuclear weapons, and in promoting co-operation in peaceful nuclear technologies among States. It was a commitment founded upon the historically strong and active support provided to the IAEA by the United States. The U.S. commitment to the IAEA remains firm, particularly as we look forward to the challenges of the next decade.

"One of the greatest challenges we will face is the need to prevent the spread of nuclear weapons. The IAEA continues to be one of the most important institutional barriers to nuclear weapons proliferation. As such, it plays a notable role in preserving global peace and security through its safeguards function and through its promotion of the peaceful applications of nuclear energy. This, I believe, is the Agency's first priority, and one which deserves the unwavering commitment and support of its members.

"A second challenge we face is that of ensuring sufficient energy resources to meet the demands of sustained, non-inflationary growth in the world. This task is made all the more difficult when we consider the impact that dependence upon fossil fuels is now having upon the global ecosystem.

"I believe the IAEA has much to offer in assisting countries to confront the development challenges of the 1990s and the next century. Nuclear energy offers a safe, reliable, and environmentally compatible means to provide electrical power. It must be considered - together with conservation and development of other energy technologies - as part of global efforts to enhance energy supplies while addressing global climate change. The Agency's efforts to improve nuclear safety, and to promote measures for the safe and long-term disposal of nuclear

wastes, will be important to overcoming public concerns - in the United States and in many other countries - regarding greater reliance upon nuclear power. The IAEA can further public acceptance of nuclear power by promoting understanding of advanced nuclear technologies that will contribute to making nuclear energy cheaper, safer, and more quickly available.

"The IAEA will play a key role in addressing many of the challenges of the 1990s. I look forward to continuing the close co-operation between the United States and IAEA in the years ahead. On behalf of the American people, I would like to wish all delegates and members of the Secretariat a successful and productive General Conference."

83. The IAEA stood at the centre of international efforts to prevent the further spread of nuclear weapons. Its unique system of international nuclear safeguards made a major contribution to those efforts. IAEA safeguards also provided many and varied opportunities for international co-operation in the peaceful uses of nuclear energy which were often taken for granted. Without verifiable assurances against the hostile use of nuclear energy the tremendous potential of the peaceful atom could never be realized.

84. One had also to be prepared to meet the challenges posed by pollution, whether it be of the air, the water, or even the ground. Where pollution had once been looked upon as affecting only the immediate area surrounding the source of that pollution, it was now clear that its effects were global. A serious nuclear accident affected everyone, not only because radioactive fission products did not respect national borders, but because the political fallout rained on every nation. Just slightly less than two weeks after the Chernobyl accident particles of radioactive fallout had reached Atlanta, Georgia, about 10 000 miles away. No longer could any country disregard the effects of pollution on its neighbours.

85. The IAEA's focus was specific but nonetheless very significant. On at least four fronts it played a most important role. Firstly, in the safeguards programme, the work to deter the further spread of nuclear weapons made a major contribution to the security of all nations of the world. Secondly, in the area of safety, the work to prevent future nuclear accidents was crucial. Although safety itself was primarily a national responsibility, the IAEA played a critical role, providing guidance and facilitating the predominant role of Member States in assuring safety. Thirdly, by encouraging the

peaceful use of atomic energy for health, research and electricity generation, the Agency offered the world a promising new hope and a viable alternative to excessive use of fossil fuels. Lastly, in the area of waste management, the Agency continued to contribute greatly to the safe and environmentally sound treatment, storage, and disposal of waste.

86. In addition, in its work in such diverse areas as radiation dosimetry services, improving human health, guiding transport of radioactive materials, fostering adequate and safe food supplies, and in maintaining the specialized scientific data networks, the IAEA was making a vital contribution, and those efforts should continue. The FAO/IAEA Joint Division of Nuclear Techniques in Food and Agriculture was celebrating its 25th anniversary. In view of the struggle to feed an expanding world population, such programmes were of ever increasing significance.

87. He had been appointed Secretary of Energy by President Bush nine months previously. Accepting the President's offer he had encountered a department beset with wide-ranging problems, from the facilities themselves where the operating philosophy had placed an inadequate emphasis on a healthy and safe environment, to the fact that the department itself which was responsible for articulating United States energy policy had not kept pace either with national or world events. During the previous nine months some necessary changes had been made and a significantly reinforced foundation for future improvement laid. There had been problems with certain Department of Energy facilities in that too little attention was being paid to safety and the environment. Changes had since been instituted within the Department of Energy to ensure that safety and protection of the environment carried the highest priorities. Under a new initiative, a ten point plan announced in June, a new course had been charted assuring full accountability in the areas of environment, safety, and health. The United States Department of Energy had thus demonstrated its commitment to complying with the nation's increasingly stringent environmental laws, and to protecting public health and safety while simultaneously achieving primary objectives. The United States, by those actions, had openly admitted to a problem affecting all Americans and acted to correct it, as they would undoubtedly soon proceed to strengthening clean air laws. He urged all nations present to follow suit.

88. It was imperative that national energy policy keep pace with a changing world. Accordingly, the United States, through the Department of Energy, had begun a process of formulating a national energy strategy designed to serve as a blueprint for United States energy policy and governmental decisions, and to guide the United States in achieving ample supplies of competitively priced energy in a manner sensitive to the environment, security and the health needs of the American people. As part of the process of formulating that national energy strategy, the United States would elicit views of other nations. Nuclear power would play a fundamental role in the national energy strategy. The world was at the threshold of a new era for nuclear power -- an era of inherently more safe, better managed, economically competitive, plentiful, and clean alternatives to fossil fuels. As the United States rapidly approached a shortfall in electricity supplies with demand exceeding production capacity, nuclear power would probably be increasingly viewed as a safe and economical alternative to meet expanding electricity needs. No single fuel source should be called upon, but rather a mixed and balanced energy supply to maximize energy security. Nuclear power currently furnished 20 per cent of US electricity needs from more than 100 operating nuclear plants, most of them with excellent operating and safety records, and many regions of the United States depended on nuclear power for 30-60 per cent of their total power requirements.

89. On the other hand, support for nuclear energy world-wide had been seriously eroded. Some believed that public confidence in the nuclear option could be regained through advanced designs. While new designs promising enhanced safety were clearly important in providing safer and cheaper generating plants for the future, new designs would not restore the public's confidence in the 450 nuclear plants currently operating world-wide. The key to restoring public confidence in nuclear energy was a positive track record of operational safety. Nuclear safety was not something that could be instilled through regulation or legislation. It had to come from a commitment on the part of the industry -- the owners and operators of nuclear facilities. Organizations such as the Institute of Nuclear Power Operations in the United States and the World Association of Nuclear Operators played a significant supporting role, but they were no substitutes for direct management attention to safety in the day-to-day operation of plants.

90. The achievement of safe nuclear operations was no mystery but it came at a high cost. Following the Three-Mile Island nuclear accident, the United States had devoted a tremendous amount of resources, time, and effort to learning the hard lessons and to establishing the necessary institutions to provide a framework for safety improvements throughout their nuclear industry. Achieving adequate safety could be costly but it was not a luxury; there was no acceptable alternative to safe operations if the industry was to survive. More than just a large commitment of resources was needed, what was required was a firmly embedded safety culture of openness, critical self-assessment, and resolute corrective follow-up in all utilities and governmental institutions.

91. Thus the key to public confidence lay in a policy and practice of openness in the nuclear industry, in acceptance of full responsibility for failed operations or deficient human performance, and in total willingness to learn the lessons and make the necessary changes no matter how fundamental they might be. One such lesson was that nuclear safety required a management approach that encouraged teamwork, discipline, and the attitude that safe practices were inviolable. Nuclear safety also required the tools to do the job right: well-written and validated procedures; adherence to the use of them; proper training, including the use of simulators, job mock-ups and computer-assisted instruction; adequate engineering support for operations and maintenance; rigorous investigation of root causes, contributors, and potential contributors to accidents and unusual plant events; quality assurance; thorough and competent safety analysis; and independent internal and external oversight of plant operations, accompanied by attention to detail on the part of management and employees, and supervision that provided clear guidance, maintained discipline, yet was infused with a sense of elemental fairness as far as relations between managers and employees were concerned. The role of human performance, both of management and operators, was critical to nuclear safety and to the restoration of public confidence in nuclear power.

92. He urged the IAEA and its Member States to establish the highest standards of excellence in nuclear plant operations, encouraged Member States themselves to demonstrate that they were taking all the necessary steps to assure improvement in human performance, and he called on the Agency to review

with them that progress. Those States which had made major commitments to nuclear power generation had to play a leading role. A case could only be made for nuclear power if safety could be clearly demonstrated. The nations of the world had a responsibility not only to those with whom they shared the planet, but also to future generations. In the search for and use of energy they had to avoid damaging or destroying the very air, soil, and water on which life depended.

93. Mr. SAITO (Japan) stressed the importance which his country attached to nuclear safety and pointed out that although Japan had 37 nuclear power reactors which accounted for about 30% of its total electricity production, there had not been any serious accident involving loss of human life, or any minor incidents affecting the lives of people living in the vicinity of nuclear facilities. Since promotion of the peaceful uses of nuclear energy was dependent on the provision of safety guarantees, it was to be hoped that the Agency's activities in the area of safety assurance, such as the improvement of nuclear safety standards and OSART missions, would be further promoted.

94. Various developments in Japan's nuclear programme had taken place during the past year. For example, the uranium enrichment demonstration plant had become fully operational and safety examinations of the commercial reprocessing plant and radioactive waste management facility had started. In addition, more than 70% of the construction of "Monja", the fast breeder reactor, which was expected to go critical in 1992, had been completed.

95. In the field of liability for nuclear damage, relevant measures, such as increasing the amount of maximum compensation for damage arising from nuclear accidents, had been taken. A new agreement between Japan and the United States in the field of nuclear energy had entered into force in July 1988 and in November 1988 Japan had acceded to the Convention on the Physical Protection of Nuclear Material, to which it hoped more countries would accede.

96. Japan was active in the field of nuclear fusion research and would continue to participate in the joint conceptual design activities of the International Thermonuclear Experimental Reactor (ITER). It also intended to

promote the use of nuclear power by stressing the fact that it was an energy source which did not emit carbon dioxide.

97. With regard to NPT, Japan hoped that the universality of that regime would be further expanded and that the effective implementation of safeguards would be assured. For its part, it would make every effort to ensure the success of the Fourth NPT Review Conference in 1990. In its nuclear-related co-operation agreements with non-nuclear-weapon States, Japan had made it a prerequisite for counterparts to join NPT and to apply safeguards based on NPT. Increasing safeguards coverage in nuclear-weapon States would help to enhance the universality of the nuclear non-proliferation regime and Japan therefore welcomed the fact that China had made a voluntary offer to place facilities under Agency safeguards. Although the safeguards system had functioned well so far, further effective and efficient implementation of safeguards would be required in order to meet the increase in and diversification of nuclear facilities placed under safeguards.

98. The Agency's technical co-operation activities had made an enormous contribution to the spread of nuclear technology in developing countries. In view of the importance of such activities, Japan had, in addition to its contribution to the Technical Assistance and Co-operation Fund, made a further contribution by providing manpower resources for technical co-operation activities and by holding training courses. His country would also continue to participate actively in RCA activities, since the RCA was one of the most successful examples of regional co-operation in the field of nuclear energy.

99. Public understanding was essential for the smooth development of the peaceful uses of nuclear energy and his country hoped that comprehensive activities to deepen public understanding of the necessity and safety of nuclear energy would be carried out by the Agency. For that reason, Japan had decided to make a special contribution for such activities in 1989. It was also important to strengthen international ties through, for example, the close exchange of information between countries.

100. The Agency had an outstanding reputation for efficiency and the Secretariat was to be commended for its efforts to maintain a zero-growth budget in real terms during the past few years. Japan hoped that the Agency would continue its efforts to maintain realistic and efficient management in

fulfilling its mission to promote the peaceful uses of nuclear energy. Japan, for its part, would make every effort to contribute positively to the Agency's work.

101. Mr. PROTSENKO (Union of Soviet Socialist Republics) said that the current session of the General Conference was being held at a time when there had been a definite improvement in international affairs, and an easing of tension and confrontation. Talks had taken place between the Warsaw Pact and NATO countries on the reduction of armed forces and weapons in Europe. The recent meeting between the Soviet Minister for Foreign Affairs and the US Secretary of State had given fresh impetus to the Soviet-American talks in Geneva. Although many Governments still pursued the anachronistic "cold-war" strategy of nuclear deterrent, the Soviet Union would continue its firm and consistent policy to reduce military tension, encouraging its partners in the talks to understand the need to think in a new way, and to find a mutually acceptable solution to the problems confronting them.

102. The Soviet Union appreciated the Agency's efforts to strengthen the non-proliferation regime, develop international co-operation in the field of the peaceful uses of atomic energy and ensure the safe development of nuclear power.

103. The Agency should continue its constructive role by strengthening the NPT. The current General Conference was the final one before the Fourth NPT Review Conference in 1990. He urged Member States to consider the role and meaning of the Treaty in maintaining peace and international security, and appealed to those countries who had not yet acceded to the Treaty to do so, thus contributing to building a world free of nuclear weapons and violence. He called on the signatories to the Treaty to observe all of its provisions, including those concerning obligations to place peaceful nuclear activities under safeguards and to conclude the relevant agreements.

104. The Agency's safeguards activities played a vital role in international co-operation in the peaceful uses of nuclear energy and formed a basis for the Agency's implementation of its statutory functions. The Soviet Union hoped to see an expansion of safeguards to cover all nuclear activities in non-nuclear-weapon States. Further organizational improvement of the Safeguards Department was possible, and the limited resources available should be

concentrated on monitoring the "sensitive" stages of the nuclear fuel cycle. The Soviet Union fully supported the Agency's technical assistance programmes and had paid its voluntary contribution to the Technical Assistance and Co-operation Fund in full.

105. The 1988 Annual Report showed that the Agency had been successful in all of its main areas of activity, including nuclear power and the fuel cycle, the application of nuclear methods in medicine, agriculture, hydrology and other economic fields, the collection and distribution of scientific and technical information, liability for nuclear damage, and the implementation of conventions relating to nuclear accidents. The Agency's work on a comparative assessment of the environmental effects of nuclear and other fuels should be used to assure the public of the ecological advantages of nuclear power, as well as its safety. Greater emphasis should be given to that area in the future.

106. Even conservative estimates showed that the world's energy requirements would at least double in the first quarter of the 21st century. What energy source could possibly ensure such growth? It would have to be fossil and nuclear fuels and hydroenergy, as no other energy resources with similar potential yet existed.

107. As the further development of energy from fossil fuels had to be limited owing to the ecological effects, and the "alternative" sources, including renewable energy sources were as yet far from capable of making any substantial contribution, nuclear energy should play a decisive role in meeting the growing energy requirements of the world economy. However, nuclear energy was going through a rather difficult period in many countries, including the USSR, where the issue of its social acceptability had become prominent on account of accidents at a number of nuclear power plants in various countries, and of course in particular, the accident at Chernobyl.

108. The IAEA should take a leading role in solving the problems relating to nuclear power and its social acceptability, as it had the objectivity and expertise required to review the world's energy situation. The Agency should give greater attention to certain areas, including: (1) the safety of NPPs and the nuclear fuel cycle; (2) the development of a new generation of safer and more efficient nuclear reactors; (3) the treatment of radioactive wastes

and their disposal; (4) the drafting of technical and other materials and provisions for public relations work, and co-operation to increase the acceptability of nuclear energy to the world community as the alternative source with greatest potential.

109. A special consultative committee should be set up to draft recommendations on these policies. The convening by the Secretariat in 1989 of a working group of senior experts on those questions had been a first step.

110. The work initiated by a special scientific meeting which was to take place during the General Conference should be continued with a view to producing criteria and standards for new designs, possibly including the international designs for the new generation of reactors, such as the ITER project.

111. The search for the optimum means of reprocessing, transporting and storing radioactive wastes had recently attracted the attention of the world community. As yet there was no internationally accepted method of dealing with wastes and each country was developing its own approach. The most rational solution would be for the Agency to take a lead in that area, and an important step had been taken with the "IAEA Safety Principles and Technical Criteria for the Underground Disposal of High-level Radioactive Wastes". The programme of work on reprocessing and storage should be strengthened, with additional research into regional storage facilities, and a comparison of the environmental damage caused by the various types of waste resulting from human activities.

112. The IAEA programme for 1991-92 should include a technical support programme for the Agency's public relations activity, and the Secretariat should consider the desirability of setting up a joint UNEP-IAEA department or section in the Agency to ensure closer co-ordination in research on nuclear-energy-related ecological problems.

113. The IAEA should also take an active part in a wide-ranging discussion of the world's energy and ecological problems. The Agency should intensify its activity in that field and its participation with other organizations, particularly in the next two years, in preparation for the 1992 United Nations Conference on the Environment. The Agency would have the opportunity to

participate in the relevant conferences of the Soviet nuclear society in 1990, as well as the conference to be held by the American and European nuclear societies. It was important to ensure the success of the IAEA symposium on electric power and the environment in Finland in 1991. He suggested that the results of those discussions and the activity in the field of nuclear energy safety could be used for a very general type of IAEA conference at the end of 1991 or the beginning of 1992, prior to the UN conference.

114. The Soviet Union was considering the possibility of organizing an international scientific research centre on the site of the Chernobyl nuclear power plant, where Soviet and foreign experts could study a wide range of questions relating to the consequences of the accident at the plant and their liquidation. The centre would provide an opportunity for experts from many countries to co-operate in joint research, a proposal which had already received a positive reaction from Member States.

115. In conclusion, the Soviet delegation wished to join the other delegations in approving the Annual Report for 1988. He attributed the Agency's successful work to the effective leadership of the Director General and supported the recommendation of the Board of Governors to reappoint him as Director General for the next four-year period. During the General Conference, the Soviet delegation would be guided by its sincere desire to participate with all Member States in a constructive and effective manner to search for ways of dealing with the important and responsible tasks facing them.

116. Mr. BRADY ROCHE (Chile) said that his country had made significant progress in the field of nuclear applications. In agriculture, more efficient use was now being made of phosphate fertilizers, which were in great demand given the nature of Chile's volcanic soils. Studies had commenced on the use of irradiation for the quarantine treatment of fruit, as required by external markets. New radiopharmaceuticals, such as biological cells labelled with technetium-99m, had been developed and made available to the country's nuclear medicine centres. Radioisotopes produced in Chile met 90% of local requirements and were also exported to other Latin American countries. With regard to nuclear safety and radiation protection, Chile had continued to draw up supplementary regulations to the Nuclear Safety Act and to provide support

to other areas of national activity, including environmental monitoring, certification of radionuclide concentrations in food products for export, personnel dosimetry and the calibration of sources and of equipment used to generate ionizing radiations.

117. Of particular significance were the joint efforts being made by the Chilean Nuclear Energy Commission (CChEN) and the Ministry of Health to establish common criteria governing the regulation, inspection and licensing of radioactive facilities within Chile. One result of those efforts was that responsibility for the monitoring and inspection of Category 1 radioactive facilities had now passed from the Ministry of Health to CChEN.

118. With regard to nuclear reactors, the RECH-1 research reactor at the La Reina nuclear centre, which had previously operated for 15 years with uranium fuel enriched to 80%, had since January 1989 been using fuel enriched to 45%. The Agency had given considerable support to the conversion process through its regular programme of technical co-operation. Studies were currently under way aimed at enabling the reactor to run on fuel enriched to 20% once the existing core was exhausted.

119. Chile's second research reactor, at the Lo Aguirre nuclear centre, was currently at the power build up phase, which was expected to be completed by the end of November 1989. The reactor would initially use fuel enriched to 90%, reducing to 20% at a later stage. The raw material used was uranium hexafluoride, purchased in the People's Republic of China and processed into fuel elements by Chilean technicians.

120. His country accorded great significance to training, in which connection the Institute for Nuclear Studies had now come into operation with the aim of organizing and co-ordinating all official nuclear training activities in Chile, both for nationals and foreigners. Furthermore, in its desire to co-operate with the Agency's regional activities, Chile had made every effort to host training events under the ARCAL and other regional programmes.

121. The ARCAL programme had now been in existence for five years and had made a major contribution to nuclear activities in Latin America. Its achievements had been possible thanks to the Agency's effective co-ordination

and to the essential financial support received both from the Agency and from individual donor countries from outside the region. However, the major reason for its success had been the enduring will of its 15 member countries to continually strengthen the bonds of technical co-operation between them in the interests of their common good. Chile, for its part, would continue to support both ARCAL and all other permanent regional bodies which favoured technical co-operation in the nuclear field.

122. The success of ARCAL led him to reflect on the present situation of the Inter-American Nuclear Energy Commission (IANEC), which had now been in existence for 30 years. In its early days it had played a most effective role in the pursuit of peaceful nuclear development among the countries of the region, but had over the years lost some of that effectiveness, owing primarily to the effects of the financial situation of the Organization of American States (OAS), but also to the limited interest shown by many of its member countries and to the lack of a professional staff dedicated exclusively to its tasks. Chile supported a draft resolution submitted by a commission of the OAS to the effect that IANEC go into recess, but at the same time felt that, once the present financial difficulties had been overcome, measures should be taken to promote its recovery.

123. Turning to specific agenda items, and first to the item on the Agency's accounts for 1988, he was pleased to note that Member States' efforts to bring their contributions up to date had led to an improved financial situation - a trend that he hoped would continue.

124. With regard to the item entitled "Dumping of nuclear wastes", he noted with satisfaction both the progress made by the technical working group in elaborating a code of practice for international transactions involving nuclear wastes and the Secretariat's work in preparing the corresponding documents. Chile, with its coastline of over 4000 km, was deeply concerned about the matter of sea dumping. It was therefore a party to all agreements aimed at regulating that practice, and co-operated actively towards that end with specialized regional bodies such as the Permanent South Pacific Commission, which would in the near future be deciding on a draft agreement aimed at banning the dumping and burial of nuclear wastes in the south-east Pacific. Chile supported all moves to strengthen legislation in that area,

and urged all Member States to ensure that the world's seas were protected from radioactive contaminants.

125. As to the Conventions on Early Notification of a Nuclear Accident and on Assistance in the Case of a Nuclear Accident or Radiological Emergency, Chile had signed both and was currently in the process of ratifying them. Given their major significance, moreover, it was also playing an active co-ordinating role in the ARCAL programme aimed at ensuring the implementation of both Conventions in Latin America.

126. On the matter of the staffing of the Agency's Secretariat, he was confident that the Director General's worthy efforts to increase the number of professionals from developing countries would continue, in order to reduce the imbalance which still persisted, particularly at the level of executive posts. A reasonable period of time spent in the service of the Agency was an excellent means for professionals to gain experience in the nuclear field, subsequently carrying that experience back to the home country. However, although an applicant for an Agency post required the consent of his Government, no such approval was subsequently sought by the Agency when it came to extending the staff member's initial contract, and he recommended that the Secretariat should in future consult Governments when proposing to extend the contracts of their nationals.

127. Expressing dissatisfaction at the continual reappearance of certain items of the agenda that were clearly political in nature, he emphasized that the General Conference had, in the short space of time available to it, to attend to many matters of great technical significance, and that for many countries it constituted the sole forum in which they could express their needs and concerns. It was therefore unjust that valuable time should be devoted to matters which were clearly not within the Agency's competence, to the detriment of its true mission as a scientific forum.

128. Finally, he welcomed the proposal to amend Rule 89 of the Rules of Procedure of the General Conference, noting that such a move would serve to complement the efforts already being made by the Agency to reduce expenses, and would also result in the more expeditious supply of documents.

The meeting rose at 1 p.m.

