

International Atomic Energy Agency

SUMMARY REPORT

TWELFTH MEETING OF REPRESENTATIVES
OF RCA MEMBER STATES

12 October 1983

VIENNA, AUSTRIA

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TWELFTH MEETING OF REPRESENTATIVES
OF RCA MEMBER STATES

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SUMMARY REPORT

TWELFTH MEETING OF REPRESENTATIVES OF RCA MEMBER STATES

12 October 1983
Hofburg, Vienna

The 12th Meeting of Representatives of RCA Member States was held on October 12, 1983 in Vienna. A list of participants is attached as Appendix 1.

Professor M. Zifferero, Deputy Director General and Head of the Department of Research and Isotopes, IAEA, opened the meeting with welcoming remarks and a statement on the major progress achieved within the RCA programmes during the past year. Prof. Zifferero's remarks are attached as Appendix 2.

Mr. C. Velez Ocon, Deputy Director General and Head of the Department of Technical Cooperation, IAEA, presented a statement on the current status of technical cooperation as related to RCA projects. Mr. Velez' statement is attached as Appendix 3.

Prof. Zifferero called for the election of the Chairman of the meeting, and Mr. K.G. Dharmawardena, Representative of Sri Lanka, was nominated and elected Chairman by acclamation.

The tentative agenda for the 12th Meeting of RCA Representatives was accepted. A copy of the agenda is attached as Appendix 4.

AGENDA ITEM I

Report of the Fifth RCA Working Group Meeting

The summary report of the Fifth RCA Working Group Meeting, held in Dhaka, Bangladesh, from 11-16 May 1983, was presented to the meeting by the IAEA Secretariat, and the major conclusions in the report and the points to be discussed in the Twelfth RCA Meeting were outlined by the Secretariat. This report, which had previously been formally submitted to the Member States by IAEA, was accepted to serve as the Report of Recommendations of RCA/12. (Appendix 5).

The report of the survey mission for the Food Irradiation Project was presented by the responsible IAEA Scientific Officer. The Member States participating in the Food Irradiation Project agreed to a one-year extension of the Project without further financial support by Japan.

The Representatives were reminded by the Secretariat that, apart from the significant progress made in all projects, four new projects in the field of Medical and Biological Applications of Nuclear Techniques are now being implemented following the approval of the Director General of IAEA. A new project on Basic Science using Research Reactors is also now in force.

The Project Office of the Regional UNDP Industrial Project was opened on July 1, 1983 at the Centre for the Application of Isotopes and Radiation (CAIR), Jakarta, Indonesia, and the interim office in Tokyo, Japan was closed on July 30, 1983.

After the report by the IAEA Secretariat, the delegates expressed their satisfaction with the progress of all projects, and presented their comments.

The delegate of Japan announced that his Government will continue, to the greatest extent possible, its cooperation in the sub-projects of the UNDP Industrial Project - Radiation Processing, Nucleonic Control Systems, and Nuclear Instrument Maintenance, and that an on-the-job training course will be held this year. On Medical and Biological Applications of Nuclear Techniques, he mentioned that his Government is now preparing the draft of an agreement similar to the Agreement for the Food Irradiation Project. He announced that the Research Coordination Meeting on Cancer Therapy will be held in Kyoto in December 1983, and recommended holding the Specialists Meeting on Nuclear Medicine in January 1984. The Government of Japan will cooperate in the sub-projects on "Cancer Therapy" and "Nuclear Medicine" to the extent possible. As proposed at the 5th RCA Working Group Meeting, the Government of Japan will offer an after-loading teletherapy machine.

The delegate of Japan mentioned that the Food Irradiation Project Phase II has been carefully examined by the Japanese Government; however, financial support of this project appears to be difficult due to the necessity of funding the new projects on Medical and Biological Applications. The possibility of "in kind" cooperation is being examined, such as the dispatch of experts and the acceptance of trainees.

The delegate of Pakistan urged the continuation of the Project on Isotope Applications in Hydrology and Sedimentology. Australian support of this project has been shifted to one of the Nucleonic Control Systems sub-projects of the UNDP Industrial Project, "Mineral Exploration, Mining and Processing". The delegate of Pakistan extended the offer of his Government to use their Nuclear Medicine Centre as a Regional Training Centre in this field, and also to use their Irradiation Centre as a multi-purpose centre for the irradiation of medical products and food. He also extended an invitation of his Government to hold the 7th RCA Working Group Meeting in Pakistan.

The delegate of Malaysia stated that his Government agreed to the extension of the Food Irradiation Project, and supported the Phase II project after explaining Malaysian experiences in food irradiation. He also proposed to offer their Regional Cancer Therapy Centre.

The preparation of the Workshop on Utilization of Microprocessors for Research Reactors was explained by the delegate of India. This workshop is planned to be held in early 1984. He proposed that the IAEA promote bilateral cooperation for the implementation of the Phase II Food Irradiation Project, and urged the best possible use of existing expertise and facilities in RCA countries.

The delegate of Australia stated that his Government had shifted financial support from the project on "Hydrology and Sedimentology" to "Mineral Exploration, Mining and Processing", and explained the training-demonstration course held in Australia and the Philippines. He also announced that Australia would cooperate in the sub-project of Medical and Biological Applications, "Nuclear Techniques for Tropical Parasitic Diseases". Australia will hold a training course on radioimmunoassay in 1984. Participation in the Food Irradiation Project Phase II was also proposed.

The delegate of the Philippines explained the progress of food irradiation in his country as well as the on-going project of commercial food irradiation in a food terminal in Manila. He expressed his Government's appreciation of Australia's cooperation in the training-demonstration course in the Philippines.

A report was given by the delegate from Korea on research being conducted in his country on the sterilization of medical products, and on the Training Course on Sterilization of Medical Products. He welcomed the Project on Medical and Biological Applications, and stated that the construction of a radiological hospital will be completed in 1984. He

also supported the Training Course on the Use of Microprocessors for Research Reactors hosted by India, as well as the Phase II Project on Food Irradiation. He explained the abundant experience in food irradiation in the Republic of Korea, and stated that several food companies are examining the possibility of commercialization.

The Phase II Project on Food Irradiation was also supported by the delegate from Thailand.

After the comments of the delegates, the Chairman requested a vote on the location of the future Working Group Meetings, and it was decided to hold the 7th Working Group Meeting (1985) in Pakistan, and the 8th Working Group Meeting (1986) in the Republic of Korea.

AGENDA ITEM II

1983 Action Plan and 1984 Cost Projection

The 1983 Action Plan was presented by the IAEA Secretariat and was accepted by the Representatives. (Appendix 6).

The total budget for RCA activities in 1983 amounts to \$3,331,668, of which \$2,759,668 is used for the UNDP Industrial Project. An amount of \$572,000 is earmarked for research contracts and project review meetings. The recommended source of funding for research contracts and project review meetings is as follows: \$397,000 from the Regular Research Contracts Budget, IAEA, and the remaining \$175,000 from special contributions by Australia, India and Japan.

The Government of Australia is expected to make a total cash contribution of \$552,097 in 1983, of which \$55,000 is being used to support the Regional Cooperative Research Project on Isotope Applications to Hydrology and Sedimentology, and the balance for the UNDP Industrial Project.

For the new projects on "Basic Science using Nuclear Research Reactors" and "Development of ^{99m}Tc Generator Systems", the special contribution in the amount of \$50,000 by the Government of India will be used.

The contributions in cash and kind by the Government of Japan are expected to amount to approximately \$560,000 in 1983, including a cash contribution of \$300,000. These funds will be used to support the Regional Cooperative Research Projects on Food Irradiation, the sub-projects on Cancer Therapy and Nuclear Medicine, and the UNDP Industrial Project.

The cost projection for 1984 was presented. (Appendix 7). The total amount of the budget is \$2,724,259, including the budget for the UNDP Industrial Project in the amount of \$1,802,759. The budget for the UNDP Industrial Project consists of \$630,000 UNDP funds, \$1,025,290 funded by RCA Member States, and \$147,269 funded by industries in the Region.

The amount of \$82,500 for the Food Irradiation Project is to cover the cost of the project until August 1984, including a part of the 1983 Japanese funds.

The budgets for the projects on "Improvement of Cancer Therapy" and "Nuclear Medicine", which amount to \$130,000 and \$155,000 respectively, include an expected contribution by the Japanese Government and the budget for one training course for each of the sub-projects funded by IAEA.

AGENDA ITEM III

Plan for Regional Non-Destructive Testing Training and Certification

The Plan for Regional NDT Training and Certification has been

prepared by the NDT Working Group of the NDT Sub-project of the UNDP Industrial Project. It was presented to the meeting by Professor Niwa, Chairman of the NDT Working Group, who had been invited as specialist participant. The Plan consists of the certification of Level I (NDT Technical Assistant or Operator), Level II (NDT Technician), and Level III (NDT Technologist), as well as the training programme for these three levels. (Appendix 8).

The Plan has been approved in letters from the President of the Australian Institute for Non-destructive Testing, and from the Chairman, NDT Certification Committee, The Japanese Society for Non-destructive Testing. These letters are attached as Appendix 9 and 10, respectively.

The proposed Plan for Regional NDT Training and Certification was accepted by the delegates.

It was proposed by the UNDP Industrial Project Coordination, Mr. S.P. Kasemsanta, to request official comments from the RCA Member States in order to establish the Plan in its final form through the Working Group. These comments are expected to reach the office of the Project Coordinator not later than April 15, 1984.

AGENDA ITEM IV

Other Business

The Chairman suggested that the discussion on the proposal from Pakistan on "Energy from Agricultural and Agro-industrial Residues through the Use of Radiation and Industrial Microorganisms" be postponed to the next Working Group Meeting due to the short time remaining in the 12th RCA Meeting.

The Chairman invited Professor H. Kakihana, Observer to the Meeting and delegate of the Japan Atomic Industrial Forum, to take the floor and Prof. Kakihana gave a report on the newly-established International Cooperation Centre of JAIF.

The Twelfth Meeting of Representatives of RCA Member States was adjourned by the Chairman at 16:30 hours, 12 October 1983.

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TWELFTH MEETING OF REPRESENTATIVES
OF RCA MEMBER STATES

Kongresszentrum Neue Hofburg
Ratsaal

October 12, 1983

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OPENING REMARKS

Prof. M. Zifferero

Twelfth Meeting of Representatives of
RCA Member States

October 12, 1983

Hofburg, Vienna

Distinguished delegates and guests from RCA Member States,
Ladies and Gentlemen.

On behalf of the Director General of the International Atomic Energy Agency, I would like to welcome all the delegates, the experts and the observers from Asia and the Pacific to the 12th Meeting of the Regional Cooperative Agreement. Continuing along the tradition of past annual meetings, I should like to briefly review the progress of our activities since we last met in September 1982.

Let me first report to you on some organizational matters. RCA activities are steadily growing and require more and more coordination work. We have therefore decided to establish an ad hoc post for this function which up to now was assigned, as a part-time activity, to the head of the Industrial Applications and Chemistry Section.

I would like, at this point, to express our appreciation and gratitude to Dr. Sueo Machi, former head of the Industrial Applications and Chemistry Section, who served at the same time as RCA coordinator during the last three years. Under his capable guidance RCA activities were diversified and expanded and represent now one of the important programmes of the Agency. The function of coordinating RCA activities have, with effect from 1 June 1983, been taken over by Dr. Masatoshi Kobayashi, whose long experience in nuclear science and technology transfer augurs well for the future of RCA. Dr. Kobayashi will work in direct contact with my office.

Turning now to the programmatic aspect of our activities I should like to mention that the success to date of the RCA Projects has reached the attention of the Board of Governors which has requested regular reports on the progress of the various projects. The document that we have prepared to this effect has been distributed to you.

With the entry into RCA of Viet Nam in 1981, thirteen countries are now taking part in the Regional Project. The RCA consolidated 1983 budget amounts to approx. 3.5 million dollars, which represents 2.6% of the Agency's consolidated budget. The largest share of funds available to RCA activities is absorbed by the Project on Industrial Applications of Isotopes and Radiation Technology. The project is funded by UNDP at a level of US\$ 630,000, by RCA Governments at a level of US\$ 1,025,290, and by industries at a level of US\$ 147,269.

Of the total amount earmarked for research contracts and research coordination meetings, which amounts this year to US\$ 572,000, US\$ 397,000 are coming from the Agency's regular budget, and the balance of US\$ 175,000 is funded by the contributions of Australia, India and Japan.

It must be noted that the allocation of the Agency has been increased this year by 12% and has now reached 12% of the Agency's total budget for research contracts. I should like to take the opportunity to once again express the Agency's sincere appreciation to the Governments of Australia, India and Japan for their continuing support and financial contribution.

The UNDP Industrial Project has been making steady progress in all of its sub-projects. As a major achievement the 300 kCi Co-60 irradiation facility for natural rubber vulcanization has been commissioned at the Centre for the Application of Isotopes and Radiation in Jakarta, Indonesia; the inauguration ceremony will take place next December, and will be attended by the President of Indonesia.

The interim UNDP Project Office in Tokyo was closed on 30 June of this year, and the new permanent Project Office was opened in Jakarta, Indonesia, on 1 July. The offer of the Government of Indonesia to host the office is very much appreciated. May I take this opportunity to express our gratitude to Mr. Fowler, the recently retired UNDP Project Director and UNDP Chief Technical Advisor, for his continued successful efforts and to welcome Mr. Kasemsanta as the new UNDP Project Coordinator.

Four new projects in the field of medical and biological applications of nuclear techniques are now being implemented, funded through the Agency's regular research programme budget and special contributions by the Government of Japan. The Government of Japan has also decided to donate a remote after-loading radiotherapy unit, and this is expected to accelerate the establishment of a training-demonstration centre, possibly in Malaysia.

The new project on the use of research reactors in basic research in physics has been approved by the Agency's Director General. It is funded through a special contribution from India. The project will start with a three weeks' workshop on the use of microprocessors in research reactor experiments, to be held in Trombay, early next year.

A one-year extension, up to August 1984, has been agreed upon for the project on food irradiation. An expert mission visited food irradiation activities in four Asian countries last June; it concluded that developmental research had made substantial progress in these countries and that interest is now focussing on the pilot-scale studies which are actually the subject of our Phase II proposal on food irradiation. The request by the Government of Bangladesh to establish a subregional Food Irradiation Centre is a further evidence of this interest.

At the Fifth RCA Working Group Meeting in Dhaka, it was announced that the financial support which the Government of Australia has been giving to the Project on Hydrology and Sedimentology since 1979, will cease at the completion of the project and the Australian financial support to RCA will be shifted to the Mineral Exploration and Processing Project. A strong desire on the part of the participating Member States was expressed to continue activities on Hydrology and Sedimentology.

In 1984, therefore the project will continue and an effort will be made to supplement, what is left of the Australian contribution with resources drawn, if necessary, from the Agency's regular budget.

The approval of the People's Republic of China for membership of the Agency is likely to bring closer the possibility of a Chinese accession to our Regional Cooperative Agreement. Clear indications were received on China's keen interest in a number of RCA projects and I believe we all recognize the importance of the impact on present RCA programmes, should this possibility materialize in the near future.

Ladies and Gentlemen, distinguished delegates, I should like to conclude on a note of optimism by noting the impressive acceleration experienced by RCA activities during the last few years. This means that a successful formula of cooperation has been established. Key ingredients of this formula are, in my view, the direct involvement of the Governments, the financial support of donor countries, the encirclement of real problems and, above all, the dedication and commitment of all participants.

S t a t e m e n t

at RCA - 12th Meeting, 12 October 1933, Hofburg - Vienna

(Deputy Director General -
Department of Technical Co-operation)

The UNDP Regional Industrial Project was officially initiated on 1 April 1932 for a period of five years extending through 31 December 1936. The project has now been in an active stage of implementation for one and a half years from the date of its formal commencement. It is my pleasure to inform you of the more important developments and achievements during the last year.

With regard to Project Management, the regional project office has now been established as agreed upon in Indonesia in the premises of BATAN's Centre for Application of Isotopes and Radiation (CAIR-BATAN). The office became operational from 18 July 1933 with the Project Co-ordinator, Mr. S.P. Kasemsanta, serving also as the office head. Many of you have known Mr. Kasemsanta for a long time and he has been associated with the whole RCA activities on behalf of Thailand in recent years, so I do not have to introduce him.

I wish to take this opportunity to express the Agency's deep appreciation and my own personal thanks, first to the Government of Japan for its generous contribution to the efficient functioning of the Tokyo interim office which was in operation from 14 June 1932 to 30 June 1933; and then to the Government of Indonesia for its co-operation in establishing the new Project Office in Jakarta. I also wish to thank the Government of Thailand for making available its national to serve as the Project Co-ordinator in succession to Mr. E.E. Fowler, the former Project Director and Chief Technical Advisor.

In respect of the Senior Board of Advisors (SBA) which has oversight responsibilities for the project, including periodic review and evaluation of project management progress and financial requirements, a fifth member has been appointed to the Board, thus fulfilling our immediate need to establish a five-member Senior Board.

The present composition of the Board is now:

- 1) Professor A.J. Lynch, Director, Julius Kruttschnitt Mineral Research Centre, University of Queensland, Australia;
- 2) Dr. G. Mukherjee, Vice Chairman, Steel Authority of India;
- 3) Datuk Dr. Ani bin Arope, Director, Malaysian Rubber Research Institute;
- 4) Mr. Chamnan Suntornwat, General Manager, the Siam Kraft Paper Company, Thailand; and
- 5) Mr. Hiroi Nakamura, Director General, Takasaki Radiation Chemistry Research Establishment, Japan.

Mr. Nakamura has replaced Mr. T. Mochizuki, Director of JAERI, who served initially on the Board.

The Board had already convened two meetings, namely in Jakarta, Indonesia in November 1982, and in Bangkok and Ban Pong, Thailand in June 1983. Recommendations from the Board have been considered by the Agency and began to be integrated into the current project action plan. A third meeting of the SBA is now being planned to be held from 14 to 16 December 1983 in Kuala Lumpur, Malaysia in conjunction with a second Tripartite Review Meeting.

The fact that the SBA is now meeting twice a year, instead of the yearly meeting originally scheduled, is an indication of its interest and dedication. SBA has also started work, jointly with the new Technical Co-operation Evaluation Unit, on formulating quantitative indicators by which progress of project implementation and ultimate success can be measured.

The project plan of 30 June 1981 had been revised and copies of the revised document, dated 1 April 1982 were presented to all participating Governments for their comments, and is now accepted as an updated Project management instrument. In addition, the previous spendings on the Project and future obligations have been periodically reviewed. The current budget plan as approved by UNDP calls for planned financial contribution as follows:

UNDP (cash contribution)	US\$ 4,255,927
Recipient Governments (in kind)	US\$ 3,946,931
Participating Industry	US\$ 1, 653,440

I should like to underline the generous contributions by the Governments of Australia and Japan as follows:

1983 Australia in-kind contribution (to activities under sub-project on Nucleonic Control System in Mineral Processing)
US\$ (equiv.) 497 097.

1983 Japan contribution (NDT, Radiation Processing, Nucleonic Control in Paper and Steel Industries, Nuclear Instrument Maintenance)
US\$ (equiv.) 270 000.

Contributions from the Governments of Australia and Japan for the subsequent years are envisaged in our financial plan but not yet committed. Apart from the important financial contributions, the Governments of Australia and Japan also provide strong technological support to the Project, for which the Agency is deeply thankful.

Other resources assigned to the Project result from (a) financing by the IAEA of the Project Co-ordinator's salary, and (b) absorption of part of the running expenses of the Regional Project Office by the Government of Indonesia.

Having summarized the Project "Input requirements" and financial sources, I now wish to turn to the "Output" side. So far, our more significant achievements are as follows:

- 1) In the aspect of equipment: Procurement actions for major equipment items are essentially completed. These equipments have already been in use in the training-demonstration programmes, or will be available in time to meet the schedule of additional start-ups planned for the last quarter of 1983 and for the year 1984.
- 2) Establishment of the Regional UNDP (RCA) Industrial Radiation Processing Facility (within the premise of CAIR-BATAN, Jakarta, Indonesia): This is, in fact, a radiation processing complex comprising two major facilities; namely -

- (a) A Pilot Plant for Radiation Vulcanization of Natural Rubber Latex, which will be commissioned and become operational in November 1983; and
- (b) Electron Beam Facility for curing of surface coating of wood panels. The Electron Beam machine will be ready for delivery around January 1984, and all efforts are being made towards commissioning of the machine together with a wood processing line by mid 1984.

3) Training-Demonstration Activities: As technology transfer to regional industry is a main objective of the Project, training-demonstration is given a high priority in the project implementation plan.

As early as February 1982 (before the formal signing of the Project Agreement) the first industrial training-demonstration was already initiated in the sub-area of nucleonic control system in paper manufacturing. Early start-up of this programme sets an example of a smooth collaboration between three types of institutions, namely the United Nations organizations (UNDP/the Agency), the Governments (Thailand and Japan) and private sectors (Siam Kraft Paper and Japan Atomic Industrial Forum). The other training-demonstrations which followed the first one are already recorded in the periodic progress reports, but could be summarized as follows:

- i) in the sub-area of Non-Destructive Testing: Two courses organized in Singapore and a most recent one in Tokyo.
- ii) in the sub-area of Radiation Vulcanization of Natural Rubber Latex: The first six-months, in-resident training is now being conducted at the Regional Industrial Radiation Processing Facility at CAIR-BATAN, Jakarta, beginning 1 October 1983.
- iii) in the sub-area of Radiation Sterilization of Medical Products: The first three-week course began in India 26 September and has now proceeded to the Republic of Korea for the last week of the course.

- iv) in the sub-area of Nucleonic Control Systems in Paper Manufacturing: Two three-week courses were organized in Thailand and Japan.
- v) in regard to Nucleonic Control Systems in the Steel Industry: The first three-week course began in India 10 October 1933 and will proceed to Japan.
- vi) in the sub-area of Nucleonic Control Systems for Mineral Processing: The first three-week part of the course in Australia has just been completed and the remaining four-month programme which includes in-resident training at a commercial mineral concentrator plant (Philex Mining Company) has moved to the Philippines.

In total, more than 100 participants have attended the above-mentioned training-demonstration courses which will be repeated mostly on a yearly basis through the period extending to 31 December 1936. In addition, training-demonstration in other sub-areas are planned for start-up in the last quarter of 1933 and in 1934 as follows:

- i) Nuclear Instrument Maintenance: A two-month intensive on-the-job training in manufacturing plants in Tokyo, to begin on 1 November.
- ii) Tracer Technology: The first three-week training demonstration will begin in March 1934 in India and Singapore.
- iii) Electron-beam curing of surface coating of wood products: The training in this sub-area is planned for start-up in mid 1934.

In all these courses we are attempting to have a larger participation from the industry, as compared with the participation of government institutions. We have not been entirely successful on this and we need the governments' co-operation in this respect. Another problem that I would like to call to your attention is that in some instances candidates that were selected to attend courses abroad were not released when the travel date had arrived. This not only amounts to a prejudice to the country that had recommended those candidates in the first place but also blocks places that could have been used by candidates from other countries.

Another important action under the Project which is expected to have significant impact on industrial technology transfer in the region is a proposal for regional training and certification in non-destructive testing. This subject will be discussed at a later point in the Agenda of this RCA Meeting, and we hope to have meaningful comments from you.

I should like to mention to this meeting that the People's Republic of China has expressed interest in joining the Regional Industrial Project and has already contacted the UNDP in New York to this effect. We look forward to the incorporation of China to the Project and to its contribution to the goal of industrial development of the countries in the region.

Thank you.

12th MEETING OF REPRESENTATIVES
OF RCA MEMBER STATES

Wednesday, October 12, 1983
Kongresszentrum Neue Hofburg, Vienna
Ratsaal

AGENDA
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14:30 - 17:00

Introductory Remarks by Professor M. zifferero
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Head of the Department of
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International Atomic Energy Agency

Statement by Mr. C. Velez-Ocon
Deputy Director General
Head of the Department of
Technical Cooperation
International Atomic Energy Agency

Election of Chairman

Adoption of Agenda

- I. Report on the Fifth RCA Working Group Meeting
- II. 1983 Action Plan and 1984 Cost Projection for RCA
- III. Plan for Regional NDT Training and Certification
- IV. Other Business

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FIFTH WORKING GROUP MEETING
OF RCA MEMBER STATES

Dhaka, Bangladesh
11-16 May 1983

SUMMARY REPORT

The 5th Working Group Meeting of Member States of RCA (Regional Cooperative Agreement for Research, Development and Training Related to Nuclear Science and Technology) was held 11 to 16 May 1983, in Dhaka, Bangladesh, hosted by the Government of Bangladesh. A list of participants of the meeting is attached as Appendix 1.

Dr. Anwar Hossain, Chairman, Bangladesh Atomic Energy Commission, in welcoming the delegates on behalf of the Host Government, traced the history of RCA and hoped that the meeting would result in pragmatic programmes in keeping with the resources and abilities of the Region. His statement is attached as Appendix 2.

Professor Maurizio Zifferero, Deputy Director General, Department of Research and Isotopes, IAEA, presented the opening remarks with a statement setting forth the current status and the significant progress achieved in RCA activities during the past year, as well as identifying important items of the agenda to be discussed during the course of the meeting. The statement is attached as Appendix 3.

Air Vice Marshal Sultan Mahmud, Minister for Energy and Mineral Resources, Government of Bangladesh, inaugurated the meeting with a statement that it is timely to consider the establishment of a Regional Centre in an RCA country since RCA has been steadily growing during the past eleven years. The statement is attached as Appendix 4.

Dr. M. Mizanul Islam of the Bangladesh Atomic Energy Commission presented a vote of thanks on behalf of the Local Organizing Committee for the Working Group Meeting; it is attached as Appendix 5.

Following the opening of the meeting, Dr. Anwar Hossain was formally elected Chairman of the Meeting.

The provisional schedule for the meeting was accepted. It is attached as Appendix 6.

Agenda Item I

Progress of Regional Cooperative Research Projects
1982-83

A summary of progress in 1982-83 and the current status of RCA research projects was presented by the IAEA Secretariat. The summary, along with the progress reports of all research projects, is attached as Appendix 7.

The IAEA Secretariat reported that significant progress had been achieved in all projects. Four new projects in the field of Medical and Biological Applications of Nuclear Techniques, which were recommended by RCA/11, have been approved by the Director General of IAEA and are now being implemented. The IAEA's regular research programme budget and special contributions by the Government of Japan are being used to fund these projects.

A new project on "Basic Science using Research Reactors", which was proposed by the Government of India and recommended by RCA/11, has been approved by the Director General and is now in force. This project is funded by the special contribution of the Indian Government.

The Representatives of Governments party to RCA expressed satisfaction with the progress made to date on all projects.

The Representative of Bangladesh expressed his pleasure at the continuation of the project on "Health-Related Environmental Research", and requested the Agency to supply reference materials of dietary items, including rice, fish and milk for intercomparison studies in 1984. The IAEA Secretariat stated that consultation with the Scientific Officer for this Project will be taken up in Vienna upon the request of the Bangladesh Representative.

The Representative of India pointed out the importance of preparing a Code of Practice for radiation sterilization of medical products, to accelerate its commercialization in developing countries, and urged the IAEA to publish the Code of Practice as soon as possible. The IAEA Secretariat stated that the establishment of the Code of Practice is an important objective of the Radiation Sterilization Project and it should be published at the earliest possible time by IAEA.

The Representative of Bangladesh pointed out that, in his country, the Yellow Mosaic Virus (YMV) is a very serious disease and presents a much greater danger in soybean production than rust.

The Representative of Bangladesh also urged the early circulation of the Revised Recommended International Standard and Code of Practice for Food Irradiation by the Codex Alimentarius Commission (CAC), to promote the commercial use of food irradiation in Bangladesh. The Representative of India informed the meeting that the Revised Code of Practice has not yet been approved by the CAC.

Agenda Item II

Progress of the UNDP Industrial Project 1982-83

A summary statement was given by the IAEA Secretariat on behalf of the Project Director of the Regional UNDP Project for Asia and the Pacific (RCA) on Industrial Applications of Isotopes and Radiation, concerning the current status, progress and future plans. The summary, along with the status report of the Project, is attached as Appendix 8.

The Project Office will be opened on 1 July 1983, at the Centre for the Application of Isotopes and Radiation (CAIR), BATAN, Jakarta, Indonesia. The Tokyo Office will accordingly be closed as of 30 June 1983. IAEA/UNDP are completing action leading to the appointment of a new Project Director to become effective 1 July 1983.

The Project Senior Board of Advisors was appointed on 9 September 1982. The Board, which is composed of five members, has overall responsibility for the Project. The first meeting took place in Jakarta, 4-5 November 1982, and the second meeting will be held in Ban Pong, Thailand, 2-4 June 1983.

The total Project budget for 1983 is US\$2,759,668, which includes UNDP funds and the contributions of the participating Governments as follows:

1.	UNDP	(in US\$)
	a. Experts and consultants	33,526
	b. Training	204,420
	c. Equipment	573,305
	d. Administration	56,000
	e. Miscellaneous	5,000
	TOTAL	872,251
2.	Participating Governments	1,887,417
	GRAND TOTAL	<u>2,759,668</u>

The Representatives of participating Governments expressed satisfaction with the progress made to date and the current status of the UNDP Industrial Project.

The Malaysian Representative urged that IAEA/UNDP should appoint the successor of the UNDP Project Director as soon as possible for a smooth transfer of responsibilities. The DDG-RI, IAEA, stated that IAEA/UNDP are holding final consultations with the participating Governments and a formal announcement will be made soon.

The Representative of Bangladesh urged an increase in the number of trainees under the sub-project "Nuclear Instrument Maintenance" in view of the importance of this field. The IAEA Secretariat stated that it is not easy to increase the number of trainees due to budget limitations and the limited capacity of hosting instrument manufacturers in Japan. It was pointed out by the Secretariat that another on-the-job training course will be given in 1984. The Representative of Japan stated that his Government would make every effort to increase the capacity for receiving trainees subject to the availability of additional UNDP funds.

The Representatives of India and Pakistan stated that they had not received the announcement letter for the first training-demonstration on Nuclear Control System Use in the Mineral Industry, scheduled for 18 August 1983 to 31 March 1984, in Australia and the Philippines, and urged the IAEA to submit the letter immediately. In this connection, the

Representative of Pakistan stated that his Government should receive the announcement letter from IAEA three months before the training is scheduled, to facilitate nomination of candidates and internal procedures.

Agenda Item III

1983 RCA Action Plan and 1984 Cost Projection

The 1983 RCA Action Plan was presented by the IAEA Secretariat as set forth in Appendix 9. The total budget for the RCA projects in 1983, as submitted to the Director General, was in the amount of US\$3,448,238. The budget for research projects was in the amount of US\$572,000, and that for the UNDP Industrial Project was US\$2,876,238. The research projects on Hydrology, Research Reactor Utilization and Food Irradiation are funded by the Governments of Australia, India, and Japan respectively. Financial resources for the UNDP Industrial Project are from UNDP funds, special contributions in cash and in kind from RCA Governments, and contributions from industries in RCA countries.

A draft of the 1984 cost projection was explained by the IAEA Secretariat, and is attached as Appendix 10.

The total estimated cost for research projects is US\$921,500, including training activities (US\$180,000). Costs for research contracts and meetings for 1984 exceed the 1983 level by about 30%.

The Representatives of RCA Governments expressed their great appreciation of the IAEA's continuing financial support to RCA and urged its strong support for the activities planned for 1984. Following the discussions, the proposed activities for 1984 as outlined in Appendix 10, were accepted.

The Chairman asked about coordination between the Department of Research and Isotopes and the Department of Technical Cooperation, IAEA, in RCA activities. The DDG-RI stated that the involvement of the Technical Cooperation Department in RCA is increasing and should be further increased in the future. The UNDP Industrial Project is handled by an office in the Department of Technical Cooperation. The training activities planned and equipment required for the project on Medical and Biological Applications of Nuclear Techniques should be supported by the Technical Cooperation funds through appropriate coordination with the Technical Cooperation Department.

The Chairman pointed out that the total cost for 1984 had decreased from 1983 by US\$724,000, due to the cost decrease for the UNDP Project because procurement of major equipment has been accomplished in 1982 and 1983. The cost for other projects has increased by about 60%.

The Representative of Bangladesh enquired as to the reasons for the reduction in cost of the Project on Hydrology and Sedimentology, and expressed his serious concern with the significant reduction in this important project activity. The IAEA Secretariat explained that the Government of Australia has been supporting the Project since 1979 and terminated its cash contribution and financial support by the Government of Australia has been shifted to the Mineral Exploration and Processing Project during 1983, so that IAEA will fund the hydrology activities through its regular research budget in 1984. The DDG-RI stated that he understood that the projected cost for the 1984 activity in hydrology should be sufficient under present circumstances.

The Representative of Australia stated that it was his understanding after the Research Coordination Meeting for the Hydrology Project held in 1982, that the development phases in the participating countries had been accomplished and that they are now, to some extent, self-supporting.

In view of the importance of this project, the increase in funding after 1984 through the support of IAEA and/or RCA Governments was particularly emphasized by the Representatives of Bangladesh, India and Pakistan.

The Chairman recommended that the IAEA could organize a regional seminar on hydrology to review the current status and exchange views among RCA countries. He also suggested to IAEA to arrange a mission to survey common problems related to hydrology and sedimentology in RCA countries.

Agenda Item IV

Future Programme and New Proposals

1. Medical and Biological Application of Nuclear Techniques

A revised project proposal on "Medical and Biological Applications of Nuclear Techniques" was outlined by the IAEA Secretariat. (Appendix 11).

The proposal includes four major sub-projects:

1. Improvement of radiation therapy in cancer
2. Nuclear medicine in liver and thyroid diseases
3. Nuclear techniques for diagnosis of parasitic diseases
4. Preparation of Tc-99m generators, radiopharmaceuticals and radioimmunoassay kits.

It consists of three phases, namely

Phase I - Cooperative research projects, 1983-85

Phase II - Training programmes for technology transfer, 1984-87

Phase III - Setting up of a centre for training, 1986-89.

In accordance with a request by RCA Governments, the IAEA Secretariat submitted the above proposal to the Asian Development Bank for their partial financial support. However, the IAEA Secretariat has recently been advised that the Asian Development Bank is currently not in a position to support the project because of their restricted budget.

The IAEA Secretariat reported that Phase I of this project is now being implemented through the IAEA regular research budget, and training courses planned for 1984 have been submitted to the Department of Technical Cooperation for approval.

The Representative of the Republic of Korea stated that, in order to reduce the cost for equipment used in a training centre, a network system using existing institutes in RCA countries as centres of excellence may be more appropriate, and offered the expertise and equipment available at KAERI for training programmes in cancer therapy.

The Representative of India expressed his support, in general, of the revised proposal, and suggested that high priority should be given to the training activities. He also pointed out the urgent importance of training in "remote after-loading technique" for therapy of uterine cancer which is very prevalent in the majority of RCA countries. He suggested that the frequency of the training courses on nuclear medicine could be reduced to once every two years to save project cost and that medical doctors and physicists trained in the courses can in turn train people in the field in their respective home countries.

The Indian Representative also emphasized the importance of the project on nuclear techniques for tropical parasitic diseases, such as malaria and filariasis, in developing countries.

The Representative of Bangladesh supported the statements made by the Indian Representative, in particular those concerning the importance of the training-the-trainers programme and the integration of training on radio-immunoassay kits and radiopharmaceuticals. He also proposed that his Government would be willing to host one training course on "Nuclear Techniques for Tropical Parasitic Diseases".

The Representative of Bangladesh suggested the integration of a compact cyclotron to produce short-lived isotopes for medical use in the list of equipment for the planned Regional Centre.

The Representative of Japan stated that his Government strongly supports the projects "Medical and Biological Applications of Nuclear Techniques" and, in particular, he emphasized the importance of cancer therapy and nuclear medicine. An outline of his statement is attached as Appendix 12.

The Representative of Japan also expressed that his Government supports the establishment of a regional centre for training, and announced that a remote after-loading machine for uterine cancer therapy will be donated by the Government of Japan through IAEA to accelerate the establishment of the centre. The DDG-RI and the Chairman, on behalf of the Representatives, expressed their appreciation of the generous offer made by the Government of Japan.

The Representative of Malaysia expressed strong interest in the establishment of the regional training centre in Kuala Lumpur and stated that there is already basic equipment such as LINAC, CT, and Betatron in Kuala Lumpur which can be integrated into the centre.

The Representative of Japan announced that a study meeting on "Radiation therapy and related subjects" will be held in Japan, 11 August - 25 September 1983, organized by the Japan International Cooperation Agency (Appendix 13). The Representative of India urged that the announcement of the study meeting should also be circulated through IAEA to RCA countries so that the atomic energy authorities of RCA countries can take quick and appropriate action. It was agreed that both the Government of Japan and the IAEA will give positive consideration to this request.

The meeting concluded that Phase I and Phase II are strongly supported by the Representatives, but that Phase III should be further studied in terms of availability of equipment and advantages over network systems among centres of excellence.

2. Utilization of Research Reactors

The Representative of India proposed a three-week workshop on the use of microprocessors in research reactor utilization (Appendix 14) in view of the importance of microprocessors and computers. This is consistent with IAEA's planning for this project. The workshop will be held at the Bhabha Atomic Research Centre in October or November 1983, with ten to twelve participants from RCA countries. The main emphasis will be on the practical experience for hardware selection and software design. The DDG-RI, IAEA expressed his appreciation that the Indian Government has picked up one of the proposals made by IAEA.

The Representatives of Pakistan and Bangladesh commented that it is worthwhile for the Indian Government to support the activities more directly related to the utilization of research reactors, such as neutron scattering, although the importance of microprocessors cannot be questioned.

It was pointed out by the Indian Representative and the IAEA Secretariat that the RCA research project on neutron scattering had, after seven years, been terminated.

The Representatives noted, however, that new research reactor facilities would soon become available in some of the Member States and the revival of coordinated research activities in neutron beam research should be considered.

It was recommended by the Chairman and accepted that in the above mentioned workshop, special lectures and case studies will be given on the use of microprocessors for neutron scattering.

The Representative of Malaysia stated that IAEA's Seminar on Utilization of Research Reactors will be held in November 1983 and proposed an RCA workshop on the same topic to take place in conjunction with the seminar to exchange views on future promising applications and activities in this field. This proposal was accepted subject to the availability of funds.

The Chairman suggested that the workshop in India may take place in October/November 1983, followed by the IAEA seminar in Malaysia in November 1983, with some common participants, so that, if possible, a continuing programme may be established in the utilization of research reactors.

3. Food Irradiation

The IAEA Secretariat explained the proposal for Phase II of the Food Irradiation Project (Appendix 15), the major objectives of which are to evaluate the commercial feasibility of irradiation treatment of fishery products, tropical fruit, onions and spices, and to promote technology transfer to the relevant food industries in RCA countries. It was reiterated that the Phase II proposal submitted to the Asian Development Bank for partial financial support had not been successful.

The Representative of Bangladesh expressed his appreciation of Japanese financial and technical support for the Food Irradiation Project during the past three years and strongly urged continuation of the support for Phase II of the project up to 1987.

The Representative of Bangladesh explained the Bangladesh proposal for a Food Irradiation Centre set forth in Appendix 16. It was stated that the proposal is well combined with the Phase II proposal of IAEA by installing a pilot-scale food irradiation plant in Bangladesh. There are three possible sources of funds, namely national funds, UNDP funds, and bilateral assistance. Bangladesh will submit a request to UNDP through IAEA under the country programme, but wants additional support of RCA countries. All relevant facilities mentioned in the proposal will be the contribution from Bangladesh.

The Representative of Japan stated that his Government agreed to a one-year extension of the Food Irradiation Project up to August 1984, without additional funding.

The Representative of Japan also stated that both the Phase II proposal of IAEA and the Bangladesh proposal should be examined based on recommendations of the expert mission in June 1983 and the final report of the on-going project.

The Representative of India supported the Bangladesh proposal and commented that estimated costs of US\$1 million for the irradiation facility are too low and should be re-estimated. He also suggested that the proposed

irradiation facility should be used for demonstration of medical product sterilization and animal feed irradiation.

The Representative of India pointed out that the most serious bottleneck in the Phase II proposal and the Bangladesh proposal is a lack of funds. In this connection, the IAEA Secretariat stated that if no funds are available, medium size irradiators existing in some of the RCA countries for medical product or other product treatment could be used for this project in the meantime. The Representative of India suggested that the cost component for irradiators should then be excluded to decrease the cost of Phase II. The irradiation facility for the Bangladesh proposal can be funded through bilateral assistance from UNDP or any other source and may be used for Phase II activities when it is installed.

4. Domestic Buffalo Production Improvement (Phase II)

It was proposed that Phase II of the Domestic Buffalo Production project will be started with particular emphasis on the studies regarding buffalo diseases and interaction between nutrition and reproductive efficiency in the period 1984-88. The proposal was accepted by the Representatives. Extension of the project to cattle was suggested by the Bangladesh Representative.

The meeting urged that funds for the project on "Nuclear Techniques for Biogas Conversion from Agricultural Residue" should be made available.

5. Other New Proposals

Reutilization of Agricultural and Agro-industrial Residues through Nuclear Technology

The Representative of Bangladesh proposed a cooperative research project on "Reutilization of Agricultural and Agro-industrial Residues through Nuclear Technology". The objective of this research project is to develop a technology to convert agricultural and agro-industrial residues such as bagasse and molasses from the sugar industry to alcohol through the use of radiation and industrial micro-organisms.

It was stated by the IAEA Secretariat that several groups, including a group from JAERI, are conducting research in the above field. They have found that alcohol can be efficiently produced from agricultural wastes by using enzyme immobilized by irradiation and that pre-irradiation of cellulosic waste increases the yield of alcohol. It was also stated by the IAEA Secretariat that as part of an on-going IAEA coordinated research programme on "Radiation Technology for the Immobilization of Bioactive Materials", radiation immobilization of enzyme and its application for biomass conversion is being carried out and RCA Member States are welcome to participate.

The Representative of Malaysia also emphasized the importance of the technique to utilize agricultural residue in his country.

It was proposed by the Representative of Bangladesh and agreed by the Representatives that a draft proposal will be prepared by Bangladesh to be presented at RCA/12 in October 1983 for consideration.

Commercial Irradiation Centre

The Representative of Pakistan stated that his Government has a strong interest in setting up an irradiation centre with 300 KCi Co-60 source in Pakistan, to promote the transfer of radiation technology to relevant industries such as medical products and wood (Appendix 12), and he urged the support of RCA countries to their proposal requesting UNDP assistance. The Representatives supported the Pakistan proposal in view of their increased contribution to RCA activities through the setup of the centre.

Training Programme on Isotope Production

The Representative of Bangladesh stressed the importance of isotope production in developing countries and asked whether it would be possible to organize a training course under the RCA programme on Research Reactor Utilization.

The Representative of India commented that for isotope production, long-term on-the-job training under the IAEA fellowship programme will be more effective than short-term training courses to achieve the experience and competence required for appropriate manpower.

Agenda Item V

Country Statements

All Representatives presented country statements on the current status, progress and future prospects of RCA activities, as attached in Appendix 18.

The Representative of Australia formally stated that his Government will contribute a sum of A\$655,000 over the five-year period 1983-1987 to the project on "Nucleonic Control Systems for Mineral Exploration, Mining and Processing", under the RCA/UNDP Industrial Project.

The Representative of Japan formally announced that his Government will make a cash contribution of US\$300,000 to RCA in 1983.

The DDG-RI expressed his appreciation of the generous offers of the Governments of Australia and Japan, on behalf of IAEA and the RCA countries.

Agenda Item VI

Other Business

The Representative of India formally offered to host the 6th Working Group Meeting of RCA Member States in 1984 and this proposal was accepted by the Representatives. The date was tentatively fixed as 14-19 March 1984.

The Representative of Pakistan offered to host the 7th Working Group Meeting of RCA Member States in Pakistan in 1985.

The Representative of the Republic of Korea informally offered to host the 8th RCA Working Group Meeting in Seoul in 1986.

Final acceptance of the offers by the Governments of Pakistan and the Republic of Korea will be discussed at RCA/12.

Agenda Item VII

Confirmation and Acceptance of the Meeting Report

The Representatives accepted the draft Summary Report of the 5th RCA Working Group Meeting.

The Representatives expressed their thanks to Dr. Machi and Dr. Fowler, who will be leaving the IAEA Secretariat at the end of May and end of June, respectively, for their efforts and hard work on behalf of RCA.

In his concluding remarks, the Chairman summarized the discussions held. He remarked that the most important aspect of RCA is the academic nature of RCA activities and the atmosphere of cooperation among RCA countries. He emphasized that we must keep in mind the application of research programmes without sacrificing quality and while remaining within the terms of reference.

The Chairman especially thanked Professor Zifferero and the staff of the IAEA Secretariat, in particular the Department of Research and Isotopes and the Department of Technical Cooperation, for their support of RCA activities. He remarked that the most important part of any such endeavour is the meeting of minds and the exchange of ideas. The Chairman thanked the delegates and the local Organizing Committee for their cooperation throughout the meeting to make it a great success.

The 5th Working Group Meeting of RCA Member States was adjourned at 13:15 hours on 16 May 1983.

* * * * *



INTERNATIONAL ATOMIC ENERGY AGENCY
INTEROFFICE MEMORANDUM

TO: The Director General

DATE January 19, 1983

OUR REF.:

FROM: M. Zifferero
DDG-RI

YOUR REF.:

SUBJECT: 1983 RCA Action Plan

Attached for your approval is the recommended 1983 RCA Action Plan in the amount of US\$3,448,238 (Ref. Table 1). Current and planned participation in individual projects by Member States is shown in Table 2.

Of the planned budget, US\$2,876,238 is projected as third-year costs under the UNDP Project for Asia and the Pacific on Industrial Applications of Isotopes and Radiation Technology.

An amount of US\$572,000 will be required in 1983 for research contracts and project review meetings. This amount compares to the 1982 estimated costs of US\$504,000.

For 1983, the recommended allocation of funds for research contracts and project meetings is as follows:

1. Regular Agency Research Contract Budget	<u>US\$397,000</u>
2. RCA Member States Contributions	<u>US\$175,000</u>
A. Government of Australia	US\$55,000
B. Government of India	50,000
C. Government of Japan	70,000

The Government of Australia is expected to make a total cash contribution of approximately US\$552,097 to support RCA projects in the 1983 fiscal year. These funds will be used to support the Regional Cooperative Research Project on Isotope Applications to Hydrology and Sedimentology at a level of US\$55,000 in cash, and the balance will be used for the UNDP Project on Industrial Applications of Isotopes and Radiation Technology.

The Representative of India announced at the 11th RCA Meeting in September 1982 that his Government would make a special contribution to RCA in the amount of US\$50,000 in 1983. These funds will be used to support new regional cooperative research projects on basic sciences using nuclear research reactors and ^{99m}Tc generator systems.

The Government of Japan is expected to make a total contribution in cash and kind of approximately US\$560,520 to support RCA projects in 1983. The funds will be used to support the Regional Cooperative Research Projects on Food Irradiation, Cancer Therapy and Nuclear Medicine, at a level of US\$70,000 in cash, and the balance will be used for the UNDP Project on Industrial Applications of Isotopes and Radiation Technology in cash and kind.

A full UNDP proposal entitled "Regional RCA Project for Asia and the Pacific on Industrial Applications of Isotopes and Radiation Technology" was implemented on April 1, 1982. The project targets an expenditure of US\$12,462,413 over its 8-year term from 1980 to 1987. In 1982, the sub-projects on Radiation processing, Nucleonic Control Systems, Non-destructive Testing and Nuclear Instrument Maintenance were fully implemented. The 1983 UNDP project expenditures are estimated at US\$2,876,238.

The 10th anniversary of RCA was celebrated in conjunction with the Fourth RCA Working Group Meeting in Kuala Lumpur, with a dedication of invited lectures by distinguished speakers of several Member States.

Implementation of a new programme on Medical Applications of Nuclear Techniques was urged by the Member States at the 10th RCA Meeting in 1981, and the draft project proposal prepared by the Secretariat was fully supported by RCA Countries at the 4th RCA Working Group Meeting and the 11th RCA Meeting in 1982. This draft proposal comprised four fields, including cancer therapy, nuclear medicine for thyroid and liver diseases, diagnosis of parasitic diseases, and ^{99m}Tc generator systems. The first phase of the project will be funded by the Agency, India and Japan in 1983.

The Government of Viet Nam informed the Agency in October 1982 of its participation in five RCA projects, including the UNDP Industrial Project, Food irradiation, Hydrology and Sedimentology, Nuclear Instrument Maintenance, and Nuclear Medicine.

A Summary Report of the 11th Meeting of Representatives of RCA Member States, which includes progress reports of approved RCA projects, is attached as Appendix 1.



Table 1
1983 RCA ACTION PLAN
Estimated Costs

Project Title	Project Officer	1982	1983	1984-1987
		Total Costs	Total Costs (Contracts, meetings, etc.)	
UNDP Project on Industrial Applications of Isotopes and Radiation Technology	E.E. Fowler	\$2,996,626	\$2,876,238 ¹⁾	\$4,158,184
The Use of Induced Mutations for Improvement of Grain Legume Production	A. Micke	71,000	80,000	80,000
Food Irradiation	P. Loaharanu	80,000	40,000 ²⁾	420,000 ⁷⁾
Nuclear Techniques to Improve Domestic Buffalo Production	J. Dargie	52,000	44,000	200,000 ⁸⁾
Sterilization of Biological Tissue Grafts	R. Mukherjee	39,000	35,000	160,000
Health-related Environmental Research	S. M'Baku	48,000	30,000	140,000
Nuclear Instrument Maintenance	P. Vuister	65,000	45,000	200,000
Basic Science using Research Reactors	R. Muranaka	-	40,000 ³⁾	150,000
Isotope Applications in Hydrology and Sedimentology	B. Payne	95,000	55,000 ⁴⁾	110,000
Semi-Dwarf Mutants for Rice Improvement	T. Kawai	50,000	68,000	200,000
Biogas from Agricultural Residues*	D. Lindquist	-	-	-
Improvement of Cancer Therapy	T. Iwasaki	-	48,000 ⁵⁾	522,000 ⁹⁾
Nuclear Medicine for Thyroid and Liver Diseases	B. Vavrejn	-	30,000 ⁵⁾	460,000 ⁹⁾
Nuclear Techniques for Tropical Parasitic Diseases	J. Castelino	-	31,000	108,000 ⁹⁾
Development of ^{99m} Tc Generator Systems	H. Vera Ruiz	-	22,000 ⁶⁾	448,000 ⁹⁾
Working Group Meeting	S. Machi	4,000	4,000	16,000
		<u>\$3,500,626</u>	<u>\$3,448,238</u>	<u>\$7,372,184</u>

- 1) The Project on Industrial Applications of Isotopes and Radiation Technology is funded by UNDP at a level of \$841,353; by RCA Governments at a level of US\$1,887,417; by industries at a level of US\$147,268. The Government of Japan has made a cash contribution of US\$195,900 in 1981-82, and is expected to make a contribution of US\$490,520 in cash and kind in 1983. The Government of Australia has made a cash contribution of US\$8,000 and is expected to make a contribution of US\$497,097 in 1983.
- 2) The Government of Japan has made a cash contribution of US\$236,000 from 1980 to 1982 and is expected to make a contribution of US\$40,000 in 1983.
- 3) A special contribution by the Government of India of US\$40,000 will fund the new project on basic sciences using research reactors.
- 4) The Government of Australia has made a contribution in the years 1979-1982 totalling US\$370,000 and is expected to make a contribution of US\$55,000 in 1983.
- 5) Part of the cost will be borne by an expected contribution by the Government of Japan of US\$30,000 for medical and biological applications in 1983.
- 6) A special contribution of the Government of India of US\$10,000 will be used to fund a part of the project cost.
- 7) Phase II of the project concerning pilot-scale research and development will be initiated in 1984 subject to availability of funds and contributions from RCA Governments and others.
- 8) Phase II of the project concerning improvement of buffalo production will be initiated in 1984.
- 9) Includes training courses in Phase II of the projects.
- * Approved pending availability of funds.

Table 2
RCA REGIONAL COOPERATIVE PROJECTS

Project Title	Participants												
	Australia	Bangladesh	India	Indonesia	Japan	Korea, Rep.	Malaysia	Pakistan	Philippines	Singapore	Sri Lanka	Thailand	Viet Nam
1. Use of induced mutations for the improvement of grain legume production		X	X	X		X	X	X	X		X	X	
2. Food irradiation		X	X	X	X	X	X	X	X		X	X	(X)
3. Use of nuclear techniques in improving buffalo production	X	X	X	X			X		X		X	X	
4. Radiation sterilization of medical supplies	X	X	X	X		X		X	X			X	
5. Health-related environmental research		X	X	X	X	X	X	X	X	X		X	
6. Maintenance of nuclear instruments		X	X	X		X	X	X	X		X	X	(X)
7. Isotope applications in hydrology and sedimentology	X			X		X	X					X	(X)
8. Semi-dwarf mutants for rice improvement		X	X	X	X	X	X	X	X		X	X	X
9. Industrial applications of isotopes and radiation technology (UNDP)	X	X	X	X	X	X	X	X	X	X	X	X	(X)
*10. Cancer therapy		X	X		X	X	X	X	X	X		X	
*11. Nuclear medicine	X	X	X	X	X	X	X	X	X	X		X	X
*12. Parasitic diseases		X	X	X			X	X	X		X	X	
*13. Tc-99m generators	X	X	X	X		X	X	X	X		X	X	

() Subject to negotiation

* Expected participants

Project Title	1983 Total Costs	1984 Total Costs
UNDP Project on Industrial Applications of Isotopes and Radiation Technology	2,759,668	\$1,802,759 ¹⁾
The Use of Induced Mutations for Improvement of Grain Legume Production	80,000	73,000
Food Irradiation	40,000	82,500 ²⁾
Nuclear Techniques to Improve Domestic Buffalo Production	44,000	85,000
Sterilization of Biological Tissue Grafts	35,000	30,000
Health-related Environmental Research	30,000	74,000
Nuclear Instrument Maintenance	45,000	60,000
Basic Science using Research Reactors	40,000	40,000 ³⁾
Isotope Applications in Hydrology and Sedimentology	55,000	25,000
Semi-dwarf Mutants for Rice Improvement	68,000	73,000
Improvement of Cancer Therapy	48,000	130,000 ⁴⁾
Biogas from Agricultural Residues*	-	-
Nuclear Medicine for Thyroid and Liver Diseases	30,000	155,000 ⁵⁾
Nuclear Techniques for Tropical Parasitic Diseases	31,000	40,000
Development of ^{99m} Tc Generator Systems	22,000	50,000 ⁶⁾
Working Group Meeting	4,000	4,000
TOTAL	<u>\$3,331,668</u>	<u>\$2,724,259</u>

- 1) The Project on Industrial Applications of Isotopes and Radiation Technology is funded by UNDP at a level of \$630,200; by RCA Governments at a level of US\$1,025,290; and by industries at a level of US\$147,269.
 - 2) Cost until August 1984 including 1983 cost, funded by Japan contribution.
 - 3) A special contribution by the Government of India of US\$40,000 will fund the project.
 - 4) Part of the cost will be borne by an expected contribution by the Government of Japan. Includes one training course (\$80,000), funded by IAEA.
 - 5) Includes one training course costing US\$90,000, funded by IAEA.
 - 6) A special contribution of the Government of India of US\$10,000 will be used to fund a training workshop.
- * Approved pending availability of funds.

PLAN FOR REGIONAL NDT TRAINING AND CERTIFICATION

INTRODUCTION

Non destructive testing (NDT) is the term used to describe inspection procedures which examine an object or structure to determine whether flaws are present which could result in reduced performance life.

There are basically 5 NDT methods, radiography, ultrasonics, eddy current, dye penetrant, and magnetic particle. The first three can detect both surface and subsurface flaws and the last two generally only surface flaws.

NDT can be applied during construction and after construction to determine in the first case whether flaws have been introduced due to the manufacturing process or in the second have developed due to service conditions. NDT is therefore used to inspect oil and gas pipelines, off shore oil and gas drilling rigs and production platforms, electricity generating plant, pressure vessels, turbines, ships, aircraft, steel framed buildings, steel bridges etc. The success of the various techniques now in use in giving quality assurance and control has resulted in larger and more complex structures being built and being able to be operated safely and economically.

The use of NDT techniques has increased rapidly in many countries in the last few decades and has led to higher quality goods being produced. Any country which therefore wishes to develop its own industrial base to compete on world market or which wishes to ensure that many heavy engineering goods being supplied to it are of internationally acceptable quality must develop NDT personnel who have been trained and examined in accordance with internationally accepted standards.

The RCA Survey Mission of 1978 observed that in most countries of the Region formal training in NDT technology was lacking. The NDT proficiency of personnel in the Region could therefore only be assessed if they sat the examinations set by NDT professional societies from other countries e.g. the American Society for Non destructive Testing, the British Welding Institute CSWIP scheme, the Japanese Society for Non Destructive Inspection, the Australian Institute for Non Destructive Testing etc. This is an undesirable situation. The recommendations of the Mission survey were accepted in principle by RCA member states and an NDT Expert Working Group, Appendix 1, was formed to develop the guidelines for a Regional plan for training, examination and certification according to internationally accepted standards as part of a 5 year UNDP Regional (RCA) Industrial Project.

The NDT Expert Working Group has had six meetings since its first in October 1980, has studied existing international standards of NDT training and certification and in this report outlines a proposal which it believes will lead to certification of NDT personnel within the Region within the five years of the UNDP Industrial Project.

2. Objective

The prime objective of the NDT Expert Working Group proposal is to raise the level of NDT technology in Member countries. To achieve this objective it will be necessary to provide NDT training for senior personnel from Member countries so that they can implement in-country training and examine and certify the personnel trained through a Central National Body and thus raise the standard of NDT practice in their own countries.

3. International Certification Schemes

At the moment there is no international certification scheme. Many countries however have national certification schemes. These are either employer based schemes conducted by or on behalf of the candidate's employer based on recommendations prepared by the National NDT Society or Institute e.g. SNT-TC-IA (USA), or central certification schemes conducted by approved independent test centres. These schemes are generally administered by a Board containing representatives from all sectors of industry and related societies e.g. CSWIP (UK), NDIS-0601 (Japan). Appendix 2 shows the administrative structure of the Japanese scheme. Appendix 2 also shows the simpler administration used by the Australian scheme.

Countries are now recognising that for trade reasons and to promote the development of NDT technology, international harmonisation of the many schemes in existence is required. In 1973 at the 7th World Conference on Non Destructive Testing the International Committee for Non Destructive Testing which comprises a voting representative from all countries with an established NDT society, formed an ICNDT Working Group on Certification to begin the difficult task of laying down guidelines which could lead to mutual recognition between countries of the standard of NDT personnel being produced. The members of this Working Group comprise, Austria, Belgium, Czechoslovakia, W. Germany, Spain, France, Great Britain, Italy, India, Japan, Netherlands, Poland, USSR and USA. It is likely therefore that these countries will be the first to harmonise their schemes with the NDT proposals.

A final draft document produced by this ICNDT Working Group is presently circulating around the various NDT societies in ICNDT member countries. This draft deals with the syllabi for the training and certification of ultrasonic personnel. A draft has also been produced dealing with the syllabi for the training and certification of radiography personnel. In both cases trained NDT personnel are classified into 3 levels of competence.

- Level 1 the operator or technical assistant level
- Level 2 the technician level
- Level 3 the technologist level.

The national trend is to adapt existing schemes to follow this international proposal. Japan, America and Germany, for instance, already comply with this requirement.

The NDT Expert Working Group was fortunate to have close contact with the ICNDT Working Group through Professor Niwa who is the Japanese representative on the ICNDT Working Group.

4. Proposed Regional Certification Scheme

The NDT Expert Working Group proposes that countries in the Region adopt a training and certification scheme in harmony with that being proposed at the international level and which is already being followed by many countries.

Definition of Qualified NDT Personnel

The scheme calls for classification of trained NDT personnel into 3 levels of competence:

- Level I at the operator or technical assistant level
- Level II at the technician level
- Level III at the technologist level

Nomenclature may vary from country to country depending on usage and practice and it is recommended that the standardised levels be used in Regional certification.

Qualification and Training Requirements

The education, training and experience requirements for the 3 Levels of NDT personnel are:

(1) Level I (NDT Technical Assistant or Operator)

Level I is defined as a person who is capable of carrying out established NDT tests under the supervision of Level II or III personnel. He is required to:

- (a) have a minimum of 4 years of secondary school education or equivalent
- (b) have in the specified areas of qualification a minimum of 12 months experience in radiography or in ultrasonics testing or 6 months experience in magnetic particle-penetrant testing.
- (c) pass an examination for NDT Level I set or approved by the appropriate authority adopting the Regional Certification Scheme. This examination will cover the basic NDT topics given in the syllabi.

(2) Level II (NDT Technician)

Level II is defined as a person who is capable of:

- (a) accepting responsibility for an NDT work group or activity under the direction of NDT Level III personnel
- (b) setting up test equipment and test procedures to applicable codes and standards
- (c) interpreting and evaluating defects in terms of appropriate codes and specifications.

- (d) preparing and signing reports of a routine nature
- (e) setting up and calibrating new equipment
- (f) accepting responsibility for safe working procedures such as radiation safety in the case of radiography

The NDT Level II person is required to have:

- (a) a minimum level of education and knowledge in science, mathematics, or engineering equivalent to 2 years of university study
- (b) a minimum of 2 years experience for radiography and for ultrasonics testing and 1 year for magnetic particle-penetrant testing (The required experience may be reduced if the person has particularly relevant technical qualification in areas such as physics, engineering, metallurgy or welding technology)
- (c) pass an examination for NDT Level II personnel set or approved by the appropriate authority adopting the Regional Certification Scheme. This examination will cover subjects given in the syllabi.

(3) Level III (NDT Technologist)

Level III is a person who is capable of assuming responsibilities for the technical management of an NDT organization or section including

- (a) the quality of testing performed by subordinate staff
- (b) the selection and specification of test methods in the absence of appropriate codes and standards
- (c) the preparation and issuance of critical and non-routine reports
- (d) the adoption of new techniques and the provision of assistance to design engineers in establishing acceptance criteria

The Level III person is required to have:

- (a) an accredited university degree or diploma in engineering, metallurgy or materials science or equivalent
- (b) not less than 3 years experience including theoretical and practical knowledge of the most commonly used NDT practices, including radiography and ultrasonics testing.

5. NDT Expert Working Group Implementation Programme

a. Syllabi

It is proposed that the syllabi approved by the International Committee for Non Destructive Testing be used by countries in the Region. The current ultrasonic and radiography syllabi are given in Appendix 3 and 4 respectively.

b. Training Courses

A series of training courses are also proposed to be presented over the next four years within the framework of the UNDP Industrial Project. These courses are intended to train senior personnel in each RCA country

to Level 3 so that they can train Level 1 and Level 2 personnel in their own countries. Courses will be organised in Singapore at the Singapore Institute of Standards and Industrial Research and in Tokyo at the Japanese Society of Non Destructive Inspection. The Tokyo courses will be at a more advanced level than Level 3. The course timetable is as follows:

September	1983	Tokyo
October	1984	Singapore
September	1985	Tokyo
September	1986	Tokyo

c. Textbooks

4 text books have been produced. Two deal with ultrasonic testing (1 theory, 1 practical training), one deals with radiography, and one deals with general metallurgy and the various other NDT methods.

These text books are aimed at Level 3 personnel, will be used on the training courses and would be used as references by these Level 3 personnel to develop training materials for the two lower levels of personnel.

d. Sample Examination Questions

Two books of sample examination questions have also been produced, one for radiography one for ultrasonics. These books contain both theory and practical examination questions and can be used to set Level 3 examinations. The standard of level 1 and 2 examinations can be established using these questions as a guide.

6. In Country Implementation Programme

a. National Certifying Body

Implementation of the training and certification proposal will vary from country to country depending on the national situation. Control of the certification scheme should however be through a national body. This could for instance be a Government Ministry which while maintaining overall control assigns administration of the scheme and the keeping of a register of personnel qualified to a particular government department or appropriate professional society. Alternatively a National Standard or Code of Practice could be established which sets out the certification scheme syllabi, training, and examination requirements and nominates a central board to administer the scheme. Or again a professional NDT society could be formed which sets up a central board to administer the scheme. Whatever alternative is chosen it is desirable that the scheme is recognised by the appropriate Government ministries and licensing authorities.

b. Training Courses

It is suggested that the senior personnel trained under the auspices of the UNDP-RCA Industrial Project form an NDT training core group in each country and organise training programmes at Levels 1, 2 and 3. National examinations can then be organised by the organisation responsible for certification and certificates issued.

7. Discussion

Countries in the Region are growing industrially which means they are producing and/or importing goods of high technology content. A necessary step in the development taking place is to improve the standard of goods produced to make them sell on a world market looking for quality with low price. In addition the technology being imported into countries in the Region requires maintenance to ensure trouble free operation. In both cases NDT techniques can assist.

The establishment of a strong central organisation responsible for the training and certification of NDT personnel and their use by industry will greatly improve the quality of goods being produced and the reliability of services.

The international NDT community is developing a guideline which will ultimately make it easier for countries to recognise each others certification schemes. The proposed RCA scheme is in harmony with this international scheme and if adopted by countries in the region should more readily lead to mutual recognition of certification schemes within the region and on an international basis.

List of Participants

Sixth Meeting of the UNDP NDT Expert Working Group

Chairman

Professor N. Niwa
Department of Electrical Engineering
Chiba Institute of Technology
JAPAN

Mr. R. Gilmour

Chairman
Australian Institute for NDT Qualifying Board
AUSTRALIA

Mr. R. R. Wamorkar

Radiation Technology Division
Bhabha Atomic Research Centre
INDIA

Mr. K. Otani

Principal Surveyor - Metallurgy
American Bureau of Shipping
JAPAN

Mr. Ong Chor Eong

Director
Technical Engineering & Scientific Services Division
Singapore Institute of Standards and Industrial Research
SINGAPORE

(Observers)

Mr. K. Ooka

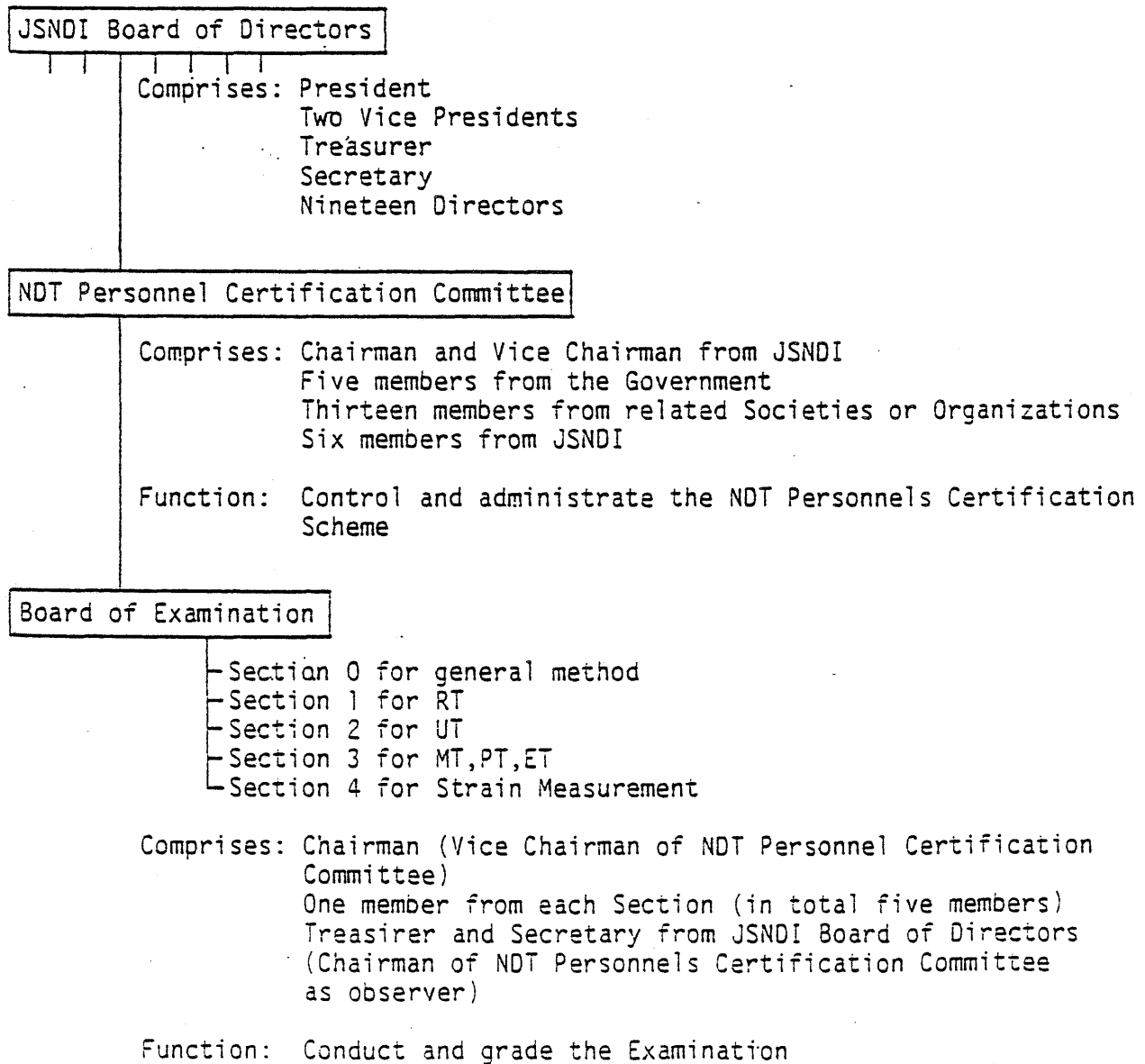
Senior Engineer
Irradiation Section II
Oarai Research Establishment
Japan Atomic Energy Research Institute
JAPAN

Mr. S. P. Kasemsanta

Commissioner
Thai Atomic Energy Commission
THAILAND

ADMINISTRATION STRUCTURE
OF
NDT PERSONNEL CERTIFICATION SCHEME

THE JAPANESE SOCIETY FOR NONDESTRUCTIVE INSPECTION



AINDT QUALIFYING BOARD

ADMINISTRATION STRUCTURE

AINDT FEDERAL COUNCIL

↓
Comprises: Federal President
Immediate Past President
Vice President
Honorary Secretary/Treasurer
Representatives from State Branches

AINDT QUALIFYING BOARD

Elected by and responsible to
the Federal Council.

↓
Comprises: Chairman
Secretary/Treasurer
2 AINDT members
1 representative from the National
Association of Testing Authorities.

Function: 1. Administering the AINDT Qualifying
Scheme
2. To recommend to Federal Council for
approval those persons who have
satisfied the Board's standard.
3. Provide advice on content and depth
of NDT training courses to authorities
wanting to run courses.

PANEL OF EXAMINERS

Elected by and responsible to the Federal
Council through the Qualifying Board.

Comprises: Chairman
Specialists in various NDT Methods

Function: 1. Set and mark examination papers
2. Organise exams.

(Appendix 3)

(Appendix 4)

Syllabi
First Advanced Training Courses
on
Non-Destructive Testing Practice
Tokyo
12 September - 8 October 1983

<u>General</u>	<u>Time</u>	<u>Lecturer</u>
G1 Present Status of NDT Personnel Qualification and Certification	1.0	Niwa
G2 Welding	3.5	Inagaki
G3 Basic Principle of Metallurgy	3.5	Akizono
G4 Steels and Its Flaws	3.5	Onodera
G5 Mechanical Properties of Materials	2.5	Shimada
G6 Evaluation of Flaws in Metals	3.5	Nakazawa
G7 Acoustic Emission (inclu. demonstration)	2.5	Onoe
G8 Magnetic Particle Inspection (inclu. demonstration)	3.5	Serizawa
G9 Dye Penetrant Inspection (inclu. demonstration)	2.5	Suzuki
G10 Eddy Current Inspection (inclu. demonstration)	3.5	Ito

Ultrasonic Testing

U1 Present Status of Ultrasonic Testing	1.0	Yanagi
U2-1 Introduction of Ultrasonic Testing	1.0	Urazaki
U2-2 Basic Principle of Ultrasonic Testing (1)	4.0	Hirose

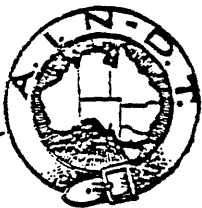
U2-3	Basic Principle of Ultrasonic Testing (2)	4.0	(Guest Lecturer)
U3	Ultrasonic Testing of Steel Plates, Bars, Steel Castings and Forgings	3.0	Takaoki
U4	Ultrasonic Testing of Welds	2.0	Kishigami
U5-1	Quantitative Evaluation of Flaws (1)	2.0	Ogura
U5-2	- " - (2)	2.0	Fujimori
U6	Automatic and Remote Controlled Ultrasonic Examination	2.0	Onoe
U7	Introduction of Various Codes, Standards and Specifications	1.5	Fuji
U8	Education and Training of Supervising NDT Engineers	1.5	Yanagi

Radiographic Testing

R1	Present Status of Application of Radiography	1.0	Senda
R2	Basic Principle of Radiography	2.0	Terada
R3	Safety Control for Radiography (practice)	3.0	Kobayashi
R4-1	Examples of Application of Radiography in Plants (1)	2.5	Yokoyama
R4-2	- " - (Lecture & Practice) (2)	2.5	Furuta
R5	Quality and Inspection of Welded Structure	1.0	Yokoyama
R6	Various Defects and their Radiographs (Lecture & Practice)	4.5	Matsuyama
R7	Inspection Manual for Radiographic Testing	1.5	Sekita
R8-1	Radiographic Techniques (Lecture & Practice)	3.0	Ooka
R8-2	- " -	3.0	Hirayama
R9	Codes for Radiographic Testing	3.0	Maruyama

R10	Practical Training of Radiography of Welds (practice)	3.0	Matsuyama & Nakamura
R11	Practical Training for Evaluation and Classification of Defects	3.0	Matsuyama & Nakamura
R12	Topics of Radiography	3.0	(Guest Lecturer)

302-TC/GAS/2/08



Federal Council

AUSTRALIAN INSTITUTE FOR NON-DESTRUCTIVE TESTING

INCORPORATED IN VICTORIA AS A COMPANY LIMITED BY GUARANTEE

c/o NATA, National Science Centre, 191 Royal Parade, Parkville, Vic., 3052

Deputy Director General
 Department of Technical Cooperation
 International Atomic Energy Agency
 Wagramerstrasse 5
 P O Box 100
 A 1400 - Vienna
 AUSTRIA

Dear Sir

RCA PLAN FOR REGIONAL NDT TRAINING AND CERTIFICATION

At the next meeting of RCA countries in Vienna I understand that the RCA Plan for Regional NDT Training and Certification which was prepared by the RCA NDT Expert Working Group is to be discussed. I would be obliged if you could advise the representatives of participating countries who attend the meeting that the Australian Institute for Non Destructive Testing (AINDT) strongly supports the plan. The idea of preparing a framework to give a consistent approach to national certification schemes and to base this framework on the recommendations of the International Committee for Non Destructive Testing (ICNDT) is very sound. If all countries in the region follow this framework harmonisation of the schemes established, if this is required at a later date, will be much easier.

AINDT as a member of the ICNDT is aware of the work of the ICNDT Working Group on Certification and is conscious that the international trend is towards three levels of NDT certification with America, Germany and Japan already adopting this approach. Therefore although the AINDT Qualifying Scheme has presently only two levels of qualification, equivalent to level 2 and 3 in the RCA plan, a draft proposal is being discussed which aims to introduce qualification at Level 1 for personnel employed in the Australian aerospace Industry.

AINDT recommends that RCA countries give serious consideration to the establishment of certification schemes in their countries as a stimulus to raising the standard of NDT being practised in their countries and that the framework suggested by the RCA NDT Expert Working Group be followed.

Yours faithfully 018873

A SONNEVELD
 PRESIDENT AINDT

To be discussed at RCA/12

Copies to:

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3. Ong Chor Eong, Director
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4. Project Director & Chief Technical Adviser
UNDP/IAEA Regional Industrial Project
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JAPAN

THE JAPANESE SOCIETY FOR
NON-DESTRUCTIVE INSPECTION

Appendix 10
3-4-3 ASAKUSABASHI, TAITOH-KU,
TOKYO, JAPAN
TELEPHONE: TOKYO 863-6321

YOUR REF.

OUR REF. IAEA NDT A

July 29, 1983

Deputy Director General
Department of Technical Cooperation
International Atomic Energy Agency
Wagramerstrasse 5, P.O.Box 100
A-1400 VIENNA
AUSTRIA

-REGIONAL NDT TRAINING AND CERTIFICATION SCHEME-

Gentlemen:

The draft report on The 6th Meeting of The UNDP/NDT Expert Working Group 14-16 March, 1983, Sydney, Australia and draft documents relative to the Plan for Regional NDT Training and Certification Scheme prepared by The Expert Working Group have been studied and examined internally in our society. We found the guidelines for the training and certification of nondestructive testing personnel to be carefully arranged to have Levels I, II and III which are considered to be equivalent to the international scheme e.g. prepared by the Working Group on Harmonization of Training and Certification of NDT Personnel and proposed to the International Committee on NDT.

Consequently, I am pleased to advise you that our Society will prepare to harmonize to the Regional Scheme for the training and certification for the NDT Personnel prepared in the RCA/NDT Regional Plan when it will be properly and effectively established in the Region.

Sincerely yours,



Noboru NIWA,
Chairman, NDT Certification Committee,
The Japanese Society for Nondestructive Inspection
Member, Working Group on Harmonization of Training
and Certification of NDT Personnel, International
Committee on Nondestructive Testing

