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ADVANCES IN THE APPLICATION OF NUCLEAR ENERGY FOR PEACEFUL PURPOSES

Information transmitted by Pakistan

Note by the Director General

On 6 September the Director General received from Pakistan material on the advances made in the year 1973-74 in applying nuclear energy for peaceful purposes. The material in question is reproduced below for the information of the General Conference.

INTRODUCTION

1. The Pakistan Atomic Energy Commission is charged with the task of generating electric power by setting up nuclear power plants and promoting peaceful uses of atomic energy in the fields of agriculture, medicine and industry besides carrying out research in nuclear sciences.
2. The activities of the Commission during the period June 1973 to July 1974 and its future programmes are briefly described below.

NUCLEAR POWER GENERATION

3. The Commission has established a nuclear power plant at Karachi. Built with the financial and technical assistance of the Canadian Government, the 137-MW(e) plant was formally inaugurated by the President of Pakistan on November 28th 1972. The plant achieved an average availability of 80% in the first 12 months and is at present running on full power, having produced 940.25 million kWh of electric power up to the end of June 1974.

4. In view of the fact that Pakistan is short of fossil fuel and the abnormal rise in the prices of oil, the country is enlarging its nuclear power programme. It is envisaged that by the end of the century more than two thirds of the electric power generated, that is over 20 000 MW, will be of nuclear origin. Firm plans are being made for installing a 600-MW(e) nuclear power plant near Mianwali to be completed by 1984. The Commission intends to set up a desalination cum nuclear power plant at Karachi in the mid-1980s.

AGRICULTURE

5. The Commission has established two agriculture research centres, one each at Lyallpur and Tandojam. Significant progress has been made at these Centres to evolve high yielding varieties of food and cash crops which have a higher protein content and mature earlier than the existing varieties. Work is also being carried out on the economic storage of food grains by disinfestation by nuclear irradiation. A new laboratory for fish preservation is being planned with the co-operation of the Government of the Federal Republic of Germany. The Commission also proposes to set up another nuclear agriculture Centre at Tarnab near Peshawar. Construction work on the project is expected to be started before the end of this year. This Centre is designed to carry out research on fruit and food preservation and on the evolution of new varieties of tobacco, sugar cane and wheat.

MEDICINE

6. In the field of nuclear medicine the Commission has established four nuclear medical centres, at Karachi, Lahore, Multan and Jamshoro. Research is being carried out at these Centres to investigate the causes for the incidence of certain commonly found malignant diseases.

7. An Institute of Radio-therapy and Nuclear Medicine (IRNM) is nearing completion at Peshawar. This centre is designed to be the largest and will be well equipped. It will have an additional facility consisting of a 42-bed hospital for the treatment of indoor cases. The centre is expected to be operational early next year. Similar centres are also planned to be set up at Larkana, Quetta, Lyallpur and Islamabad.

TRAINING

8. At the Pakistan Institute of Nuclear Science and Technology several new nuclear laboratories have been set up. The Reactor School which trains young scientists and engineers in nuclear technology is being expanded with a view to having an ultimate

annual turnover of 100 graduates per year. A separate nuclear power training institute is being established at Karachi to train nuclear power plant engineers, operators and technicians to meet the growing need for skilled manpower for the country's nuclear power programme.

PROSPECTING FOR URANIUM

9. To avoid dependence on the import of uranium, the Commission has embarked upon a comprehensive programme of prospection to locate and exploit indigenous uranium. Vast areas are being mapped out and several prospecting parties have been dispatched to different parts of the country expected to contain uranium deposits. To step up exploration activities, aerial surveying has been started for the first time. The Commission feels confident that sufficient quantities of uranium to meet its requirements will be discovered. So far uranium deposits have been located in Dera Ghazi Khan where exploration has been undertaken under a project aided by the United Nations Development Programme. The project has further been extended for another two years beyond July 1974.

10. Pakistan is planning to establish basic fuel cycle facilities to support its nuclear programme. A heavy-water plant is proposed to be set up near Multan to meet the make-up requirements of KANUPP and subsequent plants of a similar nature. A contract has been awarded and construction work is expected to start next year. It has also been decided to set up a fuel fabrication plant to meet the future requirements of KANUPP.

