



# PakAtom

Newsletter of the Pakistan Atomic Energy Commission

November-December, 2009

## Planning Commission to Support PAEC's Self-reliance Plans in Nuclear Power Generation: Sardar Aseff Ahmad Ali

To reap the immense potential of nuclear energy, a clean and cost competitive source of electricity, Planning Commission will support Pakistan Atomic Energy Commission (PAEC) to enhance its indigenous technical facilities for the manufacturing and installation of nuclear power plants.

This was stated by Federal Minister and Deputy Chairman, Planning Commission, Sardar Aseff Ahmed Ali on the eve of his visit to Chashma Nuclear Power Plants on November 7, 2009.

PAEC plans, to install more nuclear power plants to contribute to the pressing electricity requirements of the country, are well-founded and its increasing indigenous capability in this domain deserves our full support and we will provide all what is possible to this organization, which has an excellent track record of delivering what ever was assigned to it, he said.

There is huge reservoir of technical know-how available with PAEC which can be utilized for socio-economic uplift of the country. We need to strengthen this center of excellence for a prosperous Pakistan, Sardar Aseff stated.

He said, due to global warming caused by fossil fuel based electricity plants, nuclear energy as clean source has staged resurgence and it is heartening to know that PAEC is poised to take a lead in nuclear generation.

Speaking on the occasion, Chairman PAEC, Dr. Ansar Parvez said that Pakistan's nuclear power plants are



*Deputy Chairman, Planning Commission, Sardar Aseff Ahmad Ali inaugurates site for the establishment of Education Centre at Chashma barrage.*

*From (L to R) Dr. Ansar Parvez, Chairman, PAEC, Sardar Aseff Ahmad Ali and Dr. Samar Mubarakmand, Member (S&T) Planning Commission./*

operating well and PAEC is moving forward to install many more nuclear power plants in the coming years.

In future nuclear power projects, the indigenous capability is to play an increasing role. We already have workshops and facilities in place to this end and we are working to enhance this capacity all along, Dr. Parvez informed.

Chairman said that the technical facilities and know-how available with the PAEC is at the disposal of the Planning Commission or any other national institution to make use of the same for the benefit of the country.

Earlier in his presentation, DG, Chashma, Mr. Saferd Habib dwelt at length on the self-reliance program of

the PAEC in nuclear power generation and cited the example of KANUPP which is being run through indigenous capabilities since 1976 when the supplier withdrew all support and world placed embargoes on us.

Deputy Chairman, Planning Commission undertook a detailed visit of C-1 and C-2 projects. C-1 is connected to the grid since September 2000 with an excellent availability factor and under construction C-2 is to be operational by mid 2011.

Deputy Chairman, Planning Commission also inaugurated a site for development of educational facilities up to university level for the needs of nuclear power complex at Chashma barrage.



*Sardar Aseff Ahmad Ali, Deputy Chairman, Planning Commission and Dr. Samar Mubarakmand, Member (S&T) Planning Commission along with Dr. Ansar Parvez, Chairman, PAEC and other PAEC officials visiting under construction Chashma Nuclear Power Plant (C-2).*

## Pakistan Atomic Energy Commission issues policy on Nuclear Safety

### A. BACKGROUND

Pakistan Atomic Energy Commission (PAEC) is the owner and operator of a number of nuclear facilities which include nuclear power plants, research reactors, nuclear medical centers, nuclear agricultural and biotechnology centers, industrial units using radioactive sources, research and training centers etc. PAEC being the licensee of nuclear facilities has overall responsibility for the fulfillment of safety requirements for its nuclear activities. The purpose of this document is to establish and declare the basic nuclear safety policy from which specific safety rules, procedures and other requirements follow. However, it is appropriate to mention that PAEC has been fulfilling the safety objectives even prior to this formal policy statement.

### B. STATEMENT OF THE POLICY

It is the policy of Pakistan Atomic Energy Commission (PAEC) that the general public is protected such that no individual bears significant additional risk to health and safety from the operation of a PAEC nuclear facility above the risks to which the members of the general population are normally exposed. PAEC is committed to taking appropriate steps so that occupational radiation exposure to personnel working in its nuclear facilities is maintained as low as reasonably achievable (ALARA). PAEC is also committed to achieving excellent performance in all activities important to safety and to striving for improvements in safety related equipment and practices wherever it is reasonably practicable to do so. PAEC undertakes that necessary financial and material resources as well as qualified and trained manpower continue to be

provided for safe operation and safety upgrades of operating facilities, and for safe design of new facilities. PAEC is committed to ensuring that an acceptable level of nuclear safety is accorded the highest priority and is not compromised for any reason.

### C. IMPLEMENTATION OF THE POLICY

To implement this nuclear safety policy, PAEC undertakes to establish safety objectives, effective management, safety oversight and assessment programs, decommissioning and radioactive waste management programs, emergency preparedness plans, physical protection plans and manpower development programs. PAEC also undertakes that adherence to safety regulations and standards, establishment of an adequate safety culture and information to public about nuclear emergencies are ensured.

## 1. Safety Objectives

- i) PAEC is committed to taking all reasonably practical steps to achieve the following two safety objectives:
- a) The risk of prompt fatality to an average individual in the vicinity of a PAEC nuclear facility, as a result of an accident in the facility, should not exceed 0.1 % of the sum of prompt fatalities due to other accidents to which the members of the public are generally exposed.
- b) The risk of cancer fatalities to population in the area of a PAEC nuclear facility that might result from the operation of the facility should not exceed 0.1 % of the sum of all cancer fatalities due to all other causes.

It is appropriate to mention that these safety objectives are not substitutes for compliance with regulations.

- ii) In striving to realize these objectives PAEC is committed to designing, constructing, operating and decommissioning its nuclear facilities with:
- Appropriate barriers and engineered safety features to prevent or minimize potential radioactive releases.
  - Procedural controls to mitigate the effects of potential releases.
- iii) Proposed modifications to existing facilities to achieve these objectives shall be prioritized based on their safety significance.

## 2. Management

PAEC is committed to establishing clear lines of authority and responsibility for ensuring safety at all levels. The management of a PAEC nuclear facility has the primary responsibility for safe operation of the facility according to the applicable regulations. The management of the facility is also responsible for providing clear and adequate guidance to its contractors to ensure that safety is integrated into all the activities. Contractor responsibility for safety does not in any way relieve the management of the facility of the responsibility of assuring safety.

Assurance of safety is not to be compromised to achieve production or research objectives.

## 3. Safety Regulations and Standards

PAEC is committed to compliance with national safety regulations and adherence to applicable national standards for its licensed nuclear facilities.

## 4. Oversight and Assessment of Safety

PAEC undertakes to ensure that the managements of its nuclear facilities have adequate capability for monitoring and assessing their safety performance. PAEC is committed to establishing and maintaining a capability at the corporate level, independent of the management of its nuclear facilities, to monitor and oversee all aspects of safety. Independent oversight is not a substitute for the responsibility of the management of a nuclear facility. It serves as an independent source of information for senior management. Independent reviews and assessments performed by national regulatory body and international expert organizations are also beneficial in the fulfillment of safety objectives.

## 5. Decommissioning and Waste Management

PAEC undertakes to establish aging management programs at its nuclear power plants for maintaining the level of safety. PAEC is committed to carrying out decommissioning of its nuclear facilities in a safe manner when it becomes necessary. PAEC is also committed to safe and secure management of radioactive waste generated from activities in its nuclear facilities in compliance to National Policy on Radioactive Waste Management. PAEC undertakes to ensure provision of adequate financial resources for decommissioning and waste management at important nuclear facilities by creating funds for decommissioning and waste management.

## 6. Emergency Preparedness

PAEC is committed to taking appropriate steps to ensure that there are on-site and off-site emergency

plans for nuclear facilities that are routinely tested and cover the activities to be carried out in the event of an emergency. For new nuclear installations such plans will be prepared and reviewed before shifting nuclear materials to the site. PAEC undertakes to provide information to the public about nuclear and radiological emergencies in a timely, open and transparent manner. PAEC also undertakes to arrange for raising the level of public awareness about the risks implied in appropriate context of the benefits of nuclear technology.

## 7. Physical Protection

PAEC is committed to taking appropriate measures for ensuring physical protection of nuclear materials and radioactive sources. It is also undertaken that adequate recovery procedures are adopted if control is lost over such materials or sources.

## 8. Manpower Development

PAEC is committed to ensuring that its nuclear facilities are staffed with adequately qualified personnel at all times. Potential hazards associated with nuclear operations dictate that PAEC personnel possess necessary technical competence, commitment, discipline and high standards of professional and personal excellence. PAEC undertakes to ensure that its training institutes and other establishments have the ability to recruit, train and qualify personnel for specific job positions. PAEC is committed to allocating adequate resources for technical training of its manpower in PAEC's training institutes and other national and international institutions.

## 9. Safety Culture

PAEC is committed to establishing and promoting a safety culture at its nuclear facilities, which encourages setting high standards, identifying and resolving problems and openness to questioning and criticism. It undertakes to maintain a blame-free environment for the workers at its nuclear facilities ensuring mutual respect and effective communication with various levels of management for continuous enhancement of safety in all the activities. [Text of the policy is also available on PAEC website.](#)

## Breast Cancer Awareness Program at NIMRA, Jamshoro

PAEC's Nuclear Institute of Medicine & Radiotherapy (NIMRA) organized a breast cancer awareness program on 7<sup>th</sup> November 2009 to create awareness among the female community of the region.

Honorable Provincial Minister for Women Development, Mrs. Touqeer Fatima Bhutto was the chief guest, Prof. Aftab Munir Siddiqui, Consultant Gynaecologist, Isra University was a guest of honor and Prof. Dr. Noshad Ahmed Shaikh, Vice Chancellor, Liaquat University of Medical & Health Sciences, (LUMHS) was a special guest on this auspicious occasion. About 100 participants including breast surgeons, lady health workers, lady health visitors and female staff of Sindh University were present in the program.



*Provincial Minister for Women Development Sindh, Mrs. Touqeer Fatima Bhutto (center) presiding over the "Breast Cancer Awareness Program" at NIMRA, Jamshoro. To her right are Dr. Naeem Ahmed Leghari, Director, NIMRA, Mr. Amir Naveed (BM, ICI) and to her left are Professor Dr. Aftab Munir (Isra University) and Dr. Naushad Ahmed Sheikh (VC, LUMHS).*

Dr. Naeem Ahmed Laghari, Director, NIMRA in his welcome address mentioned that breast cancer is the most common cancer in females in Pakistan, where 90,000 women are affected by breast cancer annually, only 10% are diagnosed and out of them 75% women do not get treatment and die within five years. The Breast Cancer Awareness is a joint venture

and we all have to play our role by joining hands to fight against it. If it is diagnosed at an early stage, the management is very effective and 100% cure of the disease is possible.

disseminate this program up to the rural level to diagnose the breast cancer in early stage. She also announced donation of an Ambulance for this Institute.

The honorable Provincial Minister in her speech appreciated the efforts of NIMRA to organize this awareness program for female community and stressed on the health workers to

In the end, the participants visited the Breast Care Clinic, Mobile Mammography unit and Dr. Aisha Siddiqua, SMO briefed about breast screening and self-breast examination.

## Training Course for Project Directors jointly organized by PAEC & Planning Commission

A training course for Project Directors/Officials of PAEC was jointly organized by Pakistan Atomic Energy Commission and Planning Commission of Pakistan on November 14-15, 2009. About 55 Project Directors/Officials participated in the course and 9 resource persons were provided by Planning Commission of Pakistan to conduct the course.

Welcoming the participants, the PAEC-PSDP focal person, Dr. Syed Javaid Khurshid, Director Projects Coordination mentioned that at present about 40 Public Sector Development Projects (PSDP) related to PAEC are in progress. The Director, MIS, Planning Commission, Mr. Irfan Rafique said that e-linking of PAEC to Planning Commission website will enhance the efficiency and disposal as the Projects Profile, Cash/Work Plan details are now available online.

Inaugurating the course, Member (Fuel Cycle) Mr. Muhammad Naeem



*Member (Fuel Cycle) PAEC, Mr. Muhammad Naeem with Trainers from Planning Commission and PDS/Officials of PAEC.*

emphasized that this training course will facilitate the Project Directors in their working because this input of data will help in timely releases of the projects cost and thus will result in timely

completion of the projects. He appreciated the help & efforts of Planning Commission to organize this course for PAEC Project Directors.

# Molybdenum-99 Production Facility commissioned at PINSTECH

A Molybdenum-99 (Mo-99) production facility has been installed and commissioned at Pakistan Institute of Nuclear Science and Technology (PINSTECH) Islamabad. The facility will meet all the current demands of molybdenum-99/technetium-99m generators in the country as well as has export potential.

Radiopharmaceuticals labelled with Technetium-99m are routinely used to get image of different organs of human body for diagnosis of different diseases. The prominent position of this radionuclide on the market has been due to its near ideal nuclear properties, the ready availability in the form of convenient, user friendly column chromatographic Mo-99/Tc-99m generator systems.

The parent radionuclide Mo-99 is mainly produced by the nuclear fission of U-235. Small amounts of Mo-99 are produced also by the neutron activation method. However, current applications of Mo-99/Tc-99m generators almost completely depend on the fission production of Mo-99.

With the expansion of nuclear medicine program in government and public sector, more and more clinics are adopting nuclear techniques for diagnosis of different diseases. Pakistan Atomic Energy Commission has established 13 Cancer Hospitals in the different parts of the country whereas 20 medical centers are operating in government and private sector. Indigenous production of Molybdenum-99 will encourage these practices.

For the last 6 years PINSTECH is manufacturing PAKGEN Tc-99m generators in the Molybdenum-99 loading facility in Isotope Production Division at PINSTECH. 30 generators are weekly produced in this facility.



*A view of the Molybdenum-99 Production Laboratory.*

These generators are supplied to PAEC, government and private Nuclear Medical Centers in Pakistan. However Mo-99 for loading of Tc-99m generators is weekly imported from South Africa. The price of Mo-99 is increasing sharply. To overcome the problems associated with the import of Mo-99 or generators, such as increase in the price of Mo-99, import policies, delay and changes in supply schedule, etc. the indigenous production of Molybdenum-99 in the country became imperative.

PINSTECH submitted PC-1 on "Production of Molybdenum-99 for Medical Use", which was approved by Planning Commission of Pakistan in March 2004.

The installation work with in-cell equipment was finished in June 2007. Several simulated tracer runs were then conducted in the facility and finally hot commissioning of the facility was accomplished with the production of

millicurie level of Molybdenum-99 in December 2009. Upscaling of Molybdenum-99 production will be performed gradually and after a few months regular production of Mo-99 will be started. Extra Mo-99 produced in this facility may be exported to other countries.

## PIEAS organizes its first International Conference on Nuclear Medicine and Oncology

Department of Medical Sciences, PIEAS organized its first International Conference on Nuclear Medicine and Oncology on 21-22 October 2009 at PIEAS in collaboration with Higher Education Commission (HEC). Dr. Ansar Parvez, Chairman, PAEC presided the opening ceremony, which was also attended, among others, by Dr. Abdur Rasheed, Member (Biosciences) and Mr. Mansoor Ali Sheikh, Member (Finance) PAEC.

Resource persons from inland and abroad (China, Hungary and Saudi Arabia) delivered lectures and shared their expertise, technological advances and future trends in nuclear medicine and oncology. The two-day event was attended by a large community of Nuclear Medicine Physicians and Oncologists from various PAEC cancer

hospitals and other public/private sector hospitals namely, Shaukat Khanum Memorial Cancer Hospital & Research Center, Lahore, Agha Khan University Hospital, Karachi, Punjab Institute of Cardiology, Lahore, Federal Government Services Hospital, Islamabad, NESCOM Hospital, Islamabad, Nishter Hospital, Multan, Sindh Institute of Urology & Transplantation, Karachi and KRL Hospital, Islamabad.

More than fifty papers were presented orally in four plenary sessions. Eight separate parallel sessions of nuclear medicine and oncology and an interactive nuclear cardiology session were also held. Eleven poster presentations were exhibited during the conference. ■

## Ph.D. degree for PAEC Engineer

Dr. Sufi Tabassum Gul, Senior Engineer at PIEAS, PAEC has been awarded Ph.D. degree by Ecole Supérieure d'Electricité (SUPELEC)/University of Rennes-I, France, in the domain of Signal Processing and Telecommunications. He was working with Prof. Dr. Christophe MOY and Prof. Dr. Jacques PALICOT in the field of Software Defined Radio (SDR) under the overseas scholarship program of HEC, Pakistan. His thesis entitled "Optimization of Multi-Standards Software Defined Radio Equipment: A Common Operator's Approach" was awarded a grade of Très honorable/Excellent by jury, composed of professors from different European universities. SDR's parameterization techniques can help reduce the cost, size and power consumption of SDR equipment, which are required to support a wide range of existing and future wireless technologies and services. ■



## Posting in the Mission Abroad

□ Mr. Muhammad Saeed Mulla, Deputy Chief Scientist, Disarmament & Safeguards Cell, PAEC HQ has been posted as Minister (Technical) in the Permanent Mission of Pakistan to the UN, Geneva, Switzerland for a period of three years from 27 December 2009.

## Appointments Abroad

□ Dr. Javed Anver Qureshi, Deputy Chief Scientist, Head, Health Biotechnology Division, NIBGE, Faisalabad will join the position of Associate Professor (Biochemistry) at King Khalid University, Abha Kingdom of Saudi Arabia for a period of one year from 3<sup>rd</sup> week of December 2009.

□ Dr. Naeem Iqbal, Principal Engineer, PIEAS, Islamabad will join as Associate Professor in the Department of Electrical Engineering, Umm Al-Qura University, Makkah, Saudi Arabia for a period of one year from 3<sup>rd</sup> week of December 2009.

## Assignments of PAEC Officers Abroad

□ Mr. Noor Jamal, Senior Engineer and Mr. Jawad Bashir, Junior Engineer, Applied Systems Analysis Division (ASAD), PAEC, Islamabad

participated in IAEA National Training Course on "Electric System Expansion Planning Package (WASP)" held in Vienna (Austria) from 09-20 November 2009 under IAEA Regional Project - Enhancing Human and Nuclear Technology Capacities.

The following officers of PAEC attended IPSART Mission at IAEA HQ, Vienna (Austria) from 07-15 December, 2009:

□ Mr. Najmus Saqib, Chief Engineer, Director (DPSA), Karachi Nuclear Power Complex (KNPC), Karachi.

□ Mr. Muhammad Arif, Principal Engineer, Chashma Nuclear Power Plant (CHASNUPP (C-1), Kundian.

□ Mr. Abdus Samad, Senior Scientist, CHASNUPP (C-1), Kundian.

□ Mr. Saeed Ahmed, Senior Scientist, CHASNUPP (C-1), Kundian.

□ Mr. Muhammad Azhar, Senior Engineer, CHASNUPP (C-1), Kundian.

□ Mr. Mazhar ul Islam, Senior Engineer, Chashma Nuclear Power Plant (CHASNUPP (C-2), Kundian.

□ Syed Ishaq, Principal Engineer, KNPC, Karachi.

□ Mr. Shakeel Ahmed, Principal Scientist, KNPC, Karachi.

□ Mr. Shahid Ali, Senior Scientist, KNPC, Karachi

## Visits of Foreigners to Pakistan

□ Dr. Terry Townsend, Executive Director of the International Cotton Advisory Committee Washington, USA visited NIBGE, Faisalabad on 06 November 2009 for discussion on Cotton Biotechnology.

□ Dr. Srinvas V. Kaveri (French), a renowned Immunologist and Dr. Sandie Favier, (French) Attache for Science and Technology, French Embassy at Islamabad delivered a lecture at NIBGE, Faisalabad on 10<sup>th</sup> December 2009.

□ Mrs. Elizabeth Anne Trevan (Australian), Health Consultant is currently visiting INMOL, CENUM, Lahore, BINO, Bahawalpur, MINAR, Multan and NORI, Islamabad from 17-24 December 2009 to help improving the PAEC Breast Care Program. She will also meet Member (Bio-Sciences) and Chairman, PAEC during her visit.

□ Mr. Maxim Mihai (Romanian) of M/s. ASTER, Italy visited KNPC, Karachi ■



*A group photograph taken on the eve of get-together of former Directors/Director Generals of PINSTECH.*

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being provided by the current Director General, PINSTECH, Engr. Nasrullah Khan Qazi, and appreciated the remarkable achievements made by PINSTECH scientists & engineers. All the guests of honour were awarded with PINSTECH Shields, Photo Albums containing historic developments at PINSTECH during the period 1963-2009 and bouquets by the Chairman, PAEC, Member (Physical Sciences), and Director General, PINSTECH respectively.

In his concluding address, Dr. Ansar Parvez, Chairman, PAEC thanked the former Directors/ Director Generals of PINSTECH for accepting the invitation and enabling PINSTECH researchers to celebrate this memorable day with them. He declared them as great architects of this Institute and appreciated their contributions in this regard. He said PINSTECH, its leaders and scientists/engineers can take great pride of the fact that almost all projects of PAEC have PINSTECH's fingerprints on them. These projects eventually left their nursery, which is PINSTECH, as they grew and established themselves in their own right. We are fortunate that we belong to an organization which has earned the reputation of delivering for what it was established. With all these attributes, PINSTECH should take a leading role in promoting the program of the

Commission. Over the years, PAEC has engaged itself in a variety of areas from Medicines to Agriculture, from Nuclear Power to National Defense and of course from R&D to Human Resource Development and is thus playing a vital role in the socio-economic development of the country.

Pakistan Institute of Nuclear Science and Technology (PINSTECH) has been playing a pivotal role in the development of PAEC Program since Pakistan's 1<sup>st</sup> Research Reactor (PARR-I) went critical in 1965. Since then, under the able leadership and guidance of Directors (later the post was upgraded as Director General), researchers at PINSTECH have made significant contributions to promote peaceful applications of Nuclear Science & Technology in solving problems of national interest in the fields of environment, agriculture, life sciences, industry, materials and defense etc. As a mother institution, PINSTECH also provided competent scientific and technical manpower to various other strategic organizations in the build up and progression of national defense program. During the year 2002, the Islamic Development Bank (IDB) honoured PINSTECH with the award of the best R&D Center in the Islamic World.

# PINSTECH reminisces and resolves to excel

## Pays tribute to its former Directors and Director Generals



*Chairman, PAEC, Dr. Ansar Parvez addressing a get-together of former Directors / Director Generals of PINSTECH. Sitting (L to R) Dr. Abdul Ghaffar, Dr. Hameed Ahmad Khan, Dr. Iqbal Hussain Qureshi, Dr. Ishfaq Ahmad, Dr. N.M. Butt, Dr. Nisar Ahmad and Dr. Mustanser Jehangir/*

To acknowledge the able guidance and contributions made by the dynamic leadership of PINSTECH over the past 44 years and seeking inspiration from their aura, PINSTECH organized a get-together of its former Directors and Director Generals on November 17<sup>th</sup> 2009 upon the initiative of Dr. Ansar Parvez, Chairman, PAEC and Dr. Shoaib Ahmad, Member (Physical Sciences), PAEC. This unique event of its type at PINSTECH was named as "A Day with its Former Directors and Director Generals". The event was organized by Dr. Jamshed Hussain Zaidi, CS (Director Science) and Dr. Riffat Mahmood Qureshi, CS (Director Coordination). The following former Directors/ Director Generals graced the occasion to receive tributes from a large number of scientists and engineers of PAEC:

1. Dr. Ishfaq Ahmad, former Chairman, PAEC and presently Advisor (S&T) Planning Commission of Pakistan
2. Dr. Iqbal Hussain Qureshi, Scientist Emeritus and former Member Technical/Senior Member, PAEC
3. Dr. Noor Muhammad Butt, Scientist Emeritus, former Chairman Pakistan

Science Foundation and presently Professor, Preston University, Islamabad

4. Dr. Hameed Ahmad Khan, Scientist Emeritus, Former Executive Director, COMSATS and presently Advisor, COMSATS
5. Dr. Nisar Ahmad, Prof. Rafi Muhammad Chair, Government College University, Lahore
6. Dr. Abdul Ghaffar, former DG, Chairman Secretariat, PAEC and Technical Expert to Ministry of Science and Technology
7. Dr. Mustanser Jehangir, Advisor to Member, Physical Sciences, PAEC

Following recitation from The Holy Quran, the Director General, PINSTECH, Engr. Nasrullah Khan Qazi welcomed the distinguished guests of honour and presented a scientific and technical overview of PINSTECH covering briefs on historical milestones as well as on-going projects sponsored by the Ministry of Science & Technology/ Planning Commission of Pakistan and future course of action. He

paid rich tributes to the valuable services rendered by his predecessors. He mentioned that the former Directors/Director Generals are in fact our mentors and we cherish the sweet memories of their tenures. They have enabled PINSTECH researchers to determine their scientific goals, as well as to plan and execute important projects of national interest. He also expressed his gratitude to the Chairman, PAEC and Member (Physical Sciences) for providing this unique opportunity to celebrate the event with former Directors and Director Generals of PINSTECH.

The stage secretary, Dr. Sohaila Rehman, PS (Chemistry Division) gave comprehensive introduction of all the former Directors/DGs. Following this, the distinguished guests of honour expressed their deep affiliations with PINSTECH and recalled the memories of their past. They also narrated their specific strategies, which they employed to marshal the resources and inspire the workforce for the attainment of their goals. They acknowledged the skillful leadership and able guidance

*Contd. on P-7.*