International Atomic Energy Agency

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Statement by Dr. Ratan Kumar Sinha,
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and
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Mr. President, Excellencies, Ladies and Gentlemen,

It gives me great pleasure to congratulate you, Mr. President, on your election as the President of the 58th General Conference. Under your able leadership, I am sure the current General Conference will accomplish all the tasks laid before it.

India welcomes the four new Members to the IAEA, and I take this opportunity to congratulate Union of Comoros, Republic of Djibouti, Cooperative Republic of Guyana, and Republic of Vanuatu on the occasion of their joining the IAEA family.

Mr. President,

The current year marks several important milestones for the Indian atomic energy programme. The Department of Atomic Energy (DAE), established on August 3, 1954, completed sixty years of service this year. The year 2014 is also the Golden Jubilee year of India's first reprocessing plant called 'Plutonium Plant', which was the first step in the second stage of Indian nuclear power programme, that uses plutonium based fuel in Fast Breeder Reactors. At the beginning of this year, we reached the milestone of the fortieth anniversary of the commissioning of ISOMED, India's first gamma radiation processing plant for sterilisation of medical products. This plant was set up at BARC, Mumbai with the help of UNDP and the IAEA.

On August 6 this year, the Unit No. 5 of the Rajasthan Atomic Power Station (RAPS 5) achieved a record of 765 days of continuous operation, the highest in the world in the last two decades, and the second highest in the entire history of nuclear power. I would like to inform you that with the sale of electricity produced by this plant in approximately four and half years of commercial operation, it has already recovered its cost of construction. RAPS-5 has avoided about 4.25 million tonnes of carbon-dioxide emission, in its dream run.

The first unit of the Kudankulam Nuclear Power Plant which achieved its first criticality in July last year is now operating at close to its full rated power of 1000 MWe. The second unit is in an advanced stage of commissioning.

The construction of the 500 MWe Prototype Fast Breeder Reactor (PFBR) is nearing completion at Kalpakkam. The erection of all critical, permanent in-core components has been completed. The reactor is now expected to achieve first criticality in about six months from now.

Next month, at Indira Gandhi Centre for Atomic Research, India will be hosting the IAEA Technical Meeting on the Construction and Commissioning of Fast Reactors.

India continues to attach high priority for R&D on all aspects of Thorium-related reactor technologies and allied fuel cycle. The process of selection of a site for construction of AHWR is in an advanced stage.

The performance of several Indian fuel cycle facilities reached their highest levels last year. Thus, PHWR fuel production achieved an increase of 18% over the previous year, and the highest ever production of heavy water was achieved with the lowest specific energy consumption.

A protocol additional to the agreement between India and the IAEA for the application of safeguards to Indian civilian nuclear facilities entered into force on July 25, 2014.

Mr. President,

As part of India's commitment to implement the highest standards for the safety of Indian nuclear power plants, several steps have been taken in the recent past to organise peer reviews at national and international level. I wish to inform you that a 'follow up mission' of the IAEA Operational Safety Review Team (OSART) to India for Rajasthan Atomic Power Station (RAPS) units - 3&4, took place during February 3 - 7, 2014. The team assessed that in many cases the station has done much more than what was intended in the OSART observations.

A visit of a preparatory team of IAEA's Integrated Regulatory Review Service (IRRS) for peer review of India's nuclear regulatory system is planned during October 7-8, 2014. Earlier, the Indian Atomic Energy Regulatory Board (AERB) held a Workshop in March 2014, involving the participation of experts from the IAEA, for planning the compilation of documents and allied requirements for receiving the IRRS mission to India, envisaged early next year (March 2015).

India appreciates the significant progress made by International Project on Innovative Nuclear Reactors and Fuel Cycles (INPRO) over the years. The INPRO methodology for assessment of innovative nuclear reactors and fuel cycles provides an opportunity for developing acceptance criteria for new designs, *inter alia*, addressing innovative capabilities for enhanced safety.

Mr. President,

India is pleased to note that the Director General has chosen to organise the Scientific Forum this year on the important topic of "Radioactive Waste: Meeting the Challenge". In this connection, I would like to reiterate that the Indian policy of employing a 'closed nuclear fuel cycle' not only ensures better utilisation of the nuclear fuel resources, but also greatly minimises the quantity of nuclear waste. The 2014 Scientific Forum will provide an opportunity for countries to share their experience in this important area, which will also go a long way in allaying one of the major concerns of nuclear energy.

The commissioning of Actinide Separation Demonstration Facility of BARC at Tarapur, has taken India to be one of the two advanced nuclear countries who could demonstrate separation of minor actinides from the High Level Waste (HLW). This approach would help in reducing substantially the life of the radioactive waste, from around 1000 years to about 300 years, as well as the volume of HLW requiring long-term storage. Furthermore, technology has been developed and demonstrated for the removal of highly radioactive Caesium-137 and its conversion to vitrified pencil source, usable for blood irradiator and similar low dose rate radiation applications. Removal of actinides and Caesium-137 addresses several technical issues on the storage of high level waste in a cost-effective and sustainable manner.

In this context, I would like to draw your attention to the exhibition set up by India on our technological advances in the area of nuclear waste management. I cordially invite all Delegations to visit the exhibition.

Mr. President,

Non-power applications of nuclear and radiation technologies in the area of health-care, water, industry and environmental protection continue to expand, delivering important benefits to the society. We have been a strong supporter and contributor to the Regional Cooperation Agreement (RCA) initiative right from its inception, and India is the RCA Lead Country in the area of industrial applications and cancer treatment for the past several years.

Complemented with irradiation as a quarantine treatment, a chemical dip treatment has been developed by BARC for extended preservation of Lychee fruit (which has only a short shelf-life otherwise) and this technology has been transferred to traders in India and to one party in Madagascar.

As a part of continuing efforts towards development of cost effective and efficient modalities for early diagnosis and treatment of cancer, the Tata Memorial Centre (TMC), an autonomous institution under DAE, in collaboration with BARC, has established techniques, using commercially available monoclonal antibodies, to deliver radioisotopes to specific sites for imaging and also for treatment of tumors.

This practice has, in particular, been found to be very effective in cases of Non-Hodgkin's Lymphoma in reducing the duration of treatment from 9 months to 1 month.

India appreciates the IAEA's sustained efforts to support cancer management, and in particular through the Programme on Action for Cancer Therapy (PACT). India looks forward to continuing expansion of activities under the PACT initiative.

India also appreciates the efforts of the IAEA Director General to mobilise support for the proposed modernisation of the nuclear applications laboratories of the IAEA.

In addition to the activities related to nuclear energy and non-power applications, India continues to make good progress in developing high technology in many important areas, including nuclear fusion and accelerator related technologies.

Mr. President,

As part of implementation of the Arrangement with the IAEA concerning India's voluntary contribution to the Nuclear Security Fund, the services of an Indian cost-free expert in information security are being provided to the Division of Nuclear Security of the IAEA.

In the same context, and under the auspices of the Global Centre for Nuclear Energy Partnership (GCNEP) initiative, a Regional Training Course on 'Vulnerability Analysis of Physical Protection Systems', was held last week in Mumbai.

As a measure to further enhance preparedness to address radiological emergencies, a high throughput 'Quick Scan-type Whole Body Monitor (WBM)' has been developed to quickly measure internal contamination in human beings. With a counting time of one minute, the system can detect inhaled or ingested gamma emitters delivering less than 10 micro-Gray effective dose. With a rate of monitoring fifty individuals per hour, this system will serve as a valuable tool for quickly screening potentially affected individuals in case of a radiological emergency in public domain. For the prevention and response to radiological emergencies,

including threat of Radiological Dispersal Device (RDD - 'Dirty Bombs'), a ‘Quad-rotor based Aerial Radiation Monitoring System (QARMS)’ has been developed. This system can be used for search of 'Orphan Radioactive Sources' and assessment of any spread of radioactive contamination, following radiological emergencies, by flying at low altitudes of five to fifty metres and can be remotely controlled from a distance of five hundred metres.

Mr. President,

In my address to the IAEA General Conference last year, I had pointed out on the role that nuclear energy is destined to play in meeting the electricity as well as non-electricity needs of the mankind, and made a plea to make a concerted effort to pool and support the international knowledge resources and research to arrive at safe, economic and sustainable solutions, when the time comes.

In a similar context, in 2006, while I was chairing the Meeting of the INPRO Steering Committee, I made the following observation, which was also published in the IAEA - NENP newsletter.

I quote:

“Four decades from now, in any country of the world, it should be possible to start replacing fossil fuelled power plants, at the same urban or semi-urban sites where these are located, with advanced NPP that would, more economically, deliver at least twice the power that was being produced by the replaced plants.”
Unquote

There is no doubt that the modern reactor technologies would meet the required standards of safety, environmental releases and economics, for achieving the above objective. However, to realise such a vision, it will be also necessary to consider, in parallel, the need for the development of scientifically validated basis for radiation protection regime.

Decades of studies on populations exposed to high radiation, and recent advanced research in radiobiology carried out in different parts of the world provide evidence that radiation-induced damage and repair mechanisms are distinctly different at cellular and tissue levels, and for low dose and high dose rates. With the current status of development and availability of advanced research tools, I am sure, given the required resources and priority to address any residual doubts through advanced research, a science-based, firm recommendation can be made to remove any undue conservatism in radiation protection limits.

The human population living in Kerala coast in South west India is continuously exposed to natural background radiation emanating from the monazite-bearing sand, with the dose varying up to a high of 45 mGy per year in the High Level Natural Radiation Areas (HLNRA), compared to less than 1.5 mGy per year in some other places in the same area (that is similar to Normal Level Natural Radiation Areas, NLNRA). As a part of on-going research of screening newborns in these areas in India, the studies have now exceeded 160,000 newborns; these studies did not reveal any statistically significant difference in the frequency of any type of malformations and stillbirth after adjusting for the confounding factors such as maternal age at birth, consanguinity, ethnicity, etc., and frequency of Down syndrome. Adaptive response studies are in progress using end points such as chromosome aberration, micronuclei and gene expression pattern.

An accelerated and conclusive scientific research, on the matter of health effects of radiation, would allay the perceived or misplaced concerns on nuclear energy in some sections of the society, as well as lead to more wide-spread use of life saving radiation-based diagnostic modalities at affordable costs, as for example, nuclear medicine procedures such as PET imaging.

The IAEA should take the lead in this direction, along with other international bodies like UNSCEAR, ICRP and WHO, by organising an international symposium for scientific discussions and to arrive at a consensus on the current state of understanding on the effect of low dose radiation on human health, and identify any residual gap areas that need further scientific research.

Mr. President,

Before concluding, I wish to share with great pride the news that India's maiden Mars mission, Mangalyaan, successfully entered the planet's orbit today, in a historic moment for India's space programme.

Thank you Mr. President.