

Independence Day Address
Saturday, August 15, 2020
by
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Chairman, AEC & Secretary, DAE

My Dear Colleagues,

A very good morning to all of you.

On this day in 1947, India was declared an independent nation. The independence was achieved after tremendous sacrifices. Today, India along with a majority of the rest of the world, is suffering due to a pandemic. We should exhibit the same perseverance and the fighting spirit, shown by our freedom fighters before 1947, to come out of the present difficult times. While saluting our tricolour, we should rededicate ourselves to completion of the task assigned to us.

We, as a nation, are determined to overcome these difficult times. Our Research laboratories and Pharmaceutical Industries are toiling to come out with most effective alternatives for treatment and medication. I am sure, we will succeed. I salute all of them.

Dear Colleagues,

While many activities of the Department have also been affected due to lockdown, substantial progress has been made nevertheless. Today, I would like to highlight some of the major achievements of our Department.

Our first indigenously built 700 MWe PHWR at Kakrapar (KAPP-3) achieved first criticality successfully on 22nd July 2020 at 0936 hrs. This is a big achievement for our Nuclear Power Program. This reactor shall be a forerunner for the indigenous reactors planned to be built over a period.

NPCIL has continued to demonstrate its ability to safely and reliably operate NPPs. I would like to mention 2 important achievements of NPCIL : Unit – 5 of the Rajasthan Atomic Power Station (RAPS-5) registered continuous operation of 472 days after which it was manually shutdown on July 29, 2020 for maintenance activities. NAPS-2 continued safe and reliable operation for more than a period of 706 days. So far, continuous operation for more than a year has been achieved 34 times by various reactors of NPCIL. TAPS 1&2, the oldest operating Boiling Water Reactors (BWRs) in the world completed 50 years of commercial operation on October 28, 2019.

In the financial year 2019-2020, NPCIL recorded highest ever generation of 46,472 Million Units of electricity as compared to any previous financial year's generation.

During lockdown period, all the NPPs have operated well. The fleet capacity factor was more than 85% during the Q1.

I congratulate NPCIL's management, Scientists, Engineers and staff for these achievements. I also thank state governments and local authorities who have permitted to carry out vital activities at different plant sites in coordination with plant authorities, while adhering to all the COVID specific guidelines.

India has been making efforts for extending our nuclear power capabilities internationally. To begin with, agreements have been signed for training manpower in operation and maintenance of reactors.

In April 2020, Turamdih Mill has commissioned the facility for the production of 'Heat Treated Uranium Peroxide (HTUP)' in place of 'Magnesium Di-Uranate (MDU)'. With this, all the mills of UCIL in Jharkhand are now producing yellow cake in the form of HTUP which is of more than 84% grade as compared to around 70% for MDU. HTUP contains lower impurities and is easily soluble in nitric acid, and being of superior grade, it will increase the efficiency of downstream processes.

On the industrial front, all the production units of the Department viz. NFC, HWB, UCIL, IREL, BRIT, ECIL have been meeting their targeted production. Apart from taking up various developmental projects, the focus of NFC is on Automation of the fuel production line.

IREL has recorded highest ever Revenue from Operations of Rs. 1038.74 crore since its inception, which is an increase by about 35% over last year and highest ever Profit Before Tax (PBT) recorded by IREL, which stood at Rs. 402.94 crore. This is almost double of previous year's PBT. For developing value added / strategic products, IREL is setting up Rare earth Permanent Magnet Plant, for which major statutory clearances have been achieved.

ECIL has developed innovative Remote Health Monitoring System (RHMS) for remote health monitoring and tracking of COVID-19 and general patients, based on Internet of Things (IoT) Technology. RHMS has two variants MONAL 2020 and COVID BEEP 2020

(a) MONAL 2020: It was developed in association with AIIMS, Rishikesh and can remotely monitor body Temperature, oxygen saturation in blood (SpO₂), Heart Beat Rate and Respiration Rate.

(b) COVID BEEP (Continuous Oxygenation Vital Information Device – Bio ECIL ESIC Pad) 2020: It was developed in association with ESIC Medical College & Hospital, Hyderabad and can remotely monitor vital parameters like MONAL-20. Additionally, it also monitors NIBP (Blood Pressure) and ECG (Electrocardiogram).

ECIL has successfully implemented the Smart Grid Pilot Project for Telangana State Southern Power Distribution Company Limited (TSSPDCL), Hyderabad under Government of India's Integrated Power Development Scheme.

The Heavy Water Plant at Kota has made highest production of heavy water in the history of operation of the plant since 1985, with 110.2% of the target, with consumption of 28.7 GJ/kg specific energy as against a target of 29 GJ /kg.

Sodium Purification facility (400 kg per batch) was commissioned at Heavy Water Plant at Baroda on 5th January 2020, and purified Nuclear Grade Sodium of 3.0 MT was produced for supply to IGCAR, Kalpakkam.

At HWP, Manuguru, Oxygen-18 unit attained the required enrichment of 95.5%, and 800 ml product was collected. It is a milestone in the production of enriched water for medical applications.

At Medical Cyclotron Facility, VECC, Kolkata regular production and supply of [F-18]-FDG radiopharmaceutical has commenced from 29th June, 2020 for the PET imaging at Nuclear Medicine Centres in Kolkata.

BRIT started the regular Production & Supply of ^{177}Lu -PSMA, ready-to use therapeutic Radiopharmaceutical, for the treatment of Prostate Cancer since September 2019, after obtaining all Regulatory Approvals. 74 Consignments were supplied up to March 2020.

In the area of Mega Science projects, A number of milestones were completed by ITER-India for the ITER project. 28th May 2020 marked a major milestone -- the Cryostat Base section was installed in the Tokamak pit. The structure (made in India), weighing approximately 1250 Tons, over 29 m diameter and 30 m tall, was placed with a positional accuracy of less than 3 mm. For ITER project, manufacturing of the Cryostat Top Lid has been completed at L&T Hazira, marking the end of cryostat manufacturing activity on Indian soil. This month also marked supply of complex and high precision In-Wall Shield components to ITER.

At RRCAT, Indigenously developed remotely operated and fibre coupled 500 W average power Nd:YAG laser systems has been deployed for welding and cutting applications. One laser system has been commissioned at the Advanced Fuel Fabrication Facility (AFFF), Tarapur for fuel fabrication of PFBR and BWR. The other laser system has been successfully used for cutting of

pipe lines of the emergency core cooling system in the Kudankulam Nuclear Power Plant-2 reactor.

During this period, most of our research facilities, including Synchrotron, Cyclotron, Dhruva, Fast Breeder Test Reactor (FBTR) etc. gave satisfactory performance.

Department has also been working in the field of various non-power applications as its mission.

In the health care sector, BARC in association with SCTIMST (Sree Chitra Tirunal Institute for Medical Sciences and Technology), Thiruvananthapuram, successfully completed development of prototype Deep Brain Stimulator (DBS) for neurological disorders of brain. This will facilitate treating neurological conditions, like Essential tremor, Parkinson's disease & Dystonia.

A big push in Cancer treatment was taken up by TMC. It has commissioned new cancer hospitals in Varanasi (Homi Bhabha Cancer Hospital & Mahamana Pandit Madan Mohan Malaviya Cancer Centre). On the basis of last few months data, on an average, the two hospitals are treating ~11,000 patients every month with ~1500 new cases. It is also building cancer hospitals in Mullanpur, Visakhapatnam and Sangrur. TMC has started Paediatric oncology services at Visakhapatnam. Inauguration of

new state-of-the-art Linear Accelerator at BBCI, Guwahati was also carried out, benefitting persons from North East Region.

In the area of Food Security, two gamma ray induced mutant rice varieties developed, through BARC and Indira Gandhi Krishi Vishwavidyalaya (IGKV)-Raipur collaboration, were released by State Variety Release Committee (SVRC)-Chhattisgarh. To honour and celebrate birth centenary year of late Dr. Vikram Sarabhai, former Chairman, AEC, one of the mutant rice varieties is named as Vikram-TCR.

In the field of basic science, at NCRA, TIFR, a team of astronomers at the National Centre for Radio Astrophysics (NCRA-TIFR), in Pune, India have recently discovered an extremely large ring composed primarily of neutral hydrogen gas around a distant galaxy named AGC 203001 using the Giant Metrewave Radio Telescope (GMRT). This ring happens to be only the second known example of such elusive rings whose origin remains a matter of debate among astrophysicists.

Some other Mega Science Projects in which India is participating are CERN, LIGO (Laser Interferometer Gravitational-Wave Observatory), SKA (Square Kilometre Array), TMT (Thirty Meter Telescope), FAIR (Facility for Antiproton and Ion Research). These Mega Science Projects were showcased as a part of a travelling exhibition. During the entire 11 months (May 2019 to Mar 2020) of this exhibition, a first of its kind, called “Vigyan

Samagam”, attracted a total of about 6.5 lakhs visitors, which indicates the interest taken by teachers, students and general public for science.

As a part of new initiatives, on 16.05.2020, the Hon’ble Finance Minister had made three announcements under the umbrella of ‘AtmaNirbhar Bharat’ concerning DAE. All the three announcements have contributions primarily from BARC. These are:-

(Quote)

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- Establish research reactor in PPP mode for production of medical isotopes-promote welfare of humanity through affordable treatment for cancer and other diseases.
- Establish facilities in PPP mode to use irradiation technology for food preservation to complement agricultural reforms and assist farmers.
- Link India’s robust start-up ecosystem to nuclear sector – Technology Development-cum- Incubation Centres will be set up for fostering synergy between research facilities and tech-entrepreneurs.

” *(Quote complete)*

Substantial progress has been made in all the three areas.

The programmes of the Department are expanding and are progressing on the lines of Vision program that has been prepared for next 15 years. I urge all the DAE family members to work with dedication and make the Vision programme a success.

Before I end, I must acknowledge and thank a large number of persons who are quietly performing a difficult task of managing the pandemic. During this pandemic, our soldiers are Doctors, Nurses, Paramedical staff, Health workers, Sanitation workers, Police force, etc., who have continued to work without any respite and have helped us to manage the situation.

In the end, I would like to thank all the members of our Scientific, Technical and Administration, including Security who have worked hand in hand in making the program of the Department a success.

I once again wish you all a very Happy Independence Day.

Jai Hind.