Republic Day

Monday, January 26, 2026

Venue: DAE Secretariat

Address by

Dr. A. K. Mohanty

Secretary DAE & Chairman AEC

Dear Colleagues, Ladies & Gentlemen,

Good Morning. A warm welcome to you all for the celebration of the 77th Republic Day of India. The Republic Day is an occasion to commemorate India's transformation into a sovereign, democratic republic when its Constitution was adopted on January 26, 1950. On this occasion, we pay our tributes to great visionary leaders like Dr. B. R. Ambedkar, who chaired the Drafting Committee and introduced the final draft of the Constitution to the constituent assembly on 4th November 1948. The month of January is also the month of the birth of Swami Vivekananda, Netaji Subhash Chandra Bose and the great physicist Satyendra Nath Bose, a pioneer in the field of physics and quantum statistics.

As we stand under the tricolour, let us pledge to uphold the values enshrined in our constitution and commit ourselves to fostering unity- in- diversity, promoting peace, and ensuring that every citizen, irrespective of caste, creed or religion, enjoys the fruits of freedom and equality.

The Main theme of Republic Day celebration this year is '150 Years of *Vande Mataram*' with a sub theme focussing on self-reliance i.e., "*Atmanirbhar Bharat*'. As you are aware, '*Vande Mataram*' is an ode to our motherland and serves as a salutation to Mother India and was adopted as the national song of The Republic of India in 1950, sharing equal honour with the National Anthem.

In this context, I would like to mention that DAE's vision extends beyond power generation for the nation's energy security and aims to leverage nuclear science and technology for societal benefits. This vision very much resonates with the meaning of the opening stanza of '*Vande Mataram*'. Today, let us resolve to take forward this vision of DAE by scaling up our efforts in building an *Atmanirbhar* and *Viksit Bharat*.

It fills my heart with great joy and pride today to recount the achievements of our department in the last one year with major *Atmanirbhar* initiatives. The year 2025 marks a landmark milestone in the history of DAE as the "Sustainable Harnessing and Advancement of Nuclear Energy for Transforming India (SHANTI) Bill, 2025" was passed by the parliament and also received Presidential assent, to open India's nuclear sector to private players and modernize its nuclear framework. This bill stands as a pivotal step in shaping the next phase of India's nuclear journey. As the country moves towards enhanced energy security and technological advancement, this legislation will play a defining role in driving the growth of India's nuclear power and broader energy landscape. I am confident that this marks an exciting chapter for everyone in the nuclear sector. Let us draw inspiration from our remarkable achievements, harness this momentum, and gear up to contribute more dynamically and diversely.

In the last one year, our constituent units, Public Sector Undertakings and Aided Institutions have appreciably contributed to our mandate by way of pursuing innovative R&D, advancement of our nuclear power programme and rolling out a variety of spin-off technologies, which I am happy to elaborate.

1. AMD through its sustained exploration has augmented in-situ uranium oxide (U3O8) resource in the states of Andhra Pradesh, Jharkhand and Rajasthan. With this, the total in-situ uranium resource of the country stands at 4,39,800 tonne.
2. During this period, a total of 57,343 tonne in-situ Rare Earth Oxide resource has been augmented in hard rock terrains of Rajasthan and the country's total in-situ RE-oxide resource is updated to 1.29 million tonnes.
3. HWB continues to produce nuclear grade Heavy Water for meeting the annual make-up requirement for our PHWRs. This year, HWB has supplied the balance inventory of heavy water for RAPS-7 and also initiated supplies to RAPS-8 for initial inventory & testing.
4. On the Nuclear Power generation front, the third 700 MW PHWR, RAPP Unit-7 has commenced commercial operation on 15th April, 2025.
5. NPCIL's fleet of operating reactors has achieved highest ever electricity generation of 56,681 MU in FY 2024-25 at a Plant Load Factor of 86.61% and maintained electricity generation of about 54 BUs in 2025.
6. NAPS-2, TAPS-3, RAPS-6, KKNPP-2 and KGS- 4 have been in continuous operation of more than a year, continuing with the trend of setting records in long continuous operation by Indian nuclear

power reactors. With this, our reactors have achieved continuous operation of more than a year 54 times and also demonstrated a total of 655 cumulative reactor-years of safe operation of all the units since the start of their operation.

7. TAPS-1, the world's oldest operating nuclear reactor, achieved criticality on 30 December 2025, following the successful completion of major refurbishment activities.
8. Hon. Prime Minister, Shri Narendra Modi laid the foundation stone for Mahi Banswara Rajasthan Atomic Power Project 1 to 4 on 25th September 2025 which would be executed by ASHVINI (Joint Venture of NPCIL and NTPC).
9. At BHAVINI, all the construction activities of PFBR have been completed and integrated commissioning is in progress. Fuel loading is continuing towards approach to first criticality.
10. At BARC, the indigenously developed silicide dispersion fuel of Apsara-U performed robustly with average burn-up of 55,000 MWD/Te.

Coming to the Department's contribution towards societal application of radiation technology in the areas of Agriculture, Food Processing & Preservation, Water & Urban Waste Management etc., the same is gaining traction not only with industrial and rural licensees from private sector, but also from other Departments/ Ministries of Government of India.

As part of *Pradhan Mantri Kisan Sampada Yojana* and under the Integrated Cold Chain & Value Addition Infrastructure conceived by the Government of India, DAE technology for multi-product food irradiation

units has been considered by the Ministry of Food Processing Industries. 17 MoUs have been signed with BRIT to set up such facilities.

MoUs have been signed for setting up gamma radiation processing facilities in private/state government sectors and 5 such facilities were commissioned during this period. Today, a total of 42 facilities are operating in India, catering to domestic/export requirements for healthcare products, sterilization and hygienization of agro products. BRIT/DAE supports these facilities by supplying Co-60 sources and establishing plant operational parameters.

Contribution of DAE Units towards Health Care which is a major flagship program of DAE, continues undeterred in the areas of indigenous production & supply of radiopharmaceuticals and providing standardised affordable cancer care across the country. In this mission which is oriented towards building a healthy nation, TMC, BRIT, VECC and BARC continue to scale new heights and are going ahead with consistent endeavours to maintain & better our performance, year-on-year. In the year 2025, DAE units collectively made their presence felt in the domain of health care in the following ways.

1. At the Homi Bhabha Cancer Hospital & Research Centre (HBCH&RC) of TMC in Muzaffarpur, Bihar, a 150 – bedded comprehensive cancer care facility, was inaugurated by the Honourable Prime Minister, Shri Narendra Modi on August 22nd, 2025. The hospital provides comprehensive, advanced and affordable cancer care in the hitherto unserved region, strengthening equitable access to cancer care in Eastern India.
2. BARC has launched ColoNoX, a patented nitric oxide releasing wound dressing for the treatment of diabetic foot ulcers.

3. BRIT prepared a high specific activity 131I-mIBG therapeutic dose for the first time ever in our country and administered the dose successfully for treatment of a teenager suffering from neuroblastoma.
4. IPR in collaboration with ICMR, has developed and validated an Artificial Intelligence based deep learning software (**DeepCXR)** for Automatic Screening/detection of Pulmonary TB and other lung diseases using Chest X-rays at a very reasonable cost. The deep learning software has also been recommended as an AI screening Tool for National TB elimination program of India of the Ministry of Health and Family Welfare.
5. The Electron Beam Facility at RRCAT is providing E-beam sterilization services for medical devices in commercial mode and has sterilized 1.98 crore medical devices since 2023 with more than 1 Crore devices sterilized during the last one year.
6. VECC has continued to facilitate the 30MeV Medical Cyclotron System at Kolkata, for commercial production and supply of various PET and SPECT radiopharmaceuticals by BRIT and delivered to various hospitals/Nuclear Medicine Centres in and around Kolkata, for cancer diagnosis of patients.

Now, I would like to touch upon our priority in Basic & Directed research in Science and Advanced Technologies with major *Atmanirbhar* contributions aimed towards progress and development of our nation.

1. BARC has installed a pilot-scale facility of Cu-Cl thermochemical cycle of hydrogen production at FBTR site to demonstrate integrated Cu-Cl facility operation with molten sodium from secondary loop of FBTR.

2. BARC has developed and successfully deployed indigenous technologies such as first-of-a-kind ultrasonic based ammonium nitrate concentration estimation system for INRP Kalpakkam, an image analysis based automated system for metallographic inspection of PHWR fuel end cap weld, and a new miniature Thermal Ionization Mass Spectrometer for boron isotopic analysis of Heavy Water.
3. Critical Facility at BARC was utilised for special criticality experiments with Molten Salt Reactor fuel salt in different core locations, as part of the department's efforts towards Thorium utilisation.
4. ECIL has supplied Accident Monitoring System, N16 and Grass Gamma Monitoring System and Inert Radioactive Gas Monitoring System to KKNPP-3&4, commissioned the Neutronic Amplifier system at RAPP-8 and has developed a Pedestrian Monitor to prevent unauthorized movement of radioactive or fissile materials at NPPs.
5. An indigenously developed Certified Reference Material (CRM) of Ferrocarbonatite, developed jointly by AMD & NCCCM, BARC, has been formally released.
6. As a significant step towards *Atmanirbhar Bharat*, a helium refrigerator-cum-liquefier plant with 2000 litres/day capacity built with nearly 90% indigenous content has been developed and tested successfully at IPR.
7. IPR has demonstrated first plasma in India's first indigenously designed and developed Spherical Tokamak (Small Scale Spherical Tokamak -SSST). This Tokamak is built entirely with contributions from local industries, which embodies the spirit of Make in India towards fostering an *Atmanirbhar Bharat*.
8. RRCAT has successfully developed an Ultra-High Vacuum Gauge System, "Nirvatmapi-01", based on the inverted magnetron principle and tested it for reliable operation for the first time in the country. This

indigenous development will serve as an import substitute for UHV gauges required in large numbers for future projects, contributing significantly to *Atmanirbhar Bharat*.

9. RRCAT has developed, tested and installed five machine vision-based inspection and metrology systems at NFC Hyderabad in Dec 2025. This will lead to huge saving in manpower and reduction in man-rem for PHWR fuel element, Garter Spring and Reactor Management and Assembly components.
10. NFC has successfully developed a new zirconium-based advanced quaternary alloy (Zr-Nb-Sn-Fe) Tubes with oxygen below 1000 ppm for high burn-up application are proposed as substitute for Zr1%Nb and having low irradiation growth thereby enhancing fuel performance.
11. NFC has for the first time, manufactured a complete set of steam generator tubing in the minimum possible time of 3 months and flagged off to M/s L&T Ltd.
12. NFC has developed a breakthrough process employing controlled chlorination rate for selective consolidation of ZrCl4, optimization of process parameters in reduction and distillation and grading of sponge during size reduction operations and has paved a way for recycling Zr-Nb turnings.
13. NFC has produced 225 Nos. of ZrH2 filled Zircaloy moderator tubes and supplied to BARC to serve as a solid Moderator having potential for use in Advanced Modular reactors.
14. At VECC, for the first time in India, the K500 superconducting cyclotron (SCC) accelerated beam of Krypton at 610 MeV energy and successfully delivered to users for nuclear physics experiments.
15. BRIT has successfully delivered an indigenously designed Co-60–based radiation exposure device, COCAM-A to the College of Military

Engineering (CME), Pune and has exported1MCi of Co-60 Irradiator Source to NORDION (Canada) Inc.

16. Scientists at TIFR have carried out studies towards probing the nature of dark matter using strongly lensed gravitational waves from binary black holes and predicting the most precise mass to date of the Ωccc baryon, a rare particle made entirely of charm valence quarks and almost five times heavier than the proton, providing the most reliable theoretical reference for current and future experiments.
17. Indian physicists at the National Centre for Radio Astrophysics of the Tata Institute of Fundamental Research (NCRA-TIFR) in Pune, India, have discovered one of the most distant spiral galaxies ever observed - a massive, beautifully structured cosmic pinwheel that existed when the Universe was only 1.5 billion years old, named Alaknanda, using NASA's James Webb Space Telescope (JWST).
18. IMSc continues to contribute in the areas of Theoretical Physics, Mathematics, Theoretical Computer Science and Computational Biology and has published 232 research papers in national and international publications last year.
19. In the area of energy materials, researchers at the Harish-Chandra Research Institute have successfully predicted and experimentally validated emerging low-dimensional nanostructures for highly efficient and stable solar cell technologies and high-yield hydrogen generation.

Now, I would like to touch upon the concerted efforts which DAE is making towards Human Resources Development and Capacity Building and is the common thread for all our activities.

1. The second DAE Conclave was recently hosted at TIFR, Mumbai. Such conclaves in DAE have been started to celebrate the

department's accomplishments and deliberate on its future plans. During this conclave, DAE technologies and the work of young researchers, industries and health care professionals was also exhibited.

2. HBNI has secured 7th position in the Research Institution category, 12th position in the University category and 20th position in Overall category in NIRF ranking 2025.
3. Homi Bhabha Cancer Hospital & Research Centre, New Chandigarh, Punjab has become the 3rd Off-Campus Centre of HBNI expanding the total number of institutions under HBNI to 13.
4. The G P Birla Archaeological Astronomical and Scientific Research Institute has created a "ATMANIRBHAR BHARAT – GALLERY OF NFC", at the B.M. Birla Science Centre, Hyderabad, as part of India's commitment to scientific self-reliance. This gallery was inaugurated in October 2025, showcasing achievements of NFC towards establishing India's independence in the complete nuclear fuel cycle.
5. Indian Students have performed exceedingly well at the International Olympiads. India has secured a total of 14 gold, 9 Silver and 1 Bronze Medals at various Olympiads for Mathematics, Biology, Physics, Chemistry and Astronomy and Astrophysics. The International Olympiad on Astronomy and Astrophysics - 2025 was Organised by Homi Bhabha Centre for Science Education, during August 11 - 21, 2025 at Mumbai, India.

While we continue to strengthen our focus in our mandated areas, our Service Organizations like DCSEM, DPS and GSO have continued to support, facilitate and augment the Department's infrastructure. One of the historic milestones achieved this year was DPS initiative to go paperless. This was achieved by harnessing the digital tool for an End – To – End purchasing process through Material Management System.

MMS has been extended to all other out stationed Units. DCSEM has completed major up gradation and development works for the DAE Institute of Advance Studies.

As you can see that the collective efforts of DAE have yielded significant achievements in various fields. It is not surprising that quite a few National & International accolades have been bestowed upon the DAE fraternity. I would like to share my joy with you for these recognitions.

1. Team AMD has won the First Prize in the ‘Mineral Exploration Hackathon’ organised by Geological Survey of India (GSI), Ministry of Mines (MoM) on 'Innovative Mineral Hunt Techniques'.
2. ECIL has been awarded ELCINA 6th DEFENNOVATION Certificate of Merit– 2025, SCOPE Eminence Award for Institutional Excellence (2022–23) from Hon’ble President of India, Best Industry Award 2025 (Gold, Category -II) at the DRDO Industry Synergy Meet – 2025, and IEI Industrial Excellence Award - 2025 from The Institution of Engineers (India). Dr. Anesh Kumar Sharma, OS & Director (Technical) of ECIL received the ELCINA - Outstanding Contribution to India’s Strategic Electronics Sector award.
3. Dr. Yusuf Mohammad Seikh, Director, CEBS and Prof. Mj Mahan of TIFR were conferred with Vigyan Shri award, Prof. Deepa Agashe of NCBS-TIFR, Bengaluru and Prof. Sabyasachi Mukherjee of TIFR, Mumbai were conferred with Vigyan Yuva award by The President of India.
4. Mr. Rahul M. Mishra, Research Scholar, CEBS has secured 2nd rank in 20th Avishkar, Inter-Collegiate/Institute/Department Research Convention.

5. IMSc faculty Sanoli Gun and Amritanshu Prasad were elected fellows of National Academy of Sciences, Meena Mahajan was elected fellow of INSA and C Ramya was selected as an associate of IASc.
6. At HRI, Prof. Aditi Sen De was elected as a Fellow of the National Academy of Sciences, India and Dr. Sudip Chakraborty was awarded the SMC Bronze Medal–2025.
7. Smt. Sonia Kapoor, Headmistress, AECS-2, Mumbai was conferred the National Award for Teachers-2025 on Teacher's Day, 2O25 by the Honourable President of lndia.

While our scientists, technologists and engineers continue to deliver their best, children of AEES schools have also been making us proud.

1. 18 Science exhibits from AEES schools were selected for participation in the 52nd Rashtriya Bal Vaigyanik Pradarshani 2025 by NCERT.
2. Master. Aarav Godara, student of Class 10, AECS-2, Rawatbhatta received the INSPIRE – MANAK Award 2024-25 from DST and Kumari Aadhya Paul, student of class VIII, AECS-4, Mumbai secured 1st rank at the State level in Knowledge & Awareness Mapping Platform KAMP.
3. AECS-1 Kalpakkam secured the first position at the State Level Vidyarthi Vigyan Manthan (VVM) Science Talent Exhibition.

Dear Colleagues,

Over the past 7 decades, we have built multi-dimensional capabilities in various spheres of nuclear energy. With the enactment of the SHANTI Bill, 2025 to enable responsible expansion of our country's nuclear energy landscape, it is now time for us to consolidate our wide-ranging nation-centric activities and re-organise them into more focused & action-oriented mandates. The vision document released by our department for

2047 would set the tone and serve as an important guideline to channelize our contributions towards fulfilment of the national vision of Viksit Bharat.

I would like to thank you for all your efforts and urge all of you that as citizens of this great country and partners in the successes of our department, it is our duty to support these advancements and ensure that they are used responsibly for the benefit of humanity. Together, let us work to build an India that is not only self-reliant but also a beacon of hope and innovation for the world.

Last but not the least, I would like to specifically mention and sincerely acknowledge the dedication of our health care professionals, security professionals and administrative/ technical/ scientific staff who play a very important role in ensuring the safety, security and good health of all our employees and their families and thus create a positive work environment for all of us.

Once again, I would like to extend my good wishes to all the members of DAE and their families.

Thank you very much. Jai Hind!