



# DRK's News Letter

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## ISRO SPACE MISSION – PRIDE OF INDIA

### Dr. Abdul Kalam Commemorative Lecture at ISAC, Bangalore

I was invited earlier by the Scientists of ISAC – ISRO Satellite Centre, Bangalore to be the Chief Guest at the Independence Day Celebrations. I could not accept the invitation due to unavoidable important prior commitments elsewhere.

So when the invitation came from the Director, ISAC/ISRO Bangalore to deliver the Dr. Abdul Kalam Commemorative Lecture on 18th October, I readily accepted the honour.

When I arrived at Bangalore airport, I was very graciously welcomed by the senior Space Scientist Dr. S.V. Sharma, Deputy Director, ISAC and

driven straight to their sprawling and green campus.

I addressed the Space Scientists at the elegant Auditorium, named after the distinguished Space Scientist Satish Dhawan.

I recalled the amazing growth of the Space movement and the huge contribution of Bharat Ratna Dr. APJ Abdul Kalam, former President of India.

He left a lasting legacy in Indian aerospace through the many individuals he mentored and trained. He

taught and inspired the entire team to cooperate and strive towards the greater good.

Way back in 1973, when Dr. Kalam took over as the project director of India's first Launch Vehicle, SLV 3, he dreamt of doing what ISRO eventually accomplished on May 23, 2016, while developing SLV 3.



While it was his work at the DRDO that brought him laurels and earned him the name "Missile Man", Dr. Kalam belonged more at the ISRO, where he spent two decades of his career.

He gave his best to everything he did and made the most of it. The job of the President, for example came through luck but he transformed the Indian Presidency with the result, even the incumbent President Hon'ble Shri. Pranab Mukherjee generously made the well-deserved tribute that Dr. Kalam is People's President for ever.

Dr. Kalam paid the tribute to the Space Scientists by saying, "I worked for ISRO for 20 years. My team and I worked hard relentlessly to put India's First Satellite into Space. Then our



team took up the integrated Guided Missile Development Programme. These were useful teams that worked with me and they have gone on to take up much larger projects. These in turn have led to great value addition in areas such as technology, infrastructure and above all human resources".

He said "the leader must have vision. Without vision, you cannot be a leader. The leader must be able to travel into an unexplored path. The leader must know how to manage success and even more importantly failure".

"The leader should have the courage to make decisions. The leader should have the nobility in management. The leader should be transparent and finally, the leader should work with Integrity and succeed with integrity".

Through his simple lifestyle and the way he treated people, Dr. Kalam set an example on how to exercise great power.

In many ways, the successful flight of India's first reusable launch vehicle was a tribute to the vision of the Rocket Scientist Dr. Kalam.



With Dr. M Annadurai, Director and Dr. SV Sharma, Deputy Director ISAC.

AVF / ISAC

He wrote many poems, as Hon'ble President Shri. Pranab Mukherjee himself narrated to me. Dr. Kalam used to write poems in pieces of paper and hand them over to him at various functions and meetings.

According to Dr. Kalam himself, his favourite poem which he recited in the Parliament is –

I climbed and climbed  
Where is the peak, my Lord?  
I ploughed and ploughed,  
Where is the knowledge  
treasure, my Lord?  
I sailed and sailed,  
Where is the island of peace, my  
Lord?  
Almighty, bless my nation  
With vision and sweat resulting  
into happiness

Some more of his popular quotes are-

Dream Dream Dream  
Dreams transform into thoughts  
And thoughts result in action

Learning gives creativity  
Creativity leads to thinking  
Thinking provides knowledge  
Knowledge makes you great



### ISAC - the Abode of Indian Satellites

During my two days of stay at the campus, the dedicated team of Space Scientists led by the dynamic director, Dr. Mylsamy Annadurai took me around the various facilities, research laboratories and departments and patiently explained in detail the various intricate research and operations. I was also shown the Satellites, which are under various stages of making.

I was amazed at the magnitude and intricacies of the research and various operations. With about 2500 highly trained and skilled manpower, ISAC today is home to a host of advanced cutting edge Satellite technologies that feeds into the Indian Space Programme.

The Centre is presently engaged in the challenging task of building future generation advanced communication, remote sensing, navigation and space science satellites. Satellite systems are used for the communications, economic development and also security of the Nation.

The mandate of the ISAC at Bangalore is basically design, development and realisation of Satellites, research and development, establishment of critical facilities and interface with academia and industry.

The Satellites built here are playing a vital role in





transforming the lives of people not only in India but all over the world in many spheres including Agriculture, Energy, Environment, Infrastructure Planning, Developmental Planning, Water Resources, Communication, Navigation, Weather Forecasting, Health, Education, Disaster Management and Space Science.

ISAC/ISRO is ably meeting the challenge of realizing several technologically challenging satellites.

As many as 84 Satellites have been built in this Centre which houses state-of-art facilities and technologies. Each satellite is composed of over 60,000 parts, mostly electronic.

Its dedicated team of scientists at all levels are committed towards "on time performance" and "zero defect" of Space craft systems.

Indian Space Programme has demonstrated significant achievements through enhanced in-house capabilities, industry partnerships and

collaborative efforts with academia.

It contributes to socio economic security, food security, water security, energy security, health security, shelter security, infrastructure security, information security, bio resources conservation, sustainable development, dealing with climate change, early warning system, Disaster Risk Reduction system, Managing fragile ecosystems, good governance, planning, satellite communication, Space Science, Space Exploration – Chandrayaan and Mars Missions.

ISRO has the distinction of achieving success in Mars Mission in the very first attempt and also at a very low cost. It is number one in the world in Remote Sensing. INDIA is among the top five nations in Space technology – along with USA, China, Russia and France.

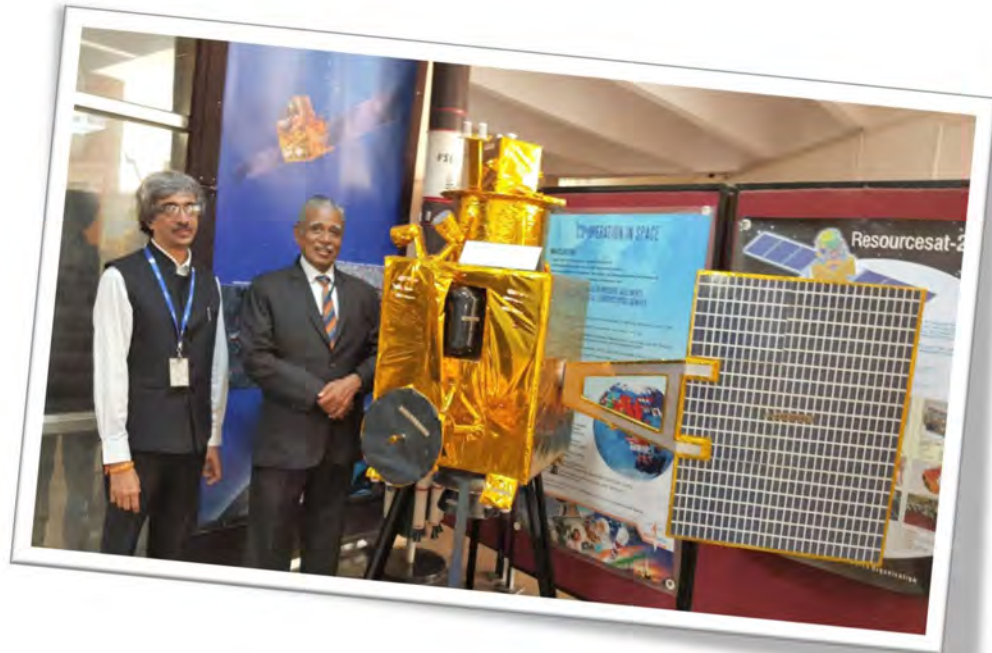


With Dr. APJ Abdul Kalam

It took three years for India to launch on 19 April 1975 its first Satellite Aryabhata, named

in one launch by March 2017, thus creating a world record.

find ways and means of bringing down the cost of accessing Space. If we don't do this, we will be beaten by host of other countries".



After deploying its own GPS system through NAVIC, ISRO is all set to achieve another milestone in the field of Space and Technology. India is going to launch its own indigenous reusable launch vehicle (RLV). When this is achieved the cost of access to space will decline significantly.

After coming back from the Space it will be guided by Satellites and radars to make it land in the Bay of Bengal. It is considered state-of-the art in reusable technology. It may take several years and enormous resources before RLV becomes a reality.

Many more spectacular achievements are in the offing, but ISRO would prefer it to be kept confidential for the time being.

after the first of the major mathematician - astronomers from the classical age of Indian mathematics and Indian astronomy.

Now due to the competence, commitment and skill of our Space Scientists, every month one Satellite is being launched.

Dr. Annadurai, the team leader of Mission Chandrayaan is applauded for his leadership and efficient Mission Management. 10 satellites have been launched in the one year of his taking over as the Director.

In September 26 Satellites were put in the orbit in one launch – out of the 26, 13 are from USA. I am told about 80 Satellites will go into the orbit

To quote the unassuming but inspiring Chairman of ISRO Mr. Kiran Kumar, "ISRO had recently also carried out some technology demonstrations like RLV-TD (Reusable launch vehicle) and Scramjet to reduce cost of access to space. It is the first step in our primary aim to





I am amazed at the total involvement, dedication and commitment of members of ISAC at every level to perform their very best to achieve the target of launching a Satellite every month.

The entire credit goes to the brilliance, commitment, dedication and more so to the leadership qualities of top Space Scientists since decades, for having succeeded in building up such a team-work culture in the organisation.

How I wish leaders, both in the corporate, public and government sectors could inspire such a culture of commitment, discipline, team-work, dedication, hard work and patriotism in their organisations also!

They alone live who live for others –rest are more dead than alive.

- Swami Vivekananda

Wars begin in the minds of men. So ramparts of peace should be built in the minds of men.

- Preamble of Unesco

Time travel used to be thought of as just science fiction, but Einstein's general theory of relativity allows for the possibility that we could warp space-time so much that you could go off in a rocket and return before you set out.

- Stephen Hawking

You cannot look up at the night sky on the Planet Earth and not wonder what it's like to be up there amongst the stars. And I always look up at the moon and see it as the single most romantic place within the cosmos.

- Tom Hanks

It suddenly struck me that that tiny pea, pretty and blue, was the Earth. I put up my thumb and shut one eye, and my thumb blotted out the planet Earth. I didn't feel like a giant. I felt very, very small.

- Neil Armstrong

The most important thing we can do is inspire young minds and to advance the kind of science, math and technology education that will help youngsters take us to the next phase of space travel.

- John Glenn

Man is an artifact designed for space travel. He is not designed to remain in his present biologic state any more than a tadpole is designed to remain a tadpole.

- William S. Burroughs

**THE KEY TO HAPPINESS IS UNCOVERING WHAT MAKES US FEEL CALM, CREATIVE, CENTERED, STRONG, AND UNMOVED BY PASSING EVENTS**