ESSAY

DRDO: ACHIEVEMENTS AND ITS WAY AHEAD

"Excellence is a continous process and not an accident"-APJ ABDUL KALAM

We are persistently striving towards globalisation , modernisation , urbanisation, exploration of entrancing innovations and miraculous up-gradation of life style. Since , after the first ablaze of independence of our nation , fascinatingly making its way ahead of bewitching development . In this round o clock development a special mention is made necessary of marvellous , scatter-binded and astonishing achievement of our prominent organisation , termed as DRDO (Defence research and development organisation) . Our heart filled with elation and delight, when we elobaretly describe fact that it is an Indian organisation which has proved to be the most efficacious organisation in the field of defence ,research, space technology , weapon system ,aeronautics , combat vehicles, missiles, advance computing and naval system throughout the world. DRDO diligently endeavours with the vision of making India prosperous by establishing world class science and technology , and provide our defence service a decisive edge by equipping them with the internationally competitive system and solution. It is matter of colossal appeasement , that our mission mode organisation has made a roaring success with continuous process of excellence as described by our missile man and illustrious soul Dr. APJ Abdul Kalam, with in sixty years of its establishment . There are many more procurement to comes in a year ahead.

"You have to dream big before your dreams can come true" with this spirit of dreams and thought and transforming it into action , defence research and development organisation was established in 1958. Independent India had good fortune to have Pandit NEHRU as its first prime minister , a person who considered science and technology as the most important factor for lifting the nation out of mire of grinding poverty .He was well aware of the contribution of modern science and technology to the higher standards of living in advanced countries like Europe and the USA . It was the opinion of Pro. BLACKETT that "probably an aeronautics research and development establishment needed to India , is to develop an air industry". In other technological areas related to defence weapon , he urged the government to strength and expand the existing technical/ defence development , so that the special problem of applying modern technique to be adequately dealt with. Later on DR. Kothari, DR. SS Bhatnagar who founded the CSIR organisation and DR. H.R. Bhabha were the triumvirate who influenced the structure and the organisation of science and technology , research and development in independent India. Then the Shri Krishna Menon took over the reins of defence ministry, he was very much conscious of the need to provide better equipment for the armed forces from indigenous production . If the prime minister had the vision and faith that science and technology would serve the cause of Indian defence , it was the conviction and enthusiasm of Shri Krishna Menon which bought a sea change in defence production and a complete transformation of the defences agencies organisation . He was a firm believer that Indian scientist , technologists and engineers are second to none and could achieve any target set in front of them provided they are given opportunities .Therefore, besides strengthening defence production activities , he initiated the move to merge the laboratories engaged in import substitution and defence activities. Therefore, DRDO was formed on 1st jan 1958 by amalgamating defence science organisation and some of the technological development establishment . A separate department of defence research and development was formed in 1980, which later on administered DRDO and its 52 laboratories . Since , that time till now on completion of 60 years of its establishment it is

dedicately and relentlessly serving nation, creating bedrock milestone in the history of any organisation.

DRDO has achieved an appreciable level of self reliance in nuclear , biological, and chemical defence technologies. Life support technologies and products developed by the DRDO have significantly enhanced the health and operational efficiency of our soldiers operating in extremes of environmental and operational condition . It has developed the tacit knowledge and capability for system integration with in country . Presently organisation is backed by over 5000 scientists and about 25000 other scientific technical and supporting personnel. It is India's largest and most diverse research organisation . There are certain important and laudable achievement of DRDO are:-

1.**AGNI-V** : It is inter- continental ballistic missile with a range more than 5000km. It is considered to be the biggest achievement because of nuclear deterrent and strategic posturing. It can carry multiple independently targetable re-entry vehicle with the missile in the armoury, India can strike any part of China and Pakistan from its territory.

2. *The BRAHMOS* : It is has been developed as joint venture between DRDO and Russia under BrahMos aerospace. It is world's fastest cruise missile in operation.

3. *AKASH :* It is a medium range mobile surface to air missile which can target air craft , cruise missile and ballistic missile .

4. **TRISHUL**

5. **NAG** Anti tank Missile

6. **SAGRIKA** : It is a nuclear capable submarine launched ballistic missile. This missile will form part of triad in India's nuclear deterrence , will provide retaliatory nuclear strike capability.

7**. NIRBHAYA** : a long range , subsonic cruise missile developed by DRDO . It is an all weather low cost long range cruise missile with stealth and high accuracy. It is capable of being launched from multiple platforms on land , sea and air.

8**. Ballistic Missile Defence system** : The Indian Ballistic missile development programme is an initiative to develop and deploy a multi-layered ballistic missile . It is very ambitious and technology intensive project as this kind of capabilities are with only 2-3 countries in the world .

9. **Light combat aircraft** –**TEJAS** : It is fourth generation fighter plan developed by Aeronautical development agency. It is a light weight multi-role jet fighter.

10. ARJUN MARK II (Main battle tank) : It is advanced third generation tank . It is missile firing capability against long-range targets . An advanced air defence gun to engage helicopter . Enhanced main weapon penetration additional ammunition type, explosive reactive armour.

11.**DHRUV :** Advanced lighter helicopter . It has become the first major Indian weapon system to have secured large foreign sales.

12. **Unmanned Air vehicle – RUSTOM**-II : It is equipped with various advanced technologies and system which includes digital flight control and navigation system , automatic take off and landing , digital communication technology.

13**. INS – ARIHANT** : Nuclear powered ballistic missile submarine . It is India's first indigenously designed and built nuclear submarines in future.

14. **Rifle- INSAS**- (Indian Small arm system) : It became the standard battle rifle for the Indian army and paramilitary units . It replaced all the outdated rifles and their export was stopped .

15. Chemical kit for detection of Explosive

16.Explosive detection kit.

17. Indian CL-20 explosive
18. Remotely piloted vehicle **NISHANT**
19. Pilotless Target Aircraft **LAKSHYA-I**
20. Main Battle Tank **ARJUN MK-I**
21. Armoured amphibian **Dozer Mk-I**
22. Armoured Engineer REcce vehicle
23. NBC Recce vehicle
24. Bridging system **SARVATRA**
25. Air borne early warning and control
26.Integrated sonar system for EKM submarine
27. Short range battle field surveillance radar
28. 3D low level light weight radar **ALESHA MI-k**
29. Weapon locating radar **SWATHI**
30. 3D surveillance radar **REVATHI**
31. Electronic warfare system for navy **SANGRAHA**
32**. SAMYUKTA**
33**. DIVYA DRISHTI**- Electronic warfare system
34. **VARUN**
35. **Akash** weapon system
36. **Prithvi** Missile for army
37. Supersonic Cruise Missile **BrahMos**
38. Multi Barrel rocket launcher system **PINAKA Mk-I**
39. Heavy weight ship launched torpedo **VARUNASTRA**
40. Telemedicine system for navy
41. Flame retardant gloves
42. Sub marine escape suit

It has also developed combat vehicle , missile, multi-barrel rocket, launcher, unmanned ariel vehicle, radars, electronic warfare system , sonars , torpedos , bridging system , combat aircraft , sensor , NCB technologies , parachutes, combat free fall system , propellant and explosive , detonators , communication system etc. List still not get over with the achievements of DRDO an ambitious dedicating organisation. There are many more achievements are still waiting at the door of DRDO. Now there is strong need to build sensors and radars for more accurate target detection . It mainly focuses on indigenous development of technology. Now many more projects are under going to provide for better security to our nation . It mainly stated by WISTON CHUCHILL " Success is not final , failure is not fatal, it is the courage to continue that counts". Therefore, with this thought our most determined, enthusiastic and committed organisation is proving its capability with in whole world . The diamond jubilee of DRDO seems glittering gloriously like a diamond through all the achievements . Its been 60 years of establishment of DRDO and it has emerged out most efficient defence organisation in world within this duration. The many technological advancements over the year , shows a serious dedication to developing the technological capabilities on home ground. A number research labs by DRDO across the country are involved in the Make in India initiative , and the participation of private and public sector increases the capability of manufacturing in India. Transforming India into Brighter India.

JAI HIND, JAI BHARAT