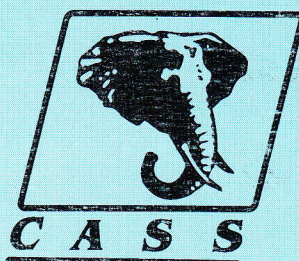


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**CENTRE FOR ADVANCED STRATEGIC STUDIES**

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**AIR MARSHAL YV MALSE MEMORIAL LECTURE**

**BY**

**AIR MARSHAL PK BARBORA, PVSM, VM, ADC  
VICE CHIEF OF THE AIR STAFF**

**ESSENTIALS OF AN AEROSPACE POWER: INDIAN CONTEXT**

**09th July, 2010**

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Editor : Gp Capt (Retd.) S. G. Chitnis, VSM Deputy Director, CASS

Address : Centre for Advanced Strategic Studies, MMDW Potdar  
Complex, Pune University Campus, Pune 411007.  
Telefax : 25697516 / Tel. : 25690182  
E-mail : cass182@bsnl.in

**WELCOME BY DIRECTOR  
AIR MARSHAL (RETD) S. KULKARNI, PVSM, VM**

Air Marshal S. Kulkarni welcomed everyone present for the Air Marshal YV Malse Memorial Lecture : 2010. He said that late Air Marshal Malse was the founder of the Centre for Advanced Strategic Studies. With his perseverance and dynamism he succeeded in getting together industrial stalwarts, late Shri Shantanurao Kirloskar and late Shri Navalmal Firodia, late Shri PVR Rao, former Secretary of Defence, Admiral (Retd) JG Nadkarni, former Chief of the Naval Staff, late Shri RD Sathe, IFS, former Foreign Secretary, Shri Sharad Marathe, IAS, former Industries Secretary, Government of India, late Professor VG Bhide, former Vice Chancellor, University of Pune and formed the National Security Forum. He saw the relevance of the Forum and the need to establish a "Think Tank" away from Delhi, deliberating and discussing National Security issues. Within a short time, through his tireless efforts the National Security Forum was transformed into the Centre for Advanced Strategic Studies in October, 1992. He persuaded late Shri PVR Rao, former Defence Secretary to take over as the President and Admiral JG Nadkarni, former Chief of the Naval Staff to take over as the Director of the Centre.

Air Marshal S. Kulkarni said that Air Marshal Yeshwant Malse was one of those who left large footprints behind when he passed away. Since then, the Centre has organized three memorial seminars/lectures. The first one was on "Aerospace Power in a Changing National Security Environment" on 28<sup>th</sup> July, 2007, the second on "India's Strategic Environment and Its Implications for Military Modernisation" on 08<sup>th</sup> July, 2008 and the third on "Military Force Application in the Contemporary Context" on 10<sup>th</sup> July, 2009.

Air Marshal S. Kulkarni said that we are fortunate that Air Marshal Pranab Kumar Barbora, PVSM, VM, ADC, Vice Chief of the Air Staff has kindly consented to deliver the Air Marshal YV Malse Memorial Lecture today, and our member Air Marshal (Retd) BN Gokhale, PVSM, AVSM, VM and former Vice Chief of the Air Staff has agreed to chair the event.

**AIR MARSHAL YV MALSE MEMORIAL LECTURE****AIR MARSHAL PK BARBORA, PVSM, VM, ADC, VICE CHIEF  
OF THE AIR STAFF, IAF****ESSENTIALS OF AN AEROSPACE POWER : INDIAN  
CONTEXT****Introduction**

It gives me immense pleasure to be here and address the Air Marshal (late) YV Malse memorial lecture. The talk is purely personal and it is my privilege to address the elite gathering on a contemporary issue '**Essential of An Aerospace Power in Indian Context**'.

**The History**

Ladies and gentlemen, before I formally start the core issue of the topic, I wish to assert that 'I am proud to be an Indian'. Post independence, country had started manufacturing Ambassador car, an achievement in the field of automobiles. Further our scientists had been successful in making satellite indigenously, a significant achievement in the space technology. But in between these two achievements we got nothing to talk about. We have been moving ahead into space but we have not been able to make progress on other areas of vital interest of the country. Now, if the subject is aerospace power, let us first touch upon post independence as to what existed in India. There was nothing much in civil aviation. It was our Air Force which played a very vital role that may have changed history and geography also.

In 1948, if aircraft of the Indian Air Force had not landed in Srinagar and supplied the aid that the troops had required, history may have been different and again if it had not been again for the IAF to go into Leh, we don't know what would have been the geography today. I understand from history that after the landing at Leh proved that we cannot only recapture areas around Poonch, but as Army says that they could have moved up to Muzaffarabad. But I understand that at that time the dictate was 'no hold on at Poonch'. Again, we don't know, how history could have changed, the geography would have been different, but that was the role of aerospace

power then. Of course those were the primitive years of aviation and the Indian Air Force has grown phenomenally since then.

### **Present Position**

Now touching upon India's new role in the world order, I don't have to say much as you all know about it. India has become an economic power and there is no doubt in anyone's mind about this fact. The new identity is not only in the South/South East Asia but in the world today. India may have the growth of GDP @ 8.5% this year as per reports published in the newspaper today. I believe the growth is phenomenal considering recession encountered by the Indian economy in the recent past. Now India has become a world player and world leaders say that this century belongs to, the Chinese and Indians. It is a fact and 'this century belongs to us'.

### **Challenges**

As you know instability exists everywhere in the world and India is not an exception to it. But despite instability we are a nation which is growing. In India there is a need to sustain the growth notwithstanding challenges, both external and internal. The greater challenge lies with water resources, energy, trade, transportation etc. In other words I am convinced that, this has been and would be major issues and may lead to conflict like situations with our neighbourhood.

### **Role of Aerospace**

It is very true that every progressive Nation must be supported by a strong defence. Defence forces ensure that the nation is free from any threat, external or internal. In this context, within the country and outside the country, the Indian Air Force has done extremely well. The role of aerospace power does not only apply to defence forces of a Nation but also includes civil aviation and the aviation industry. The time has come for us to seriously plan out the strategy for the future. It would also be prudent for the Government, the Indian Air Force and the industry to come together, interact and identify regions of cooperation and move forward in a concerted manner. This would give us a niche capability and we could be major player in the world in the future.

### **Impact of Aerospace Power on National Policy**

Aerospace Power can play and has always played a major role in influencing the formation of National Policy. I along with my colleagues

landed in DBO at 0617 hrs. after 43 years in May 2008. China requested for a flag meeting two days later. Four days later Defence Minister visited China and the subject was not brought up. Govt of India decided to not open more ALGs and we did that. The PM decided to open up North Eastern Sector for developing ALGs in the North East. I am heading one such committee. This is where the Aerospace can make an impact on national policies.

### **Defence Industry**

The state controlled HAL was established in 1939 like many other PSUs and DRDO. The return is really worthwhile and India is very proud that HAL has produced more than 500 AC. HAL has indigenously produced parts like doors, under carriages etc for Airbus industry. China, as a nation came into being after India and has developed a whole Airbus. So some thing is wrong somewhere. We have to take leverage of the business in aviation. Manufacturing of defence products like LCA and development of Kaveri (aero engine) by the state controlled defence industry is very difficult task but nothing is impossible if there is a will.

### **Public-Private-Partnership (PPP)**

The Indian defence industry which was till recently state controlled has now been thrown open to the private sector. The new procurement policy DPP-08 presents opportunity to private industry. No fruitful results could be envisaged without extending financial assistance, firm orders and explicit policy on export of items. There is a need to build focused product strategy with commensurate investments in Defence Industry across segments including private sector so that in the long term, the country meets its defence requirements as much as possible from within the country. This will only be possible by allowing the private sector to play rightful role in product design, development, manufacturing and integration capabilities available in the private sector to augment the capacities build in the public sector through public-private-partnerships. Presently, our D&D is relatively limited, i.e. for licensed manufacture, but not beyond. We must involve the private sector in Development & Design too and also in production.

### **Joint Ventures**

The joint ventures and co-production are one of the very effective ways to improve the capabilities of Indian defence industry. The joint ventures

partnerships between industries help in evolving new products, improve existing products, raising the technology threshold, improve skills as well as cater to in service-life support. Both Defence PSUs and private sector must enter into JVs, co-designing and co-production to obtain and absorb genuine technology, rather than simply licensed production. But there are hurdles for private firms to enter into JV with foreign firms. It is seldom possible to achieve desired results in the absence of full freedom to private firms.

#### **Future of Aerospace**

The future areas of interest in case of aerospace in Indian context should be technology driven, materials, structures, power systems, electromagnetic systems, sensor, interactive networking which could be developed by our scientists. Our scientific fraternity is very good, energetic and full of ideas. Unfortunately they do not stick to the time frames or they have not been mobilized. Our endeavour could be dual i.e. civil and military purposes. Some of our private firms are exporting their products to foreign countries. In some case these firms are funded by foreign countries. But when it comes to developing our own defence and aerospace industry, again all those hurdles and hindrance come in the way of growth. We must invest more in research and development organisations by increasing the budget allocation. If, required we need to extend financial assistance to some of the private firms, create an export market and build our core competency.

#### **Conclusion**

I must reiterate that we are a prominent aerospace power. Today, we stand at a critical juncture in our quest for a strong aerospace potential. As India rolls into the future with a goal of becoming a major global player, our scientists and aerospace industry would need to play a very significant role in synergizing our efforts towards enhancing our capabilities. Our aerospace industry should be able to cater for our defence needs as well as boost our economy through foreign military sales. To bridge the existing system, it will be prudent to buy of the shelf technologies, which are available in the open market and focus on developing core technologies, which other nations are reluctant to part with. We must utilize the huge infrastructure available in the commercial industry and facilitate their endeavour to join the growing Indian aerospace industry. We must also involve the IITs, universities, government and private science and technology establishments in accumulating technology.



**CONCLUDING REMARKS BY THE CHAIRMAN****AIR MARSHAL (RETD) BN GOKHALE,  
PVSM, AVSM, VM**

Today despite various constraints, the armed forces in general and Air Force in particular, is doing well. We now have the AWACS, the Aerostat, Network Centricity and many other projects that are on the anvil. Also as Air Mshl Barbra has very candidly put across various challenges that we face. But I am sure that the leadership will overcome these and we will continue to prosper as proud Indians. Someone has said and I quote, "An optimist invented an aircraft and pessimist a parachute", unquote. I am an optimist and although there are constraints, the Indian elephant and the resurgent economy that we have now inherited will see us through. There were problems in the past, which are thankfully through such as the budget constraints. I remember when we were buying Hawk trainers, we were severely constrained by the budget then and there were also delayed decisions. But the idea is not to get into blameworthiness but today we should talk about the opportunities ahead.

We now have 50 % offset and some of the opportunities are already translating into facts such as what the Chinese would call the Mk-I and Mk-II philosophy. You have heard of the LCA including the Naval version, which has rolled out. We are now talking in terms of a Mk-I LCA, and probably a Mk-II with a different kind of improved engine, possibly modified Kaveri. Similarly the Arjun Tank, which will have Mk-I and II. There is one thing I must point out in terms of Indian Air Force that unlike the Navy, which has the great example of having an in-house Warship design department, the warship department, unfortunately the Indian Air Force does not have one. HAL at one time was a kind of an extension and whichever products they made were considered as if they were only for the captive market of the Indian Air Force. Then our policy of not exporting goes back to our non-alignment days. We have experts from MEA here who know that many countries are on the negative list. When I was a Defence Adviser in Egypt, I also used to go to Sudan. We have the famous Sudan block of NDA, whose Commandant is also here. For almost first ten years an Indian Army Officer used to be the Sudanese Army Chief. They fondly remember our association and keep asking about importing Indian equipment, but our negative list does not permit such export. That is one of the reasons that our neighbours are doing so well in exports.

Then there are other changes happening, DRDO for example is now going in for a collaborative approach. Like Brahmos there are some other projects, which are in the offing. But as the VCAS has just said that we must not try to do everything, but we should look at our strengths, and one such strength I can pinpoint today is radar technology. The indigenous Rohini radar is a great example of success. We in the Indian Air Force have placed a big order, and so has the Army. I think that it has a tremendous export potential. We have exported Dhruv Helicopter to Chile, but, it is not easy to get into an established market where a number of players are already in the helicopter manufacturing market. But, such challenges should not deter us from attaining this kind of export. As I said I am an optimist.

I will now touch on a few more aspects from the aerospace. I am glad that this terminology is being used together because space is a contiguous medium of air and together they have tremendous potential today, be it in navigation, imaging etc. And here the Indian Armed Forces are asking for a Joint Command, which is generally being agreed to, but has not transformed into a reality. As you know the Chinese have gone in for weaponisation, hence we must differentiate when we talk about use of space for weaponisation or militarization. What we are asking for is militarisation, which means using space as a medium for enhancing our capabilities. But the weaponisation like the Chinese did three years ago, which was soon followed by the Americans, has left a lot of debris behind in the Space which is so very harmful and everybody is now trying to clean it up. Such debris could well have hit a spacecraft in which late Kalpana Chawla was travelling. As the Vice Chief has rightly said that we have done well in Space arena, another area we have also done well is in nuclear or atomic energy. As you may know on 11<sup>th</sup> May every year since 1998 we celebrate what is called as the National Technology Day. This is to mark the Shakti experiment, which we did so successfully and indigenously. Similarly DRDO must not only do research, but also facilitate research by various Academic Institutes. However this has not happened very effectively so far.

Then there is the other issue of Cyber Security which of great importance while we are enhancing our network centricity. The Vice Chief mentioned about our industry not exporting enough abroad and software is one such area, which we are exporting a lot. Many big companies in Bangalore and Hyderabad are not only supporting the software to civilian use but also for Military applications. I remember asking them as to why

don't we go for patenting these software products and exporting at a better price. This is because for all we know we may be importing back the same software for our own programmes at a much enhanced price. This is one area we have also to be extra cautious, especially because of Cyber Security. As you would know the most affected area is the hardware and we don't make much of hardware. We had a factory in Chandigarh making chips but it got burned and after that we are not getting into any chips, motherboards or any other hardware production. And the embedded technology is something that is worrisome. We have to look at the hardware issue and as to how to sanitize the same before we use it. It is the Chinese themselves who were affected at one time. We have heard about the Boeing deal, which got cancelled due to inadvertent bombing of the Chinese embassy in the Kosovo conflict, but there is also one more reasons for cancelling 11 VVIP aircraft from Boeing, also because the Chinese found bugs embeds in these aircrafts. They got the Boeing aircraft, however they are not using these for VVIP duties, but for commercial purposes.

The other issue I would like to mention is of training especially when we aspire to have more modern technology. Here it is important to also keep pace with technology. We have engineering institutes in India, which have made micro satellites like IIT Kanpur and Chennai and even by the Engineering College at Pune. Today's generation has certainly got the talent, which we need to harness. There is a huge potential in India and what is most required is harnessing all our strength together. This should include the scientist, operator, the services, training and human resource and even the civil aviation.

I am confident that we will collectively rise to various challenges to make India proud and as it is said in the Indian Air Force, 'To Reach the Sky and Space with Glory'.

Jai Hind.

## **CENTRE FOR ADVANCED STRATEGIC STUDIES**

The Centre for Advanced Strategic Studies (CASS), Pune was registered on 21st September, 1992 under the Society's Registration Act, 1860, and as a Charitable Public Trust on 28th October, 1992, under the Bombay Charitable Public Trust Act of 1950. The Department of Scientific and Industrial Research, Ministry of Science and Technology, Government of India have accorded recognition to CASS as a Scientific and Industrial Research Institution. The Centre has been granted extension of IT exemption U/S.80G from 01.04.2008 to 31.03.2011 vide letter No.Pn/CIT I/12A(a)/80G/396/2008-09/4587 dated 30.01.2009 and U/S.10(23C)(iv) for AY 2004-2005 and onwards vide Government of India Notification No.80/2007 dated 26.03.2007. Section 10(23C)(iv) gives hundred percent exemption for income of the Centre, and Section 80G gives fifty percent exemption to the donors.

The Centre aims at undertaking research and analysis of subjects relating to national and international security and development through seminars, discussions, publications at periodical intervals and close interaction with the faculty members and research students in allied disciplines in the Universities/Institutions and the Armed Forces. It expects to award research fellowships as soon as its corpus builds up and makes it possible. It aims to generate and promote interest among the academicians and public in these subjects with a view to making them alive to national security concerns. It has received very valuable support from the University of Pune in all its activities, specially from the Department of Defence and Strategic Studies. It has an Memorandum of Understanding (MOU) with Yashwantrao Chavan Academy of Development Administration (YASHADA) enabling mutual collaboration for making available their infrastructure, publications and teaching and research activities. The Centre has held a number of seminars, panel and group discussions.

### **ADDRESS :**

Centre for Advanced Strategic Studies  
M..M.D.W.Potdar Complex, Pune University Campus  
Pune - 411 007  
Tele Fax No. : 020-25697516  
Tel. No. : 020-25690182  
Email : cass182@bsnl.in