



## EDITOR'S NOTE

The year ends on a sombre note. Wars in Syria, Iraq, Yemen, Afghanistan and elsewhere continue unabated. In all these wars, there are far too many players and diverse interests, and the United Nations and the international community apparently are unable to come to grips with the situation and agree on a possible solution acceptable to most. Till then, the Islamic State in Syria (ISIS), Al Qaeda, Boko Haram et al will continue to wreak havoc. In many parts of the world, militancy and insurgency continue to defy an answer. There is a threat of horizontal and vertical proliferation of nuclear weapons, with increasing threat of use of missiles that could have either conventional or nuclear warheads, thereby creating confusion and difficulties in decision-making. The threat of submarines is increasing and anti-submarine operations are gaining salience. There is growing suspicion amongst independent states, and the recent conferences on climate change and World Trade Organisation (WTO) are mere indications of the malady. Four years ago, the cyber world was recognised as the fifth domain of warfare, and now, use and control of the electro-magnetic spectrum is being recognised as the sixth domain of warfare. Not satisfied with the increased lethality of weapons, major work is afoot in the realm of personnel capability enhancement, to improve the bodies and minds of our military personnel and adversely impact those of the adversary. The picture is gloomy. We live in a troubled world.

Many of the issues mentioned above are included in the articles in this issue but we lead with the remarks of the **Chief of the Air Staff Air Chief Marshal Raha** at the 12th Subroto Mukerjee Seminar. In a wide ranging talk, he covered the roles of aerospace power in conflict situations and during peace, whilst emphasising the importance of technology in the application of aerospace power.

Every year or two, our Defence Procurement Procedure (DPP) is amended and yet the many changes have failed to satisfy the users or the manufacturers. The government took a good decision to examine the entire ambit of the procurement procedure and set up a Committee of Experts for Amendments to the Defence Procurement Procedure 2013 including the Formulation of Policy Framework. The work has been well received and many recommendations made are likely to feature in the next procurement procedure that will be issued. **Shri Dhirendra Singh** was the chairman of the committee and in a well reasoned article, he describes the need for a paradigm shift. The article will remain an important work in a field that has so far defied an acceptable approach.

Nuclear issues continue to be debated and the romance with matters nuclear is as strong as ever. Much has been written about the reasons why India chose to shift from 'peaceful uses' to weaponisation. **Arjun Subramanian P** takes a somewhat different tack. He assesses the Indian nuclear programme from the 'material' perspective from the beginning and extrapolates to the requirements in the future. Pakistan's tactical nuclear programme is also examined. The article is a good read and informative.

The much touted drawdown of forces from Afghanistan was supposedly completed in December last year but the country remains in a troubled state. What the future holds is unclear. Pakistan would like to continue its dominant position but the relationship has had its ups and downs. China and India also have their own interests and the situation remains uncertain. **Shalini Chawla** attempts to decipher the situation and unravel the intricacies.

The US-China relationship is the defining debate at present and it has undergone major changes in the recent past. **Temjenmeran Ao** traces the recent history and asks the important question as to whether the US has been soft on China. Chinese nuclear proliferation is described in some detail and the author argues that the proliferation has been near accepted because of strategic and commercial considerations, in a major departure from stated US policies.

The world views the cyber sphere with some excitement and apprehension. The potential of cyber attacks in their myriad forms is now recognised as a reality. The attacks are also becoming more effective and wide-ranging. The term Distributive Denial of Service is gaining currency. In December 2015, some 400,000 websites in Turkey were brought down in a week. That is indicative of the power of cyber attacks. One form of cyber attacks or system to facilitate such attacks is to introduce bugs in the hardware. **Gp Capt Ashish Gupta** looks at how hardware exploitation can be achieved.

Many of us bemoan the lack of a flourishing aerospace industry in India. So much needs to be done. It is instructive to see as to how the growth of indigenous industry was brought about in other countries. In a detailed account, **Gp Capt Vivek Kapur** looks at the development of the aerospace sector in the USA and in the erstwhile USSR/Russia. There are many lessons to learn for us.

The last article in this issue is about a subject that seldom finds a place in this journal. In an academic theoretical article **Gp Capt M Misra** discusses how a human systems approach can make the application of air power more effective.



Happy reading