Guest Editorial

Communications system can be described as the backbone of the military machine. New challenges are emerging everyday leading to advances in communication techniques and development of new technologies. Defence personnel and communication engineers have to keep pace with these developments for reliable and survivable communications systems. Communication in itself is a vast field and is interwoven with closely associated fields such as electronics, signals, computers, information processing, electronic warfare, networks, ELINT, C^4I, aerospace, nuclear hardening, EMI/EMC, etc. In this Special Issue on Military Communications—Future Trends, efforts have been made to cover the most relevant and contemporary subjects.

In the paper Military Radio Communications Research in Australia, Dr SC Cook, Mr JB Scholz and Mr FB Andrews of the Communication Division, Defence Science and Technology Organisation, Australia, present their major breakthrough in the field of radio communications called the probability distribution function (PDF)—directed adaptive radio, promising substantial improvement in throughput, reliability and availability, particulary in HF spectrum.

Prof JP Singh, in his enlightening paper Inmarsat's Worldwide Mobile Satellite Services: Today and Tomorrow, covers the emergence of mobile satellite service as an important and integral component of the public telecommunication infrastructure, advances made in the field and the goal set to be achieved by the end of the decade, leading to the development of hand-held satellite phone.

Dr AS Bains of DEAL in his paper An Overview of Millimeter Wave Communications for Military Applications, has highlighted the potential benefits of millimeter waves in the area of military communications, local area networks and satellite communications. Use of 60 GHz band for ECCM and other applications has also been reviewed.

Dr CK Chatterjee and Mr Surendra Pal of DEAL review Present and Future Trends in Military Satellite Communication Systems. A brief account of various counter measures, use of EHF, spread spectrum techniques and on-board processing have also been presented.

Communications with submarines, operating under water, is a challenging task. Mr HB Singh and Mr Rajendra Pal in their paper Submarine Communications outline various methods and the contributions made by DEAL.

Prof SL Maskara from the Indian Institute of Technology, Kharagpur, discusses basic concepts and design considerations in his paper Multiple Access Techniques—An Overview. The paper presents different resources for multiple access and their optimum use by proper assignment and control.

Dr VK Bhargava, Dr Qing Yang and Dr DJ Peterson of the Department of Electrical and Computer Engineering, University of Victoria, Canada, in their paper Coding Theory and its Applications in Communication Systems give a lucid account of basic coding theory and various state-of-the-art coding techniques and their applications. They have also discussed the related future trends.

Mr MS Viswanathan of Electronics and Radar Development Establishment, Bangalore, in his paper Tactical Military Communication Networks of the

Future, has covered the networking features of the communication system in relation to tactical requirement, network security and survivability.

Bringing out this Special Issue of *Defence Science Journal* was a pleasant and rewarding experience. I am thankful for this opportunity. I would like to thank, the authors for sparing their valuable time and submitting the manuscripts in time, and also those authors whose papers could not be accommodated because of space constraints. Thanks are also due to Dr KD Nayak, DEAL, Dehradun for coordinating and assisting in bringing out this Special Issue.

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