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Issue 2: From the Guest Editor

Frank Gargione

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I am [Frank Gargione](#) former Program Manager of ACTS at Lockheed Martin. As Guest Editor, it is my privilege to guide you through the origins and development of this landmark event in satellite communication. I will also share with you the perceptions of industry professionals and academics and NASA officials and researchers on the long-term importance of ACTS.



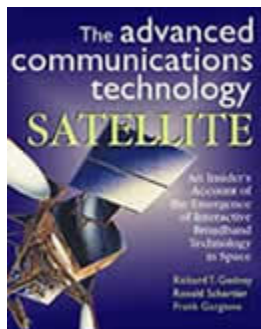
The Advanced Communications Technology Satellite was launched into space in 1993. Since that time, the ACTS program has achieved a number of technological firsts and received numerous awards. Yet the project also suffered multiple setbacks and found its life extended well beyond expectations. Without doubt, the ACTS program has become the most highly documented program in the history of satellite communication.

This wealth of documentation on ACTS has made the job of preparing this issue of the Online Journal a much more difficult task than I anticipated when I accepted the assignment, since I now realize that the selection of material will, of necessity, include only a small portion of the research conducted and the material published. I hope that my choices will not alienate the many collaborators contributing to the success of this complex program whose work could not be included.

The aim is to provide an overview of the program, its history, its technology, its experimental results, and its contributions to Space/Earth communication, for example, as in the study of propagation phenomena and development of fade compensation techniques. Emphasis will be on the results of experiments conducted in a multitude of applications areas, to show prospective users how the satellite could serve their particular needs. At the same time, the issue will provide an overview for policy makers, journalists, managers, financial analysts, students and others with an interest in development of advanced communication technologies.

This Issue will illustrate the approaches taken by the members of the NASA ACTS Experiment Office, with whom I collaborated in publicizing ACTS to the many prospective experimenters, that proved effective in gaining acceptance for the satellite. It proved very successful in demonstrating digital satellite voice telephony at the AIAA show in San Diego in 1994, where NASA set up telephone lines, connected to a T1 VSAT outside the exhibit area. Attendees were able to make calls anywhere in the US using the satellite connection into terrestrial lines via NASA Glenn. I remember quite vividly the skepticism of satellite experts whom I personally escorted to the phones and their surprised reaction at the clear voice quality free of the infamous GEO satellite echo!

In the area of propagation (having to do with electromagnetic signals traveling through space and their behavior in Earth's atmosphere), ACTS has made a lasting contribution by providing not only the stable beacons on the spacecraft, but also the receiving stations deployed in different rain zones that collected uniform data over a five year period. The published results have been used to optimize commercial Ka Band system designs.



Much of the source material, including the ACTS program overview and ACTS history and technology, has been excerpted from the book The Advanced Communications Technology Satellite by Richard Gedney, Ron Schertler and Frank Gargione, available from Scitech Publishing, Inc. The papers on the experimental results were taken from the NASA Glenn ACTS website <http://acts.grc.nasa.gov> which also contains other documents that are available for further study.

Finally, I would like to thank Dr. Richard T. Gedney, the ACTS Project Manager during the ACTS development, launch and initial operations period; Robert A. Bauer, the current ACTS Project Manager; Richard Krawczyk, the current ACTS Operations Manager, and Dr. Roberto Acosta, all from the NASA Glenn Research Center for their assistance and suggestions in assembling the material contained in this issue.

Contact:

[Frank Gargione](#), ACTS Program Manager
Lockheed Martin Astro Space
Email: gargion@attglobal.net

Or send your communication directly to the Editor:

[Don M. Flournoy](#), Professor of Telecommunications
General Editor, Online Journal of Space Communication
School of Media Arts and Studies
Scripps College of Communication
Ohio University, Athens, Ohio 45701
Tel: +1 740 593 4866
Fax: +1 740 593 9184
Email: don.flournoy@ohio.edu