

Report of NAPEX XXIII Technical  
Discussions

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## REPORT OF NAPEX XXIII TECHNICAL DISCUSSIONS

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At the 23rd NASA Propagation Experimenters Meeting and ACTS MiniWorkshop held in Falls Church, Virginia, the ACTS Working Groups held a brief Technical Discussion Meeting on 03 June 1999. The current situation within the NASA Propagation Program was deliberated, along with speculation on actions by experimenters that might benefit the future health of the program. Results of these technical discussions are reported here.

### **I. NASA Propagation Program**

At various points during the general NAPEX meeting, concerns were expressed by many participants regarding the status and continuation of the NASA Propagation Program, now that most propagation measurements with the ACTS Propagation Terminals have ceased, and NASA's directive has substantially departed from the original stated goal of industry support. The parent location of the Propagation Program is currently the "Cross Enterprise Technology Development Program." The responsible NASA Headquarters manager is Dr. Peter Ulrich, Code SM.

[In the NAPEX meeting itself, F. Davarian conducted discussions on this topic during which several suggestions worthy of note were made. J. Goldhirsh proposed that the NAPEX group draft a letter to assist individual initiatives to alert responsible individuals (Congressmen, NASA officials) of the need for propagation research. R. Henning suggested the formation of a committee to represent NAPEX views. V. Chandrasekar proposed creation of a "science consortium" to continue NAPEX type activities. W. Vogel urged that achievements of the Propagation Program be emphasized, and noted that another benefit is training of the next generation of propagation experts. F. Davarian observed that industry is unable to do science elements very well because industrial focus is generally short-term. At the conclusion of the discussions, F. Davarian offered to prepare a couple of summary slides and distribute them for comment after the meeting.]

During the Technical Discussion Meeting, various opinions were expressed by participants, and actions explored, that might have a beneficial effect on the future existence and vitality of the program. A narrative summary of that discussion is offered here.

N. Golshan asked what the situation would be if there were no NASA Propagation Program; who would fill the vacuum? Industry is concerned with short-term results, but might the program be competing with industry (or perceived to be)? Would any company be ready to make the investment to perform such work? D. Astrom responded that were industry to perform such activities, the results would almost certainly be considered proprietary and not available for public use.

L. Ippolito noted that his company was making an investment to upgrade an APT to permit depolarization measurements to continue in Virginia. Companies might be more inclined to perform such work if the collected data could be sold. N. Golshan wondered if perhaps industry might prefer that NASA cease this type of work. L. Ippolito said that both government and industry are customers for propagation information; there is little sharing of information by companies, whereas government usually shares its results with the community. D. Westenhaver noted that the rules have changed (tax implications, etc.) regarding industry activities, which influences industrial behavior.

L. Ippolito stated that with international competition, sharing of information is reduced. D. Rogers said that in the International Telecommunication Union (ITU) fora, companies (with potential vested interests) appear to contribute more, whereas the U.S. government seems to lack propagation expertise (e.g., recent concerns related to interference between mobile-satellite system feeder links and unlicensed radio local area networks operating at 5 GHz). In connection with the suggestion that a research consortium could be formed whose industrial members would fund propagation research, W. Vogel noted that vertically-integrated industries (as common in satellite communications), where

almost all elements of a system are developed and controlled by one organization, have no need or desire to share information.

R. Henning encouraged more and better PR in the current situation, such as another special issue of ACTS results. F. Davarian stated that managers don't read such issues. L. Ippolito said that we might invite industry participation, and that more managers might be attracted to our meetings if we focus on the results of the ACTS campaign. F. Davarian observed that the format of the meetings would have to change, perhaps with a half-day session devoted solely to the results and impacts of the program. J. Goldhirsh observed that such a session would be a significant effort, whereas there are no dollars at present for such an activity.

N. Golshan recommended that we focus on marketing, not technical details. L. Ippolito noted that there are many conferences that emphasize telecommunications where such information could be presented. Hua Ho mentioned the Ka-Band Utilization Conference scheduled for October in Italy as a particularly attractive venue. N. Golshan observed that NASA and industry now attend this conference, but no support for the program has resulted. S. McCormick stated that high-level managers and officials aren't themselves interested in propagation, and might not be a suitable target for our efforts.

It was apparent that collective action was not viable at this point, but that useful interactions could proceed among the NAPEX community. However, well-directed actions by individuals (e.g., contacting Congressmen, senior NASA officials) might be quite helpful, and should be pursued by interested members of the group.

## **ACTIONS:**

Participants in the NASA Propagation Program should evaluate what individual actions may benefit the health and continuation of the program, and act as each deems appropriate and feasible.

## **II. *Reporting of ACTS Data and Results***

It was agreed to proceed per the approach formulated at the previous meeting to develop a journal issue like the June 1997 *Proceedings of the IEEE* Special Issue on "Ka-band Propagation Effects on Earth-Satellite Links." N. Golshan, R. Acosta and D. Rogers were again proposed as guest editors. N. Golshan has approached the IEEE concerning another special issue of *Proc. IEEE*, and obtained general agreement for such an issue, with the anticipated publication tentatively proposed for 12-14 months from the present.

Per previous discussions, subject areas and coordinators were identified for inclusion in a special issue as follows:

- signal scintillation - C. Mayer;
- ACTS system overview - D. Westenhaver
- summary of basic ACTS propagation statistics - R. Crane;
- antenna-wetting model/experimental verification - R. Crane
- radar issues - J. Beaver;
- fade durations - H. Helmken;
- fade slopes - J. Pinder;
- fade mitigation - R. Acosta;
- site diversity - H. Helmken;
- cloud effects - C. Mayer.

Subsequent to this discussion, A. Dissanayake offered to contribute a paper on the combining of propagation impairments, based on the ACTS data. In addition, C. Amaya and D. Rogers would like

to consider a paper on the climatic aspects of the ACTS results. It is realized that other topics and/or amendments may arise during preparation of the special issue.

**ACTIONS:**

Papers intended for the special issues should be drafted and submitted to the Guest Editors (N. Golshan) no later than 01 November 1999.

**III. *Next Meeting***

The group tentatively agreed to hold the next NASA Propagation Experimenters Meeting in Salt Lake City, Utah, during Friday and Saturday, 30 June - 01 July 2000, at the venue of the IEEE APS/URSI meeting.