Wednesday, May 31, 2000

08:00 – REGISTRATION

08:30 – 09:00 – Grand Ballroom
OPENING REMARKS
Speakers: F. Marconicchio, Agenzia Spaziale Italiana, Italy
F. Gargione, Analex Corporation, USA
D.J. Campbell, NASA Glenn Research Center, USA
R. Bauer, NASA Glenn Research Center, USA

09:00 – 10:00 – Grand Ballroom
Session 1: ACTS SYSTEM RESULTS
Chairpersons: L.R. Ignaczak, NASA Glenn Research Center, USA
F. Gargione, Analex Corp., USA

1.1 The Advanced Communications Technology Satellite - Performance, Reliability and Lessons Learned
R.J. Krawczyk, L.R. Ignaczak, NASA Glenn Research Center, USA

1.2 ACTS Ka-Band Earth Stations: Technology, Performance and Lessons Learned
R.C. Reinhart, NASA Glenn Research Center, USA; S.J. Struharik, COMSAT Laboratories, USA; J.J. Diamond, Analex Corp., USA; D. Stewart, GTE Technology Organization, USA

1.3 T1 VSAT Fade Compensation Statistical Results
S.K. Johnson, R.J. Acosta, NASA Glenn Research Center, USA

10:00 – 10:30 – Coffee Break

10:30 – 11:45 – Grand Ballroom
Session 2: ACTS PROPAGATION
Chairpersons: R.T. Gedney, Advanced Communications Technology, USA
R.J. Acosta, NASA Glenn Research Center, USA

2.1 Summary of ACTS Propagation Experiments
L.J. Ippolito, ITT Industries, USA; R. Bauer, NASA Glenn Research Center, USA

2.2 Rain Attenuation Model Comparison and Validation
C.E. Mayer, B.E. Jaeger, University of Alaska Fairbanks, USA

2.3 Propagation Effects Handbook for Satellite Systems Design
L.J. Ippolito, ITT Industries, USA

2.4 Special Effects: Antenna Wetting, Short Distance Diversity and Depolarization
R.J. Acosta, NASA Glenn Research Center, USA
11:45 – 13:15 – Luncheon address by Astronaut Dr. J. Newman, from the STS 51 mission that launched ACTS

13:15 – 14:45 – Grand Ballroom
Session 3: **ADVANCED APPLICATIONS**
Chairpersons: F. Buzzard, NASA Johnson Space Center, USA
R. Bauer, NASA Glenn Research Center, USA

3.1 **Survey of Advanced Applications over ACTS**
R. Bauer, NASA Glenn Research Center, USA; P. McMasters, Analex Corp., USA

3.2 **NASA/DARPA ACTS Project for Evaluation of Telemedicine Outreach Using Next-Generation Communications Satellite Technology: Mayo Clinic Participation**
B.K. Khandheria, B. Gilbert, M.P. Mitchell, A. Bengali, Mayo Clinic, USA

3.3 **ACTS Satellite Telemammography Network Experiments**
B. A. Kachmar, Analex Corp., USA; R.J. Kerczewski, NASA Glenn Research Center, USA

3.4 **Satellites and the Internet as a "Passport to Knowledge": A New Model of Teaching and Learning**
G. Haines-Stiles, Passport to Knowledge, USA

3.5 **Advanced Shipboard Communications Demonstrations with ACTS**
R.A. Axford, Space and Naval Warfare Systems Center, USA; T.C. Jedrey, Jet Propulsion Laboratory, USA; M.A. Rupar, Naval Research Laboratory, USA

14:45 – 15:15 – Coffee Break

15:45 – 16:45 – Grand Ballroom
Session 4: **PROTOCOL ENHANCEMENTS AND INTEROPERABILITY**
Chairperson: K. Bhasin, NASA Glenn Research Center, USA

4.1 **A History of the Improvement of Internet Protocols Over Satellites Using ACTS**
M. Allman, NASA Glenn Research Center/BBN Technologies, USA; H. Kruse, S. Ostermann, Ohio University, USA

4.2 **Mobile Internet Protocol Performance and Enhancements over ACTS**
D. B. Johnson, B.J. Bennington, Carnegie Mellon University, USA

4.3 **NASA and Industry Benefits of ACTS High Speed Network Interoperability Experiments**
M.J. Zernic, NASA Glenn Research Center, USA; D.R. Beering, D.E. Brooks, Infinite Global Infrastructures/LLC, USA

4.4 **Global Interoperability of High Definition Video Streams via ACTS and INTELSAT**
E. Hsu, C. Wang, L. Bergman, Jet Propulsion Laboratory, USA; N. Kadowaki, N. Yoshimura, T. Takahashi, Communications Research Laboratory, Japan; J. Pearman, Sony Pictures High Definition Center, USA; F. Gargione, Lockheed Martin Missiles and Space, USA; K. Bhasin, NASA Glenn Research Center, USA; P. Gary, NASA Goddard Space Flight Center, USA; G. Clark, P. Shopbell, Mt. Wilson Institute and University of Maryland, USA; M. Yoshikawa, Institute of Space and Astronautical Science, Japan; M. Gill, H. Tatsumi, National Library of Medicine, USA and Sapporo Medical University, Japan; R. desJardins, NASA Research and Education Network, USA
16:45 – 17:15 – Grand Ballroom
Session 5: FUTURE NASA GLENN PLANS IN SPACE COMMUNICATION
Chairperson: R. Bauer, NASA Glenn Research Center, USA

5.1 Partnering to Change the Way NASA and the Nation Communicate Through Space
P.A. Vrotsos, J.M. Budinger, K. Bhasin, D.S. Ponchak, NASA Glenn Research Center, USA

19:00 – Grand Ballroom
ACTS DECOMMISSIONING CEREMONY

19:00 – Dinner

20:00 – Dinner Program

• Opening Remarks
  D.J. Campbell, Director of the Glenn Research Center, USA

• ACTS Retrospective and Impact
  Invited Keynote Speaker:
  The Honorable D.S. Goldin, NASA Administrator, USA

• Industry Perspectives on ACTS
  Guest Speakers:
  - T. Brackey, Hughes Space & Communications, representing the TIA Satellite Communications Division, USA
  - E. Fitzpatrick, Hughes Space & Communications, representing Spaceway, USA
  - J. Grant, Astrolink, USA
  - D. Olmstead, Société Européenne des Satellites, ASTRA, Luxembourg

• ACTS Payload Shutdown Ceremony

21:00 – 23:00 – Open Bar Reception
Time to mingle, meet old friends, visit, reminisce and just have a good old time!
08:00 - REGISTRATION

08:30 – 10:00 – Grand A
Session 6: NEW AND UPDATED SYSTEMS
Chairperson: R.T. Gedney, Advanced Communications Technology, USA

6.1 TRW's Global EHF Satellite Network
E.R. Wiswell, H.J. Morgan, H. Ho, J. Freitag, TRW Space & Electronics Group, USA

6.2 A Satellite Network Bringing Broadband Communications to the User
R. Mura, G. Losquadro, Alenia Spazio, Italy

6.3 Koreasat Ka-Band Interactive Multimedia System
Y.-M. Yoon, H.-C. Kim, H. Hwangbo, Korea Telecom, Korea

6.4 Astrolink: An Evolutionary Telecommunications Venture
R.L. Gobbi, J.D. Grant, D.S. Rosener, M. Liu, Astrolink, USA

6.5 Advanced Traffic Management for the Support of QoS Sensitive Internet Services over Satellite: the EuroskyWay Solution
G. Losquadro, Alenia Aerospazio, Italy; F. Fedi, Space Software Italia, Italy

6.6 Satellite Constellations for Ka Band Communication
P. Christopher, PFC Associates, USA

08:30 – 10:00 – Grand B
Session 7: PROPAGATION - MODELING AND FADE MITIGATION
Chairperson: R.J. Acosta, NASA Glenn Research Center, USA

7.1 Performance Simulation of an Adaptive Control Scheme for Scintillation Fade Compensation in a Generic Ka-Band VSAT Videoconferencing System
D. Mertens, Université Catholique de Louvain, Belgium; L. Castanet, ONERA/CERT, France

7.2 Optimum Power Control Scheme For Dynamic Ka-Band Land Mobile Satellite (LMS) Channel
W. Li, C.L. Law, V. Dubey, J.T. Ong, Nanyang Technological University, Singapore

7.3 Considerations of Rain Attenuation Models for Ka-Band Satellite-Based Multimedia Systems
L. Yen, Hughes Space and Communications Company, USA

7.4 Radio-Format Selection Algorithm for Rain-Fade Compensation in Adaptive Satellite Communications
K.-J. Lim, S.I. Lee, S.P. Lee, ETRI, Korea

7.5 GBS Data Mapper: Modeling Worldwide Availability of Ka-Band Links Using ITU Weather Data
G. Fitzgerald, The Mitre Corporation, USA; G. Bostrom, Space and Naval Warfare Systems Center, USA
7.6 Research on the Propagation due to Rain in ETRI

10:00 - 10:30 — Coffee Break

10:30 - 12:45 — Grand A
Session 8: ARCHITECTURES
Chairperson: F. Vatalaro, Università di Roma Tor Vergata, Italy

8.1 Comparison of Four Different Resource Allocation Strategies for WWW Communications in a Satellite Network
A. Cavallaro, F. Faggi, P. Lovisolo, A. Magliano, CSELT, Italy

8.2 Multimedia Hub System Architectures
J. Gilderson, R. Craig, R. Iorgulescu, SpaceBridge Networks Corp., Canada

8.3 An Overview of the Connection Management Scheme in ASSET
B. Fan, R. Tafazolli, B.G. Evans, CCSR, University of Surrey, United Kingdom

8.4 A Limited Complexity Highly Reliable Switch Architecture
G. Albertengo, Politecnico di Torino, Italy; C. Ponzoni, Laben, Italy

8.5 The Gen*Star Program
H. J. Morgan, E.R. Wiswell, J. Freitag, TRW Space & Electronics Group, USA

8.6 ATM On-board Satellite Service Provisioning and Congestion Control for Broadband Satellite Networks
I. Mertzanis, SPACE Hellas, Greece; J.-o. Joo, Ministry of Information and Communication, Korea; R. Tafazolli, B.G. Evans, CCSR, University of Surrey, United Kingdom

8.7 Internet End-to-End QoS Provisioning over Ka Band Satellite System in the GMBS Environment
C. Tocci, G. Losquadro, P. Conforto, Alenia Aerospazio, Italy; F. Fedi, Space Software Italia, Italy

8.8 Managing Broadband Satellite Services — A Service Provider’s Perspective
J. Wakeling, BT Satellite Systems Technology & HAPS Development, United Kingdom

10:30 - 12:45 — Grand B
Session 9: PROPAGATION - EXPERIMENTAL RESULTS
Chairperson: A. Paraboni, Politecnico di Milano, Italy

9.1 Results and Implications Arising from Slant Path Measurements of ITALSAT F1 Beacons in the United Kingdom at Ka Band & V Band
C.L. Wrench, S. Ventouras, S.A. Callaghan, CLRC-Rutherford Appleton Laboratory, United Kingdom

9.2 Florida ACTS Propagation Measurements Program
H. Helmken, A. Miguel, Z. Koro, M. Bourgeois, R. Pollard, Florida Atlantic University, USA; R. Henning, J. Stanton, G. Sklarz, E. Wolfe, P. Bartels, J. Duvall, University of South Florida, USA
Comparison of Predicted Scintillation with Data Measured from the 50 GHz ITALSAT Beacon in Norway
L.E. Braten, Telenor Research and Development, Norway

Ka-Band Wideband Dispersion Technology Verification Experiment
R.J. Acosta, NASA Glenn Research Center, USA, L. Blackman, COMSAT Labs/NASA Glenn Research Center, USA

ITALSAT Propagation Experiment at Spino d'Adda: Seven Years of Statistics at 18.7, 39.6 and 49.5 GHz
A. Paraboni, C. Riva, Politecnico di Milano, Italy

Ka-Band Site Diversity Measurements and Modeling
A. Dissanayake, K.-T. Lin, COMSAT Laboratories, USA

Propagation Measurements Campaign at Two Sites in Canada with the Advanced Communications Technology Satellite
C. Amaya, D.V. Rogers, Communications Research Centre, Canada

Five Years of Experimental Results from the New Mexico ACTS Propagation Terminal at 20.185 and 27.505 GHz
C. Grinder, J. Pinder, L. Ailes-Sengers, ITT Advanced Engineering & Sciences Division, USA

12:45 – 14:00 – Lunch

14:00 – 15:30 – Grand A
Session 10: GROUND SYSTEMS 1
Chairperson: J. Rigley, Communications Research Center, USA

Antenna Optimisation to Minimise Pointing Loss
K. Willey, University of Technology Sydney, Australia

An FH-TDMA VSAT System in Ka Band for Multimedia Traffic Using Jitter-Free Bandwidth Allocations on Demand
N. Celandroni, E. Ferro, CNUCE - CNR, Italy

Flexible Terminal and Gateway Concept for Multimedia Satellites
H. Skinnemoen, P.Chr. Amundsen, Nera SatCom, Norway

Supervisory Control and Data Acquisition Using the Advanced Communications Technology Satellite: Lessons Learned
C. Emrich, W. Wilson, G. Ventre, Florida Solar Energy Center, USA; A. Kalu, Savannah State University, USA; R.J. Acosta, D. Kifer, NASA Glenn Research Center, USA

Analysis of Frequency Assisted Spatial Tracking for Low Earth Orbit Satellites
E. Aboutanios, S. Reisenfeld, The Cooperative Research Centre for Satellite Systems, University of Technology Sydney, Australia

Universal Broadband Wireless Modem Architecture
A. Mascioli, SpaceBridge Networks Corp., Canada
14:00 – 15:30 – Grand B
Session 11: ADVANCES IN COMPONENTS 1
Chairperson: F. Marconichio, Agenzia Spaziale Italiana, Italy

11.1 A carrier Phase Recovery Scheme Suited to Transmissions with Turbo-Codes
C. Morlet, M.-L. Boucheret, ENST, France; I. Buret, G. Mesnager, Alcatel Space Industries, France

11.2 Ka-Band LNA and Ka/C Downconverter for ASTRA-1K
S. Suzuki, R. Koyama, NEC Corp., Japan; S.-I. Sakaki NEC Engineering, Japan

11.3 Communication Payload Equipment for Ka-Band Multimedia Systems (E.G ESW)
N. Doerflinger, K.-H. Huebner, D. Schmitt, Bosch Telekom, Germany

11.4 Suspended Patch Antenna Array with Electromagnetically Coupled Inverted Microstrip Feed
R.N. Simons, Dynacs Engineering Co./NASA Glenn Research Center, USA

11.5 New Generation of RF Products for Ka-Band Multimedia Payloads
H. Leveque, P. Ulian, B. Cogo, J.C. Cayrou, J.L. Cazaux, Alcatel Space Industries, France

15:30 – 16:00 – Coffee Break

16:00 – 16:45 – Grand A
Session 12: GROUND SYSTEMS 2
Chairperson: A. Bastikar, Canadian Space Agency, Canada

12.1 AFRL and CRC Experience Using ACTS
C.J. Pike, Communications Research Center, Canada; D.J. Legare, US Air Force Research Laboratory, USA

12.2 On Standardization Activities for Broadband Satellite Systems
H. Skinnemoen, Nera SatCom, Norway; H. Tork, Telia Research, Sweden

12.3 Adapting the AN/USC-60A Military Triband Terminal for Ka-Band Operation
A.J. Kelly, L-3 Communications LNR, USA

16:00 – 16:45 – Grand B
Session 13: ADVANCES IN COMPONENTS 2
Chairperson: D. Williams, NASA Glenn Research Center, USA

13.1 A Gain-Variable Ka-Band SSPA Using MMIC Technology

13.2 Microstrip Antenna for an Earth Terminal Operating at 20GHz
L. Russo, TeS - Teleinformatica e Sistemi, Italy; A. Morone, CNR-Istituto per i Materiali Speciali e Servizio Controllo ed Analisi dei Materiali, Italy
08:30 – 10:00 – Grand A
Session 14: INTEROPERABILITY
Chairperson: N. Kadowaki, Communications Research Laboratory, Japan

14.1 Networking Performance of High Speed Internet through Satellite/Terrestrial Hybrid Networks
N. Kadowaki, N. Yoshimura, N. Nishinaga, Communications Research Laboratory, Japan

14.2 On the Performance of TCP-Based Data Transfers on a Faded Ka-Band Satellite Link
H. Kruse, S. Ostermann, Ohio University, USA; M. Allman, NASA Glenn Research Center/BBN Technologies, USA

14.3 Global Satellite - Fiber Networks
D. Martin, CTR Group, Project Oxygen, USA

14.4 CNIT-ASI Project "Integration of Multimedia Services on Heterogeneous Satellite Networks": Experimental Results
D. Adami, Universita di Pisa, CNIT Pisa Research Unit, Italy; M. Marchese, Universita di Genova, CNIT Genova Research Unit, Italy; L.S. Ronga, Universita di Firenze, CNIT Firenze Research Unit, Italy

14.5 Multiple System Commercial Ka-Band Terminal
J.A. Mazzei, The Aerospace Corporation, USA; A. Bartko, Defense Information Systems Agency, USA

08:30 – 10:00 – Grand B
Session 15: FINANCING AND MARKETING
Chairperson: P. De Santis, INTELSAT, USA

15.1 The Multimedia Migration: Transponder Versus Processing Payload VSAT Networks

15.2 North American Broadband Satellite Market Research Study
F. Farsi, SpaceBridge Networks Corp., Canada

15.3 A Continuing Report on Ka-Band Satellite Progress
W.L. Morgan, Communications Center, USA

15.4 The Commercial Issues for Broadband Satellite - A Service Provider's Perspective
G. King, BT Satellite Strategy, United Kingdom; E. Korolev, BT Satellite Business Development, United Kingdom

15.5 The Role of 20/30 GHz Satellites in Transmission of Internet Content
L. Taylor, R. LeClair, A. Furber, Leslie Taylor Associates, USA
08:30 – Humphrey Room

VIII CEPIT MEETING: ITALSAT Propagation Experiment
Coordinator: A. Pawlina Bonati, CNR-CSTS, Italy

10:00 – 10:30 – Coffee Break

10:30 – 12:00 – Grand A
Session 16: PROTOCOLS
Chairperson: B.G. Evans, University of Surrey, UK

16.1 The ACE Project: a Real Time Simulator for Satellite Telecommunication Systems
G. Albertengo, Politecnico di Torino, Italy; T. Pecorella, Università di Firenze, Italy; M. Marchese, Università di Genova, Italy

16.2 Traffic Management Strategies for On-Board GEO Satellite ATM Switches
E. Wibowo, J. Gilderson, SpaceBridge Networks Corp., Canada

16.3 The Impact of Combined Free-Demand Assigned Multiple Access Systems on Web-Based Applications
R. Westwick, BT Advanced Communications Engineering, United Kingdom

16.4 Parameter Tuning, Study and Performance Evaluation of TCP Algorithms over Geostationary Satellite Channels
M. Marchese, Università di Genova, CNIT Genova Research Unit, Italy

16.5 Traffic Analysis in Packet/Cell-Based Satellite Systems: A Case for Open Security Architectures
S. Hryckiewicz, The Mitre Corp., USA

10:30 – 12:00 – Grand B
Session 17: BAND SHARING
Chairperson: W. Brandon, The Mitre Corporation, USA

17.1 Performance Simulation of a Ka-Band Multimedia LEO Satellite System
C. Oestges, X. Maufroid, D. Vanhoenacker, Université Catholique de Louvain, Belgium

17.2 A Bandwidth Allocation Scheme in a Satellite Environment to Support Multimedia Communications
R. Bolla, F. Davoli, Università di Genova, Italy; M. Marchese, Università di Genova, CNIT Genova Research Unit, Italy

17.3 Experimental Assessment of a Wide-Band Earth-Satellite Channel in the Ka and W Bands: the DAVID Project
A. Paraboni, C. Capsoni, Politecnico di Milano, Italy; S. De Fina, M. Ruggieri, Università di Roma Tor Vergata, Italy; M. Pratesi, CNIT Parma Research Unit, Italy; C. Bonifazi, Agenzia Spaziale Italiana, Italy

12:00 – 12:15 – Grand Ballroom
CLOSING REMARKS
Announcement of date and location of the next Conference

12:15 – 14:00 – Lunch