

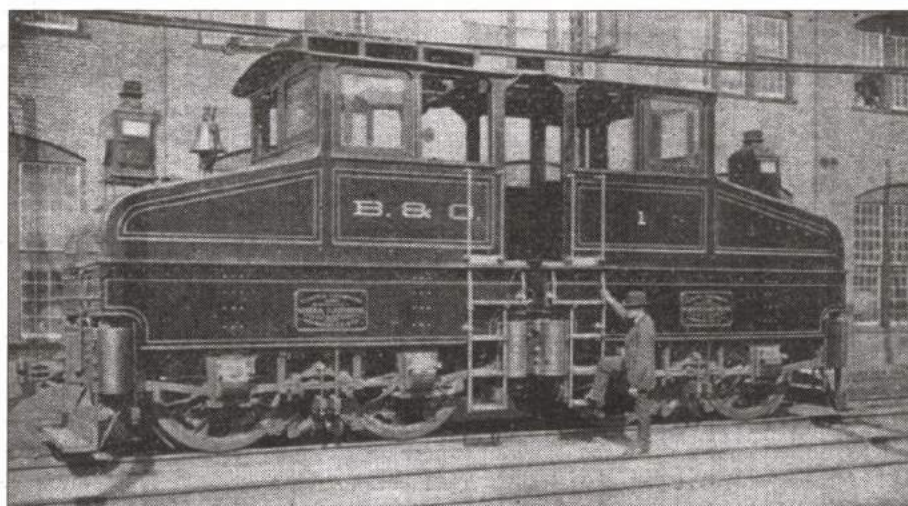


2012 IEEE NCA Summer Picnic

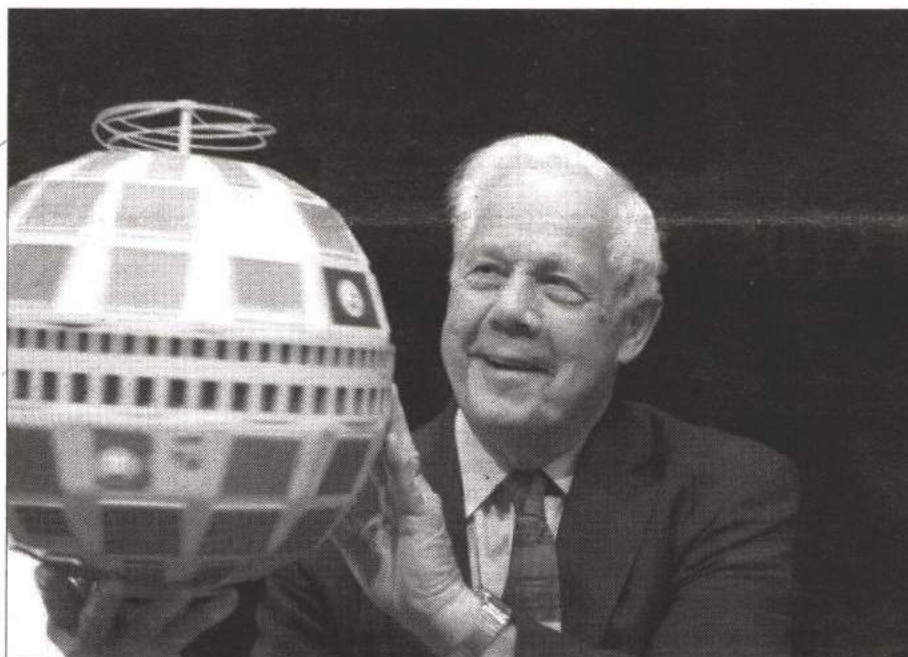
Seventy-five members and guests from the Northern Virginia, Washington, and Baltimore sections enjoyed food, fellowship, and perfect summer weather on July 28 at the annual IEEE National Capital Area picnic. The covered shelter at Black Hill Regional Park in Boyds, Maryland was a perfect picnic spot, with convenient parking, plenty of room for outdoor sports, and even our own restroom! Events were planned for volunteers of all ages, and a good time was had by all. The Women in Engineering and NOVA GOLD chapters, led by Dr. Carolyn Carroll and Javier Handal, took the lead in planning the picnic and shared their culinary skills at the grill. Rick Collins, Consultants Network Past Chair, made a special appearance with his famous spicy shrimp. In spite of the warm July day, the ice cream sundaes did not melt; this speaks to the organizers' exceptional planning skills. After lunch, picnickers enjoyed nature walks, volleyball, water sports, and even games of tag to work off the ice cream! Undoubtedly, the three Sections will find Boyds the picnic spot of choice for years to come.

Celebrating Milestones

Inside this issue, the IEEE NCA Scanner celebrates the Telstar I Satellite 50th Anniversary and Main Line Electrification of the Baltimore and Ohio Railroad (B&O).



Balt. Section Dedicates IEEE Milestone Honoring Early B&O Railroad Electrification. For full story, see page 4.



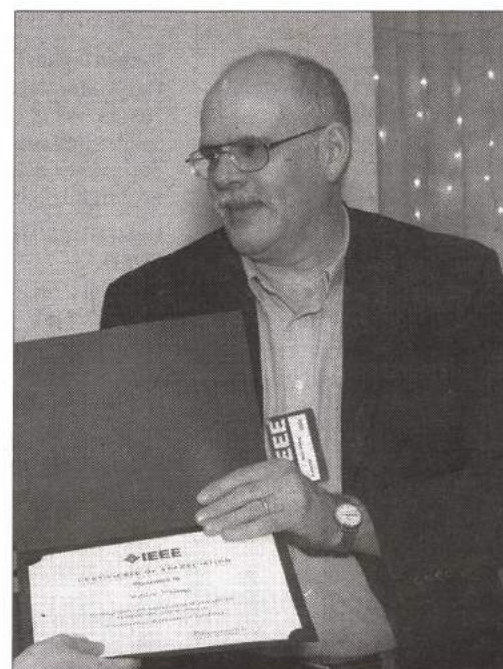
Communications Milestone: Telstar Celebrates 50 Years. For the full story, see page 7. (Photo Courtesy of Alcatel-Lucent)

In Memoriam: Walter Edwin Willing (1954 - 2012)

On July 28th, 2012, Walter Edwin Willing passed away at University of Maryland Medical Center in Baltimore following complications during surgery for treatment of injuries he suffered in a motorcycle accident on June 26. He was 57 years old.

Walter Edwin Willing was born into a large and loving family on September 20, 1954 in Delaware. After graduating from Brandywine High School, he attended the University of Delaware, where he graduated third in his class with a BS in Electrical Engineering in 1976. He later earned his MS in Electrical Engineering from Loyola College in Baltimore. He began his career with Westinghouse Defense in June 1977 as an associate engineer within the graduate student program, and immediately found a home in the Reliability Engineering Group, where he served with distinction for 35 years, ultimately rising to the position of Senior Advisory Engineer of the Northrop Grumman Electronics Systems group in Baltimore. Walt was a mentor to many and was always available for consultation whenever a tough technical problem presented itself on the numerous programs he supported.

Walt was a member of Tau Beta Pi and a senior member of IEEE and the IEEE Reliability Society, serving numerous volunteer roles, including 2012 Baltimore Section Chairman, and a key role on the management committee of the annual



See Willing, p. 6

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*Washington, Northern Virginia, and Baltimore Sections

ON THE WEB

eScanner Calendar of Events

The calendar is available at www.ieee.org/escanner. Check here for events submitted too late for print publication.

IEEE National Capital Area Virtual Community

Exchange ideas and participate in discussions with local IEEE members at www.ieee-communities.org/nca.

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Announcements & Articles

Please submit calendar items to nca-scanner@ieee.org. Events must have an IEEE or affiliate sponsor. Please include a synopsis of the event and a biographical sketch of the presenter including academic background, current position, notable achievements, and IEEE and other professional affiliations. Other contributions, such as reports on chapter events and other member activities, are most welcome. Please submit articles to the content editor at nca-scanner@ieee.org.

Deadlines

The editor reserves the right to set policies and procedures necessary to provide members with a newsletter that is informative and timely. Deadlines must be strictly observed to keep the publication on schedule. If you are planning an event and have insufficient information by the deadline, please contact the content editor. The deadline for the upcoming issue is Oct. 1, 2012.

calendar of events

For the latest calendar information, go to www.ieee.org/escanner.

Tuesday, September 4, 2012

Washington Section AdCom Meeting

Sponsor: IEEE Washington Section
Time: 6:30 p.m.
Place: American Association for the Advancement of Science (AAAS), 2nd Floor Conference Room, 1200 New York Avenue NW, Washington, DC.
Directions: Use the 12th Street entrance. The AAAS building is one block from Metro Center (Red, Orange and Blue lines). Parking is available in the garage on 12th Street directly across from the AAAS building.
More Info: All interested IEEE members are welcome. https://meetings.vtools.ieee.org/meeting_view/list_meeting/13597
Contact: Contact Wally Lee at w.h.lee@ieee.org.

Wednesday, September 5, 2012

Building a Culture to Support Quality

Sponsor: IEEE-CS N. VA & DC, ASQ 509 N.VA
Speaker: Judith Ann and Joseph Pauley
Time: 6:00 PM (Networking); 7:00 PM - Dinner; 8:00 PM - 09:15 PM (Program)
Place: Mykonos Grill, 121 Congressional Lane, Rockville, Maryland 20852
More Info: <http://www.asq509.org/ht/d/EventDetails/i/73444/pid/372>
Cost: \$25.00 members & students, \$35.00 non-members
Website: <http://www.asq509.org/ht/display/EventDetails/i/73444>
Registration: <http://www.asq509.org/ht/d/DoSurvey/i/48127>
Contact: Ron Kelly: Programs@asq509.org

Wednesday, September 12, 2012

NoVA Section Keynote Seminar and Administrative Committee Meeting

Sponsor: IEEE Northern Virginia Section, Nanotechnology Council and Society on Social Implications of Technology
Time: 6:30 p.m. Section Administrative Meeting; 7 p.m. Keynote Seminar; 8 p.m. Informal Event Planning for Local IEEE Chapters
Place: Olive Garden, 8133 Leesburg Pike, Vienna, VA 22182
Directions: From I-495, take Route 7 West (Exit 47A) toward Tysons Corner. Turn left at Gallows Road. Parking garage is behind the restaurant.
More Info: The keynote seminar by Dr. Francisco Castro, Ph.D., J.D. will explain recent changes to the patent process, including ramifications for nanotechnology. All interested IEEE members are welcome to attend this meeting.
Registration: Please RSVP to the section secretary at nova.secretary@yahoo.com by Noon on Tuesday, September 11, 2012.

Thursday, September 13, 2012

What I learned From Baldrige and How I Use It In Everyday Work

Sponsor: IEEE-CS N. VA & DC, ASQ 509 Performance Excellence SIG
Speaker: Mr. James Tony
Time: 6:00 PM (Networking) and Pizza; 6:30 - 8:00 PM (Program)
Place: WMATA (Metro Headquarters), 600 5th St. NW, Room 505, Washington D.C. 20001
More Info: <http://www.asq509.org/ht/d/EventDetails/i/72403/pid/372>
Cost: FREE
Website: <http://www.asq509.org/ht/d/EventDetails/i/72403/pid/372>
Registration: <http://www.asq509.org/ht/d/DoSurvey/i/35966>
Contact: Kirk Holmes, PESIG@asq509.org

Thursday, September 20, 2012

Hardly Anyone Watches the Developers

Sponsor: IEEE-CS N. VA & DC, ISSA-NOVA
Speaker: Ken Williams
Time: 5:30 PM (Networking/Dinner); 6:15 - 8:00 PM (Program)
Place: Avaya Government Solutions
More Info: <http://www.issa-nova.com/meetings.aspx>
Cost: FREE (Preference is for increase in organizational membership)
Website: <http://www.issa-nova.com/meetings.aspx>
Registration: <http://www.issa-nova.com/default2.aspx>
Contact: Zena Jones, VP_Programs@ISSA-NOVA.ORG

Thursday, September 20, 2012

Relay Protection and Coordination

Sponsor: Power Engineering Society (NV) & Industry Applications Society (DC)
Speaker: Paul Gill, Gill Engineering, Inc.
Time: Social Hour 5:45PM; Snacks 6:00PM, Topic 6:30PM
Place: KEMA Consulting 4400 Fair Lakes Court, Fairfax, VA
Directions: KEMA Office is located in the "AFCEA" Building, one block east of the Fairfax County Parkway between I-66 and Route 50.
Cost: Free for Members, \$10 Guests, and Free IEEE Student Members
Registration: RSVP Sirak Belayneh; sbelayne@ieee.org or at <https://meetings.vtools.ieee.org/main>.

Tuesday, September 25, 2012

Agile Quality Management Techniques

Sponsor: IEEE-CS N. VA & DC, ASQ 509 SW SIG, SSQ
Speaker: Jim Jamieson

Time: 5:30 PM (Networking and Pizza(*)); 5:50 - 6:50 PM (Program)
Place: MITRE, room 1N100 7515 Colshire Drive McLean, VA 22102; FDA, Bld 66, room G512 10903 New Hampshire Ave Silver Spring, MD 20993, MITRE, room 1M306 202 Burlington Rd (Rt. 62) Bedford, MA 01730
More Info: <http://www.asq509.org/ht/a/GetDocumentAction/i/70192>
Cost: FREE
Website: <http://www.asq509.org/ht/a/GetDocumentAction/i/70192>
Registration: <http://www.asq509.org/ht/d/DoSurvey/i/26913>
Contact: Scott Ankrum: ankrums@mitre.com

Wednesday, September 26, 2012

The Art of WASTE: Losing the Farm, Strategic Performance Improvement Challenges in the US Government

Sponsor: IEEE-CS N. VA & DC, ASQ 509 LSS SIG
Speaker: Mr. Jim Bowie
Time: 6:00 - 6:45 PM (Networking and Pizza); 6:45 - 8:00 PM (Program)
Place: TEQCORNER, 1616 Anderson Road, Center Conference Room (3rd Floor), McLean, Virginia 22102
More Info: <http://www.asq509.org/ht/d/EventDetails/i/71010/pid/372>
Cost: FREE
Website: <http://www.asq509.org/ht/d/EventDetails/i/71010/pid/372>
Registration: <http://www.asq509.org/ht/d/DoSurvey/i/38891>
Contact: Carlos Mata, SixSigmaSIG@asq509.org

Tuesday, October 2, 2012

Washington Section AdCom Meeting

Sponsor: IEEE Washington Section
Time: 6:30 p.m.
Place: American Association for the Advancement of Science (AAAS), 2nd Floor Conference Room, 1200 New York Avenue NW, Washington, DC.
More Info: All interested IEEE members are welcome. https://meetings.vtools.ieee.org/meeting_view/list_meeting/13765
Contact: Contact Wally Lee at w.h.lee@ieee.org.

Wednesday, October 10, 2012

NoVA Section Administrative Committee Meeting

Sponsor: IEEE Northern Virginia Section
Time: 6:30 p.m.
Place: Olive Garden, 8133 Leesburg Pike, Vienna, VA 22182
Directions: From I-495, take Route 7 West (Exit 47A) toward Tysons Corner. Turn left at Gallows Road.
Contact: Please RSVP to the section secretary at nova.secretary@yahoo.com by Noon on Tuesday, October 9, 2012.

Balt. Section Dedicates IEEE Milestone Honoring Early B&O Railroad Electrification

BY CARL SULZBERGER

The historic 1884 roundhouse of the Baltimore and Ohio Railroad Museum on West Pratt Street, Baltimore, was the setting on June 21 for the dedication of an IEEE Milestone in Electrical Engineering and Computing commemorating the first main line railroad electrification. This feat, achieved by the Baltimore and Ohio Railroad (B&O) in 1895 at the Howard Street Tunnel in Baltimore, served as the prototype for later main line railroad electrification projects in North America and abroad.

This dedication ceremony, arranged and led by Antoanna Romaniuk, Baltimore Section Milestone nominating committee chair and 2010 IEEE Baltimore Section chair, began at about 6:00 p.m. with over 70 IEEE members, family members, and other interested invitees in attendance. Romaniuk, serving as master of ceremonies, gave opening remarks and then introduced the speakers in turn.

Walter Willing, 2012 IEEE Baltimore Section chair, offered his welcoming remarks. He was followed by Courtney Wilson, executive director of the B&O Railroad Museum, who welcomed the attendees and expressed the thanks of the Museum for the B&O being accorded the honor of having its pioneering achievement named an IEEE Milestone. Wilson was a supporter of the Milestone effort from its inception in 2010.

The keynote address was given by Joseph Cunningham (shown in middle photo), a noted railway and electric power system historian, author, and educator. Cunningham, a member of the Baltimore Milestone nominating committee, authored a definitive article on the historic Howard Street Tunnel electrification that was published in the January/February 2010 issue of the IEEE Power & Energy Magazine. Cunningham's article was the inspiration for the successful Milestone effort.

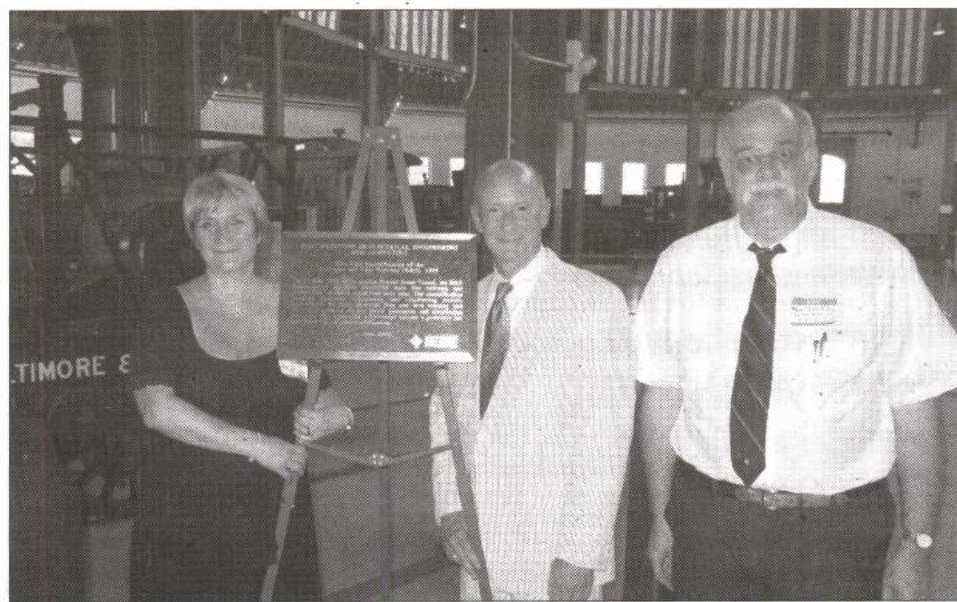
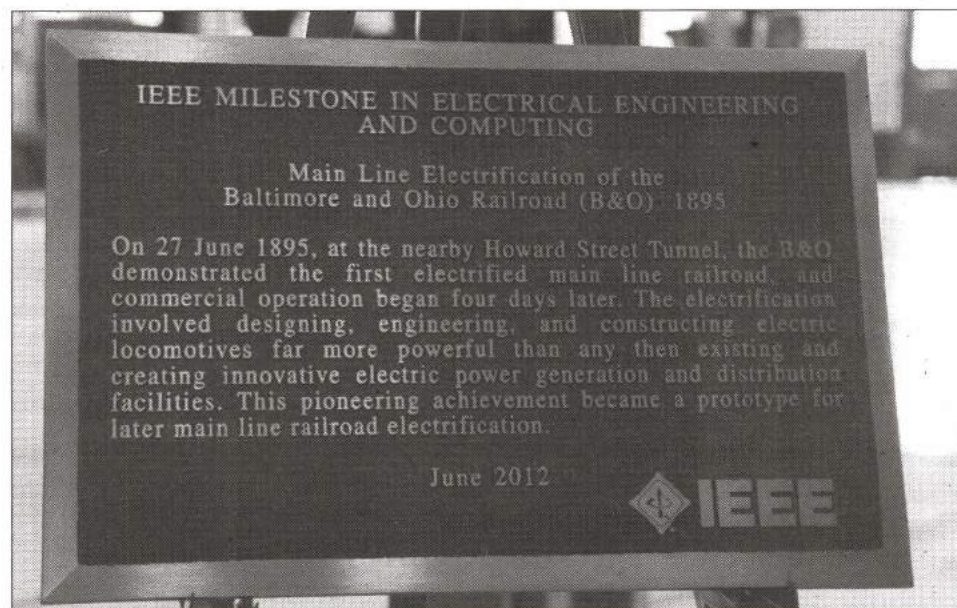
Dr. Lyle Feisel, 2012 chair of the IEEE History Committee, then discussed the role of the History Center in promoting and managing the IEEE Milestone program that is conducted through the IEEE History Center. The program's goal is to recognize and to honor with a bronze plaque significant achievements in the many fields of interest of the IEEE. The Milestone program was established in 1983, and to date, approximately 120 Milestones have been dedicated. Feisel encouraged all IEEE members to seek out and nominate worthy Milestone candidate achievements using the detailed guidelines available on the IEEE website. Robert Colburn, represented the History Center at the June 21 dedication ceremony, and Carl Sulzberger, the third member of the B&O Milestone nominating committee and former coordinator for the Milestone program, also attended. As the administrator of the Milestone program, Colburn works closely with the nominators working on each Milestone effort.

Dr. Moshe Kam, 2011 IEEE president, then addressed the attendees on the importance of the IEEE Milestone program and then unveiled and dedicated the bronze plaque honoring the B&O Railroad's pioneering first main line electrification. The plaque citation reads:

Main Line Electrification of the Baltimore and Ohio Railroad (B&O), 1895

On 27 June 1895, at the nearby Howard Street Tunnel, the B&O demonstrated the first electrified main line railroad, and commercial operation began four days later. The electrification involved designing, engineering, and constructing electric locomotives far more powerful than any then existing and creating innovative electric power generation and distribution facilities. This pioneering achievement became a prototype for later main line railroad electrification.

The plaque will be installed in the main Museum building (the 1884 roundhouse) at the location of an existing display covering the 1895 Howard Street Tunnel electrification project. Following closing remarks by master of ceremonies Romaniuk, the attendees enjoyed a reception and refreshments in the Museum lobby and galleries and presentation of door prizes, including a 1952 volume published by B&O Railroad, *A Picture History of B&O Motive Power*. The door prize winner was Ms. Jane Colignon, whose father worked on the design on some of the engines depicted in the book.

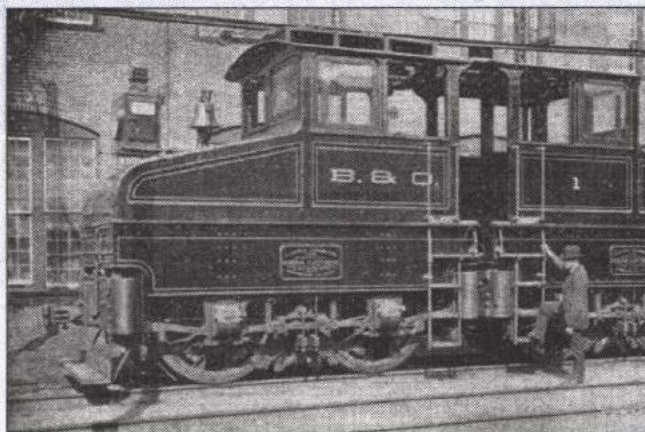


The Electric Railway: A Milestone in Electrical Engineering and Computing

BY JOSEPH J. CUNNINGHAM

Railways, both local urban street systems, and long distance lines were one of the first industries to explore electric operation. While the birth of the electric railway is generally considered to be that of the Richmond VA street railway installation of Frank Sprague in 1887-8; there were predecessors. The Sprague installation was, however, the one that established standards and is considered to have launched the electric transit industry.

Electrification of main line long distance railroads
See *Railway*, p. 6



B&O No. 1 was the world's first mainline railroad electric locomotive. Before the Belt Line was built, the B&O ferried trains across Baltimore Harbor from Locust Point to Canton. The electrified portion of the Belt Line extended from Camden Station northeast to Waverly Tower, nearly four miles. When the line was opened for service on May 1, 1895, the electrical distribution was not complete, so the trains were drawn by coke-burning locomotives. The first electric trial trip was made on June 27, 1895, and regular service began on July 1. The Patapsco River railroad ferry ceased operation on August 4, 1895. Northbound passenger trains were pulled through the tunnels by electric locomotive No. 1, and freight trains were pushed, while southbound trains coasted on the downgrade run. (Photo source: *The Electrical World*, 13 July 1895, p. 55.)

calendar of events

Wednesday, October 10, 2012

Professional Enrichment Seminar

Sponsor: Power Engineering Society (NV) & Industry Applications Society (DC), Joint Meeting with National Capital Chapter ASHRAE
Time: Seminar: 3:45PM-6:00, Social Hour 5:45PM-6:30 Dinner 6:30PM-8:30
Place: Hilton Arlington, 950 North Stafford Street, Arlington VA 22203, at the Ballston Metro
Cost: Seminar: \$30, Dinner \$45
Registration: Register at www.nccashare.org by 5 Oct.

Thursday, October 18, 2012

Current Trends In Cyber Crime

Sponsor: IEEE-CS N. VA & DC, ISSA-NOVA
Speaker: Panel Discussion
Time: 5:30 PM (Networking/Dinner); 6:15 - 8:00 PM (Program)
Place: TBD
More Info: <http://www.issa-nova.com/meetings.aspx>
Cost: FREE (Preference is for increase in organizational membership)
Website: <http://www.issa-nova.com/meetings.aspx>
Registration: <http://www.issa-nova.com/default2.aspx>
Contact: Zena Jones, VP_Programs@ISSA-NOVA.ORG

Tuesday, October 23, 2012

Reverse Engineering Legacy Systems

Sponsor: IEEE-CS N. VA & DC, ASQ 509 SW SIG, SSQ
Speaker: Mike Oara
Time: 5:30 PM (Networking and Pizza(*)); 5:50 - 6:50 PM (Program)
Place: MITRE, room 1N100 7515 Colshire Drive McLean, VA 22102; FDA, Bld 66, room G512 10903 New Hampshire Ave Silver Spring, MD 20993; MITRE, room 1M306 202 Burlington Rd (Rt. 62) Bedford, MA 01730
Website: <http://www.asq509.org/ht/a/GetDocumentAction/i/70192>
Registration: <http://www.asq509.org/ht/d/DoSurvey/i/26913>
Contact: Scott Ankrum: ankrums@mitre.com

Wednesday, October 24, 2012

TBD IEEE-CS Meeting

Sponsor: IEEE-CS N. VA & DC, ASQ 509 LSS SIG
Speaker: Mr. Mike Cantwell
Time: 6:00 - 6:45 PM (Networking and Pizza); 6:45 - 8:00 PM (Program)
Place: TEQCORNER, 1616 Anderson Road, Center Conference Room (3rd Floor), McLean, Virginia 22102
Website: <http://www.asq509.org/ht/d/EventDetails/i/71010/pid/372>
Registration: <http://www.asq509.org/ht/d/DoSurvey/i/38891>
Contact: Carlos Mata, SixSigmaSIG@asq509.org

IEEE Annual Election

As reported in the July-August Scanner, IEEE annual elections are being conducted during the window August 15 - October 1. (This is not the same as the local Section elections.) All eligible IEEE members were mailed an individual annual election ballot in mid-August. The Scanner solicited candidate statements from IEEE President-Elect candidates for publication in this issue. Regrettably, one or more candidates declined to participate and invoked IEEE regulations that forbid publication of the opposing candidate's statement. Information and electronic ballot access are available at www.ieee.org/elections. Members are welcome to post comments on the Washington Section's Facebook page at www.facebook.com/WashSec.

Local IEEE Sections Want YOU to Serve Section elections announced for 2013 offices

It is often said that there is no "me" in "team," but you can put the "I" in IEEE by running for a Section executive leadership position for 2013. Northern Virginia Section must fill the 2013 offices of Secretary, Treasurer, and Vice-Chair (Chair-Elect for the 2014 Chair term), and the three Director positions vacated by Monica Mallini, PE, the late Dr. Pedro Rustan, and Katie Schaffold, PE. Jeff Poston, 2012 Section Chair, announces that nominations for Officer and Director positions will be accepted through September 30, 2012. The term of office is calendar year 2013 for the Officer positions, with the exception of Vice-Chair, who will also serve as Section Chair in 2014.

Directors serve two-year staggered terms. Newly elected executive committee members will join 2013 Chair Mithun Banerjee and returning Directors Marc Apter, Michael Cardinale, and Oscar Reyes, PE.

Washington Section must fill the 2013 offices of Secretary, Treasurer, Vice-Chair, Chair, and the four Director positions vacated by outgoing Directors Varetta Huggins, Dr. Raj Madhavan, Harry Sauberman, PE, and Dr. Mary Tobin. Dr. Paul Cota, 2012 Section Chair, announces that nominations for these offices will be open from September 15 through October 15. Washington Section has eight Directors who serve two-year staggered terms. The four new Directors (2013-14 term) will join returning Directors Dr. Raul Cruz-Cano, Dr. Brian Riely, Dr. George Simonis, and Dr. Min Wu.

Qualifications for holding office and for voting in the Northern Virginia or Washington Section election are current IEEE membership at a membership grade of Member or Graduate Student Member or higher and membership in the respective Section. Each Section's Bylaws, which are archived on the Section websites, may have additional details regarding qualifications.

How to Apply: Nominate yourself or another member for one of these offices by sending an email message with "Nomination" as the subject line. Include the nominee's name, IEEE member number, membership grade, office, and contact information in the body of the message. Northern Virginia Section nominations should be emailed to nova@ieee.org, and Washington Section nominations should be emailed to washsec@ieee.org.

The final candidate slates will be announced in the eScanner as the nomination periods close. Both Sections will hold online elections through the IEEE vtools voting tool. The balloting period will open on October 30 and close on November 30 so that election results may be reported at each Section's respective December meeting. To vote, IEEE members should navigate to <https://voting.vtools.ieee.org/> and use their IEEE login credentials to access the ballot. Any problems or concerns should be reported to nova@ieee.org for Northern Virginia Section members or washsec@ieee.org for Washington Section members.

Washington, DC Celebrates National Plug-in Day

The Electric Vehicle Association of Greater Washington (EVA / DC) is the lead organizer of local events for the second annual National Plug-In Day, a nationwide observance to bring attention to the environmental and economic benefits of all-electric vehicles. The event is free and open to the public on Sunday, September 23 from 10am to 4pm. It will be held on the Washington Mall,



on the east side of 3rd Street, NW in front of the Capitol building. Local electric vehicle owners will bring their cars to the mall for public display and will be on hand to answer questions about their EV experiences. Whether you are ready to join the electric vehicle revolution or not, this event is a good place to get first-hand answers to your questions, see the vehicles up close, take test drives, and allay your fears about EV ownership. In addition to a variety of electric cars and bikes, there will be exhibits on charging stations and renewable energy.

Volunteers are also invited to help with handing out flyers, organizing exhibits, and publicizing the event. Those interested should contact Joe Lado, Chief Trail Boss of the local organizing committee, at trailboss@nca-scanner.org.

National Plug-In Day is the largest grassroots electric vehicle event in the United States, and perhaps in the world. The inaugural National Plug-In Day, in October 2011, highlighted by electric vehicle parades in at least 20 cities, brought the benefits of automobiles powered by domestic electricity to thousands of people across the United States through celebrations, lectures, tailgate parties (tailpipe-free, of course) and film screenings. The 2012 National Plug-In Day event will feature events staged simultaneously in over 50 cities. The national event is organized by Plug-In America, the Sierra Club, and the Electric Auto Association, of which EVA/DC is the local chapter.

The Baltimore & Ohio Electric Belt Line

From Page 1

was explored early in the 1880s but the motors then available were not up to the task of handling heavy trains. A decade later, Sprague produced an electric locomotive intended for the Chicago freight yards but the project foundered due to an economic downturn. The Baltimore & Ohio railroad, the nation's first common carrier railroad and one noted for its innovation, launched a line relocation project in 1887 that involved a tunnel through prime areas in the city of Baltimore. Smoke producing locomotives were prohibited; some other system was required.

Electrification appeared the best option and two leading figures in the rail industry, Cary Hutchinson and Louis Duncan, both associates of Frank Sprague and also of Johns-Hopkins University, directed the effort. To succeed, it was necessary to scale up power systems by more than 1,000% and develop motive power equal to the task. General Electric was contracted to develop the systems and supply the components. In 1895, electric power took over the hauling of both freight and passenger mainline long distance trains for the first time anywhere in the world. The installation was short but proved the feasibility of electric operation and encouraged the adoption of electric power elsewhere.

Although electric propulsion never reached the extent on U.S. main line railways that it did elsewhere, it made another significant contribution. That was the electric traction motor which made it possible for diesel engines to supplant steam propulsion on US roads during the mid-20th century. Since North American practice employs a diesel generator to supply power to electric traction motors, in a wider sense, all U.S. railroads continue the technological leap made at Baltimore in 1895. That pioneer installation was replaced by diesel-electric motive power in 1952 as was most U.S. rail electrification. Over time, it has all but been forgotten but the significance remains, a significance that was truly an electrical engineering milestone in its day.

On behalf of the IEEE NCA, the Scanner thanks guest authors Carl Sulzberger and Joe Cunningham for their contributions to this issue.

Joseph Cunningham lives in New York State and has over

"It is by the deft manipulation of its motive power, like a general deploying his armies, that the operating officials of a railroad are capable of handling what might otherwise be a baffling traffic problem."

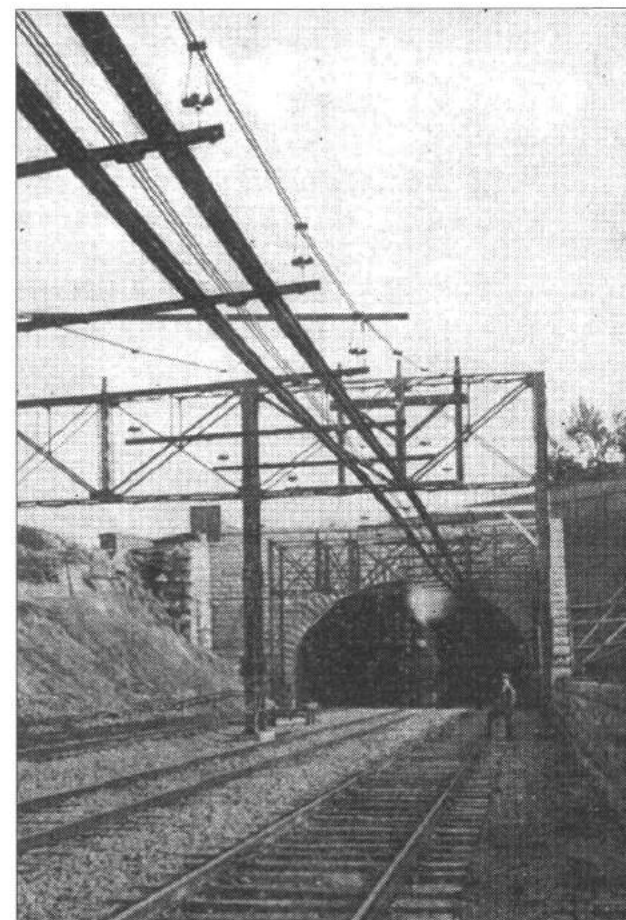
— PICTURE HISTORY OF B&O MOTIVE POWER, 1952.

35 years of experience researching railway and electrical technology. He has served as a consultant to authors in the US and the UK and has lectured and taught widely on the history of railway technology and public transit systems and contributed to the IEEE Global History Network. His high school science project, "The Theory and Operation of Alternating Current," won a gold medal and led to a college scholarship. He holds a B.S. in physics from St. Francis College.

Carl Sulzberger, an IEEE Life Member, lives in New Jersey and has been associate editor for history for IEEE Power & Energy Magazine since the magazine's launch in January 2003. He has served as a member of the IEEE History Committee and as coordinator for the IEEE Milestones program. He holds BSEE and MSEE degrees from Newark College of Engineering and the Juris Doctor degree from Rutgers University School of Law. Carl is retired as Associate General Attorney at Public Service Electric and Gas Company (PSEG), Newark, NJ, where he was employed for 40 years. Carl is married to Virginia Sulzberger, an IEEE Life Fellow and long-time officer of IEEE PES.

For more on this topic:

- "The Baltimore & Ohio electric belt line," Electr. World, vol. 26, no. 2, pp. 54-57, July 13, 1895.
- J. J. Cunningham, "Howard Street Tunnel: origins of



Although electric trolleys and other light-duty rail installations existed in the 1890s, the B&O application was novel because it used electric propulsion to move an entire mainline train, including the steam engine and coal tender, through a long system of tunnels and over steep uphill grade. An overhead power distribution system was designed using a slotted metal trough, suspended by insulated iron rods, of ampacity equivalent to a 1000-Kcmil conductor. Collector shoes attached to the locomotive by a flat-slide pantograph – invented at B&O just for this application – and rode in the trough slot. The rails, bonded with 0000-gauge wire, were used in the return circuit. The design proved unsatisfactory due to high maintenance caused by corrosion from steam engine gases, so it was replaced by a third-rail system in 1902. Photo Source: The Electrical World, 13 July 1895, p. 54.

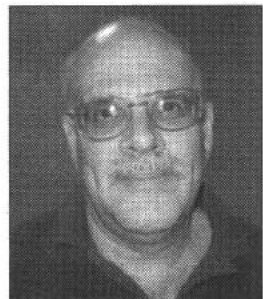
mainline railroad electrification," IEEE Power & Energy Magazine, vol. 8, no. 1, pp. 62-71, Jan-Feb 2010.

- "A ninety-six ton electric locomotive," Scientific American, 10 August 1895.

'A Kind and Humble Man with a Wonderful Sense of Humor'

From Page 1

Reliability and Maintainability Symposium (RAMS). He authored many papers, with the most recent presented at the 2012 RAMS. He was working on another paper for the 2013 RAMS at the time of his death. He was a fixture at Northrop Grumman Advanced Technology Laboratory (ATL) where his contributions led to the success of many space systems with his innovative redundancy schemes and protection circuits that made their way into every payload delivered over the last two decades. Walt was active in his church and in the community, spending many hours working with young people. He volunteered as a mentor for the IEEE Robot College and Discover-E programs to foster high school students' interest in engineering.



Those of us who worked with him will remember him as a truly exceptional engineer dedicated to his work and a kind and humble man with a wonderful sense of humor who was never too busy to answer a question or lend a helping hand. Walt's presence will be sorely missed by everyone who knew him.

Walt was an accomplished craftsman, with the motto "Power Tools Make the Man." He had a great sense of humor and an eccentric taste in hats. He was involved in many productions of the Liberty Showcase Theatre and Salem Players in Catonsville. Walt is deeply mourned by his family, relatives and friends. He is survived by his wife, Mary Kay Willing, their children Alaina and Shannon Willing, and Scott, Jeremy and Todd Metcalfe; his siblings Joe, Tom, Anne, Frank, Nancy and Fran Willing, and his grandson Sam Metcalfe. A memorial service in his honor was held at Salem Lutheran Church, Catonsville, MD on Saturday, Aug. 4.

"Walt had the exceptional ability to communicate with IEEE fellow members in a friendly, calm, exact, and very constructive way... Working with him was a pleasure, you always knew he was doing his best in the most objective way. Dependable and reliable, as the Reliability in the name of the IEEE Chapter he used to chair for many years."

— BORIS GRAMATIKOV

Region 2 Metropolitan Area Workshop

When: November 2-3, 2012

Where: The Westin Baltimore-Washington International Airport, 1110 Old Elkridge Landing Road Linthicum, MD 21090 Phone: 443-577-2300.

Cost: \$129 for IEEE Members and \$179 for Non-members through September 9. \$159 for IEEE Members and \$209 for Non-members. \$279 starting October 31.

Registration: <http://maw-baltimore.eventbrite.com/>

The Baltimore Section is hosting the first Metropolitan Area Workshop in Region 2, November 2-3, 2012. On Friday the workshop begins at 7:00am with a continental breakfast and registration, moves through an opening session on Friday morning and course instruction, to lunch at noon. Two more course sessions, separated by a break, culminate at 5:00pm. At 5:30pm on Friday, join us for a reception with a light dinner and a cash bar after the keynote address by Nobel Prize Winner Dr. John C. Mather.

On Saturday morning, breakfast begins at 7:00am. Track sessions begin at 8:30am. The workshop officially ends at 5:00pm on Saturday. Your registration fee includes two days of instruction, breakfast and lunch both days, and the Friday evening reception with a light dinner (cash bar will be available).

Course content is provided by IEEE Communications Society, IEEE Power & Energy Society, IEEE Computer Society and IEEE-USA. IEEE CEUs will be awarded for all workshops.

Communications Milestone: Telstar Celebrates 50 Years

A revolution in satellite communications was born 50 years ago in a small town in Maine when a 3-foot sphere made the globe suddenly smaller. Telstar, developed by Bell Telephone Laboratories for the American Telephone and Telegraph Company (AT&T) as an experimental active communication satellite, was launched by NASA from Cape Canaveral Air Force Station on July 10, 1962, for which AT&T paid \$3 million. History was made again that day when AT&T President Fred Kappel telephoned Vice-President Lyndon Johnson in Washington, DC from Andover, Maine via Telstar. Two days later, Telstar relayed the world's first transcontinental television signal, from Andover Earth Station, Maine, simultaneously to the Pleumeur-Bodou Telecom Center, in Brittany, France and to Goonhilly Downs, Cornwall, UK. Andover Earth Station was equipped with a 177-foot horn antenna enclosed within a 210-foot diameter radome, the world's largest balloon (at the time). The first broadcast images consisted of a view of the cloudy Andover sky and large white radome as an American flag--slowly coming into view as the camera panned--waved against the backdrop of the Andover Earth Station. The transmission has been compared in significance to the first message sent by telegraph, but the otherworldly quality of these images is not unlike Apollo 11 transmissions from the Moon, in composition and historical significance. Buoyed by the startling success of this initial satellite transmission, Pleumeur accelerated the planned July 23 broadcast schedule and opened a July 12 French broadcast with, "Relax, you are in Paris!" followed by a seven-minute concert for American television viewers featuring popular singer Yves Montand.

On July 12, 2012 the Smithsonian and the Embassy of France marked this milestone with a live telecast between the National Air & Space Museum in Washington, DC and the Cité des Télécoms in Pleumeur-Bodou, followed by a seminar on Telstar's historical significance, its impact on commercial space endeavors, and the birth of global communications. Footage from the original 1962 broadcast between France and the United States on July 12, 1962 was shown at the symposium. Dignitaries, including French Ambassador François Delattre and US Consul Robert Tate spoke alternately



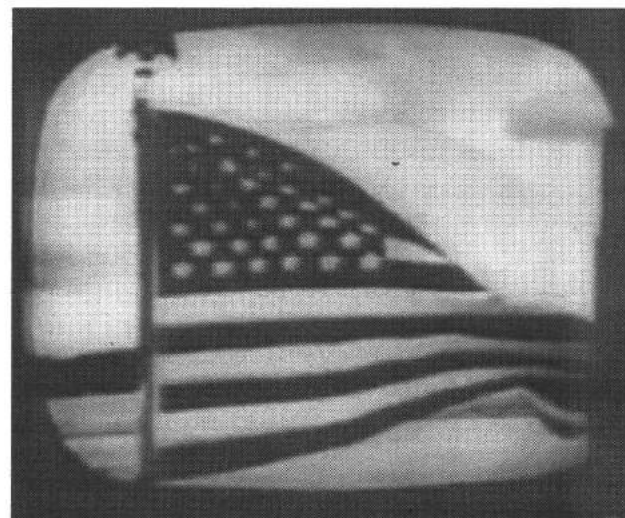
Walter Brown, original member of the Bell Labs Telstar I team who led semiconductor physics research, holds a scale model of the Telstar satellite at a Telstar 50th anniversary reunion at Bell Labs in Murray Hill, NJ. Credit: Alcatel-Lucent

from France and from Washington, DC. Concluding remarks were delivered by State Department Assistant Secretary Kerri-Ann Jones. The event was organized by the Embassy of France and The Smithsonian National Air & Space Museum in partnership with Intelsat, GlobeCast, Cité des Télécoms, Alcatel-Lucent, IEEE, ITSO, and The University of Maine to celebrate the 50th anniversary of both the first live TV transmission between continents and the inauguration of the commercial use of space by Telstar, the first commercial satellite.

A webcast of the event is archived at <http://www.us-tream.tv/recorded/23940708>

The Telstar 1 satellite was a 3-foot diameter sphere weighing 170 pounds, powered by 3,600 solar cells mounted in panels on the face of the sphere, and outfitted with NiCd batteries to satisfy peak communication power demand. The batteries recharged when

See *Telstar 1*, p. 8



An image from the first satellite transmitted television broadcast on July 12, 1962. The round object behind the flag is the 161-foot Radome in Andover, Maine. Credit: Alcatel-Lucent

Virginia Tech Professor Saifur Rahman Honored at IEEE-USA Annual Meeting

Virginia Tech's Professor Saifur Rahman was honored at the IEEE-USA Annual meeting in Cincinnati with the Divisional Professional Leadership Award.

The award is in recognition of Dr. Rahman's outstanding leadership efforts in advancing the broad field of power and energy in the United States, and particularly for his contributions in the area of smart grid and related technologies. This award seeks to honor those who have contributed to IEEE's goals of enhancing the quality of life through the constructive application of technology and promoting understanding of the influence of technology on the public welfare. At the IEEE-USA annual meeting last year, Dr. Rahman received the Professional Achievement Award for leading the collaboration between the IEEE and other engineering societies to form the Technologies for Carbon Management Initiative.

Dr. Rahman, who holds the positions Joseph R. Loring Professor of Electrical and Computer Engineering at Virginia Tech and Director of the Virginia Tech Advanced Research Institute in Arlington, is an IEEE Fellow and member of the Northern Virginia Section. Dr. Rahman is the founding Editor-in-Chief of the IEEE Transactions on Sustainable Energy and currently serves as the Vice-President for New Initiatives and Outreach of the IEEE Power and Energy Society and as

a member of its governing board. He is also a distinguished lecturer of the IEEE Power and Energy Society and a Member-at-Large of the IEEE-USA Energy Policy Committee.

Dr. Rahman has lectured and published extensively in the areas of smart grid, conventional and renewable energy systems, load forecasting, uncertainty evaluation, and infrastructure planning. He was recognized this year by Greentech Media in The Networked Grid 100: The Movers and Shakers of the Smart Grid in 2012 for having "dedicated his professional life to researching cutting-edge energy technologies, including energy efficiency, demand response, renewable energy and microgrid and distributed generation and storage." The latter set of technologies may be particularly applicable to developing economies in India and Africa; Professor Rahman has extensive experience with such developments as a former consultant to the World Bank's Africa Energy Program. Dr. Rahman is a Principal Investigator of the Smart Grid Information Clearinghouse (SGIC) project at Virginia Tech, which provides a web portal with information related to smart-grid technologies, standards, and rules and regulations. You can visit the portal at <http://www.sgicclearinghouse.org>.

IEEE-USA accepts nominations for its Regional/Divisional Professional Leadership Award throughout the year. A nomination must be endorsed by the candi-

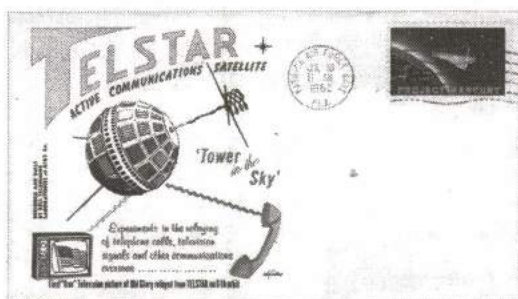


Dr. Saifur Rahman accepts the IEEE-USA Divisional Professional Leadership Award. (Credit: IEEE-USA)

date's Regional or Divisional Director. The nomination form and instructions can be found at IEEE-USA's website at <http://www.ieeeusa.org/volunteers/awards/>.

Life Before Telstar

Before the era of satellite communications, television was an experimental medium in delivering instructional content to the masses. In 1944, Westinghouse Radio Division (Baltimore) engineer Charles E. "Chili" Nobles conceived "Stratovision," a system to rebroadcast television signals using transmitters mounted on aircraft, to overcome the 50-mile distance limitations of ground-based line-of-sight broadcasting. Nobles, a Texas A&M University graduate, was flying to Baltimore in 1944, when he looked down at the flat Texas landscape below and realized that the similarities between radar and television would make it possible to transmit television signals from airplanes in the stratosphere. His vision was to bring television programming to rural areas unserved by commercial television broadcasts.



National Postal Museum, <http://www.postalmuseum.si.edu>

Pi in the Sky

The technical feasibility was proved by a series of regular tests, with "airborne station X10A" rebroadcasting signals from Baltimore WMAR-TV, WMAL-TV in Washington, and some special programming, including the final game of the 1948 World Series between Boston and Cleveland. The game was rebroadcast from a B-29 flying over Pittsburgh and relayed from the east coast by coaxial network to Cleveland. The main transmitting antenna mast was 28 feet long and hung vertically downwards from the plane in flight, inducing 600 hp of additional drag. The broadcasting equipment was powered by three 15-kVA 500-cycle alternators coupled to the plane's engines and required 70,000 BTU/hr of air conditioning to dissipate heat, which would otherwise cause the compartment to reach temperatures of 134 degrees. Westinghouse officials saw the future as a fleet of aircraft relaying Stratovision broadcasts plane-to-plane to reach 78% of the population of the United States. In 1959, the Ford Foundation and private industry funded an initiative to apply Stratovision to education, and the Midwest Program for Airborne Television Instruction, Inc. (MPATI) was established. Curricula and teachers were selected, and Westinghouse was chosen to implement the technology. Two DC-6 planes were outfitted with six tons of television broadcasting equipment, and the planes flew on alternate days out of Purdue University's airport to deliver video-taped instructional broadcasts five hours per day to a 200-mile radius from a position over central Indiana. Westinghouse crews operated tape recorders on board and monitored audio and video output on two channels which telecast simultaneously on UHF channels 72 and 76. Courses were offered in a variety of topics, including music, arithmetic, science, history, and languages. The classroom in the sky served a million students in six Midwestern states with 98% reliability during the 1961-62 school year, delivering 1393 hours of televised lessons. In fact, MPATI exceeded the availability of school openings due to a particularly harsh winter. Good reception was reported in Cleveland, Chicago, Louisville, Milwaukee, Decatur, IL, and Muskegon, MI. The pilot project was a technological success, but it was not continued because many school districts did not have funds to invest in receiving equipment, and an FCC decision to require MPATI to use a dedicated education channel instead of the UHF frequencies would require an additional research investment. In the summer of 1962, the birth of satellite broadcasting would eclipse interest in aircraft transmission for ordinary commercial broadcasting. However, the underlying technology's name has lived on, having been adopted by Fender guitar company in 1953 for its new model, the Stratocaster.

Sources:

- "Airborne Educational TV Project is Ready for New School Year," *The Washington Bulletin*, vol. 2, no. 2, October 1962, p.8.
- Kenneth R. Boord, "Is Stratovision the Answer?" *Radio and Television News*, January 1950, p. 36-37, 145.

Telstar 1 Satellite Celebrates Anniversary

From Page 7

the satellite was not in view of the ground terminals. Telstar's communication system had a single 50MHz bandwidth channel, which could support one television channel or 600 one-way voice circuits. Telstar 1 orbited the earth nine times per day but was only "visible" between Andover and Europe for 20-30 minutes three times per day. Between July 12 and November 23, the satellite participated in 400 transmission sessions to test its performance with telephone, telegraph, facsimile, and television signals with stations in the United States, France, and Britain. Telstar's communication subsystem failed after six months of operation due to degradation of transistors exposed to Van Allen belt radiation. It was temporarily repaired to permit brief operation in early 1963. Telstar 2 was launched in May 1963 using radiation-resistant transistors and a higher orbit apogee, to increase ground-view time and decrease exposure time to the Van Allen belts. Telstar 2 met its two-year operational objective.

All three sites of the original satellite broadcast, Andover Earth Station, Pleumeur-Bodou, and Goonhilly Downs, were commemorated as IEEE Milestones in July 2002.



One-third model of the Telstar satellite, donated to the National Air and Space Museum in 1982. (Credit: Smithsonian National Air and Space Museum)

National Air and Space Museum

Dear American friends,

It's a great pleasure for my team and for me to be with you today at the Smithsonian National Air and Space Museum as we are celebrating "Telstar 50th anniversary" and I want to thank all those whose commitment and hard work have made this exceptional event possible.

Fifty years ago, Telstar was a technological breakthrough that produced a true revolution in the information and communication world, allowing any human being on Earth to potentially communicate with any other, wherever they may be. In this respect, Telstar made science-fiction a reality. Its technology helps save lives, avoid conflicts and promote better understanding between peoples. So diplomacy and telecommunications go together – and Telstar therefore deserves the title of honorary Ambassador. We owe Telstar's great success to the talent and vision of hundreds of brilliant scientists and engineers in America and in Europe, and to the commitment of our two countries in particular.

France is proud to have been instrumental in this wonderful adventure. Telecommunications have always been and still are one of France's technological fields of excellence, as illustrated by our Institut des Telecommunications, our many engineering schools, and our leading telecommunication companies such as Orange in particular, with Globecast America, that I'd like to warmly thank for their support and their leadership.

Against this backdrop it should come to no surprise that innovation is today more than ever France's number 1, number 2 and number 3 priority.

Ladies and Gentlemen, our event could not come at a better time, between Independence Day and Bastille Day, and as French-American relations – and this is good news – have never been stronger than they are today.

My warmest thanks again to all of you.

Ambassador François Delattre
Embassy of France

IEEE NCA Advertising Opportunities

The National Capital Area Scanner is accepting advertising reservations for its November-December 2012 and January-February 2013 issues. Electronic button and banner ads may also be reserved for placement on the eScanner website. With subscribers in Washington, Baltimore, and Northern Virginia Sections, the Scanner and eScanner now reach 15,000 IEEE members. Additional information and deadlines can be found in the Scanner's media kit, which may be downloaded at www.nca-scanner.org/ad. Discounts are available for multiple insertions, and IEEE members and entities may claim an additional 10% courtesy discount. Custom ad sizes and layout assistance are available. Please contact the Scanner's Advertising Manager, Jerome "Jerry" Gibbon, IEEE LSM, to place your ad.