VIRGINIA MOUNTAIN SECTION
NEWSLETTER

IEEE Region 3, Council 09, Section 65 October 2003

Wednesday October 15

Tour of the New WDBJ Television Facilities

On **Wednesday, October 15** (please note change from regular meeting date), we will meet at the WDBJ (Channel 7) television facilities in Roanoke at 6:30 PM for a pizza and soft drinks supper, followed by a tour of the WDBJ facilities. Cost is $5 per person; advance reservations are necessary (see below).

WDBJ and Digital TV Background

WDBJ began operations in 1955. The station moved to its then new studios at Colonial and Brandon in 1960. Over the next 43 years at that location, WDBJ saw the conversion from black-and-white to color TV. It saw the transition from film-based programming and news to videotape, and then it went through a number of evolutionary improvements as technology moved forward. All the while, however, each of the enhancements of technology was still trapped in the basic analog television format that was first developed in the 1930s. Industry leaders and Washington regulators realized that the 21st century would herald the arrival of a digital world.

They knew that television could not be stalled in a 20th century analog world. An effort was launched some ten years ago to create an orderly public policy plan for migrating the television industry, and viewers alike, to a new digital realm. Researchers in Japan had already developed an analog high-definition television system. It was beautiful, but it used two entire channels of bandwidth to transmit the high-definition signal. The NTSC television system used in the United States requires 6 MHz of bandwidth for each channel. There was no way the channel assignments could be shifted to allow each station to use its existing channel, plus one existing channel. So, it was under those constraints that in 1991 a number of technology companies began to develop competing systems for delivering a new digital form of television in the United States. Two years later, in 1993, several decided to take the best ideas of each and form an organization called "The Grand Alliance" to expedite development of digital TV. They were AT&T Labs, Sarnoff Research Center, General Instruments, MIT, North American Philips, Thomson Consumer Electronics and Zenith. At that point, things started to move along quickly. With 100 million households in the US - and each with multiple television sets - it was not politically acceptable to make all those TV sets obsolete in one bold move. The Federal Communications Commission developed a new allocation plan in which each existing television station would be assigned a second channel on which it would begin digital operations - without creating interference to existing stations. The FCC and Congress then decided to create a "transition" period, in which stations would operate both digital and analog channels, giving the public time to retire old NTSC analog sets and acquire the new digital receivers. Then, another political decision was made; stations would be permitted to do high-definition television on their new digital channel, or to opt for standard-definition transmissions.

In the midst of these developments, WDBJ realized it could not readily make the conversion to a serial digital plant in its old location at Towers Mall. Planning started for a new facility, one capable of simultaneous operation of an NTSC analog plant (the Channel 7 that was actually paying the bills) and an ATSC digital plant (the station that people would someday be watching). Six years ago, in 1997, the FCC finally announced channel assignments. WDBJ was given the opportunity to apply for Channel 18 for its digital operation, and soon thereafter stations in cities this size were told they must apply for, build, and start telecasts no later than May 1, 2002. WDBJ started development work for a new digital broadcast facility. Consultants specified that the new location must be in a high visibility location, out of the flood plain, with unobstructed line-of-sight view of the transmitter location on Poor Mountain, with an unobstructed look at the south-southwest horizon for satellite transmissions and reception, at least a half mile from railroad tracks, and free of terrestrial microwave interference. They identified two "perfect" locations, including the former Best Products property on Hershberger Road. The station acquired the property. Working with the local architectural firm of Hayes, Seay, Mattern & Mattern and local contractor J.M. Turner & Company, construction got underway in 2001. Work on the new digital plant was completed and the station made a seamless move to the new location in April last year, never missing a minute of broadcast time. WDBJ-DT, the new digital service, was launched within days of the move. WDBJ-DT is now doing daily high-definition telecasts, along with simultaneous multicasts of local news, sports programming and a full-time weather channel.

Date: Wednesday, Oct. 15, 2003
Pizza supper: 6:30 PM
Tour: 7:15 PM
Cost: $ 5.00
Reserve by Noon, Monday, October 13; Shawn Addington
mailto:AddingtonJS@mail.vmi.edu
(540) 464-7343
Please indicate number of attendees
Directions to: WDBJ, 2807 Hersberger Rd.
I581, Exit 3, Hershberger Rd West
1st Rt. onto Ordway Drive, go past first intersection, and WDBJ will be on right.

VMS Computers, Controls, & Industrial Electronics Society Meeting on Oct. 21

Subject: Virginia Tech Terascale Computing Facility, from the Ground Up
Speaker: Jason Lockhart

Abstract:
This talk will focus on the process by which the Virginia Tech Terascale Computing Facility was constructed and how it will be used. The technologies used, the reasons they were chosen, and the overall facility design will be discussed.

Speaker Bio:
Jason Lockhart is the Director of High-Performance Computing and Technology Innovation for the College of Engineering at Virginia Tech. He is Co-chair of the College's Research Computing Council, and is also Associate Director of the Virginia Tech Terascale Computing Facility. He has spent the last seven years supporting faculty and students developing instructional and research related tools as well as delivering research related faculty workshops and team teaching a Scientific Visual Data Analysis and Multimedia course (ESM 4714). Jason is a graduate of the College of Architecture and Urban Studies at Virginia Tech and has co-founded two commercial ventures.

Location and Time:
7 p.m., Tuesday, October 21
Whittemore Hall 257
Virginia Tech, Blacksburg, VA

Senior Member Drive

The membership of the IEEE Virginia Mountain Section as of August 30, 2003 was: 26 Fellow
97 Senior Members
296 Members
266 Students

If you are a member, and it is 10 or more years since you received your undergraduate degree, you may qualify for senior membership. The IEEE has a special program each year to promote Senior Member upgrades.This program makes it easy to process a Senior Member application and itgives a financial incentive of a $10 rebate to the Section for every new Senior Member that is approved. Information on this program can be found at,http://www.ieee.org/organizations/rab/md/smprogram.html
Please consider applying for senior membership. The application is simple, and we will be pleased to help you obtain the necessary references.

Meetings Reports

September Meeting
In September, we had a joint meeting with the Blue Ridge Section of the American Chemical Society. Hurricane Isabel and a Virginia Tech football game not withstanding, more than 50 people were present to hear an informative and entertaining talk on gasoline/electric hybrid vehicles by Dr. George Lester. Dr. Lester pointed out that U.S. automobiles use 10 million barrels of crude oil per day, which is about 2/3 of the total crude used in the U.S. This also equals the amount of oil the U.S. imports per day. Gasoline/electric hybrid vehicles result in a 30-40 percent savings in fuel, and are available today. Dr. Lester indicated that fuel cells are much further in the future, and will require much more efficient means of generating hydrogen to offer significant further improvement.

November Meeting
In November we will be back to our regular 3rd Thursday schedule on November 20 at the Clarion Hotel in Roanoke. The program is not yet firm, but will likely be a talk on project management techniques. Details will be in the November Newsletter

IEEE Virginia Mountain Section

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