The Florida West Coast Section of the IEEE
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THE SUNCOAST SIGNAL

THE INSTITUTE OF ELECTRICAL AND ELECTRONICS ENGINEERS, INC.

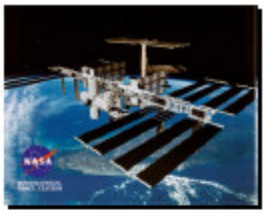
Volume 50 — No. 2 **http://www.ieee.org/fwcs** **February 2007**

Inside this Signal…

— ENGINEERS —
Invent Tomorrow Today

Celebrate Engineering Banquet

Friday — February 16th, 2007



With the Evening's Guest Speaker: Thomas Pentrack

Forget walking on the moon—how will we get to Mars? NASA plans to go back to the moon by 2018 and then on to Mars after that. A key part of this new chapter in space exploration will be the International Space Station (ISS). The ISS is a manned research space facility that is being assembled in orbit around the Earth. The ISS is still under construction with a projected completion date of 2010.

Thomas Pentrack is NASA's deputy director for Operations and Exploration in the ISS/Payload Processing Directorate. His presentation will be focused on the ISS and NASA's Vision for Space Exploration.

The 7th annual Celebrate Engineering Banquet brings together local leaders and Engineering Professionals to recognize the outstanding achievements of Engineers, Engineering Students, and Science & Math Teachers in our community. **Be sure to show up early to enjoy our Celebrate vendor's booths in the Reception area!!!**

Who: Engineers of Florida's West Coast, Family and Friends
Where: Wyndham Westshore Hotel, Downtown Tampa
Time: Cocktail Reception (Cash Bar) 5:30pm - 7:00pm
Dinner, Speaker, Awards: 7:00pm
Cost: $30 per person
RSVP: Register online at www.time2meet.com/celebrate
or call Jim Anderson at 813-417-8854

This Engineer's Week Banquet is a joint event with the following professional organizations:

THE SUNCOAST SIGNAL is published monthly by the Florida West Coast Section (FWCS) of the Institute of Electrical and Electronics Engineers, Inc. (IEEE). THE SUNCOAST SIGNAL is sent each month to members of the IEEE on Florida's West Coast. Annual subscription is included in the IEEE membership dues.

All material for THE SUNCOAST SIGNAL is due in electronic form by **1st Friday after the 1st Tuesday** of the month preceding the issue month.
Address all correspondence to:

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Engineers' Week (Editor's Column)

Engineers' Week, February 18 to 24, is a celebration of the contributions made by this important segment of our society. Locally there are two events of interest to EE's: the Celebrate Engineering Banquet and Engineering EXPO. Both occur at the beginning of the period.

February 16th is the seventh Celebrate Engineering Banquet (p. 1) and is an opportunity for engineers of a variety of flavors to meet each other and develop new relationships. This can be a very important part of your career development; networking, such as this, can be crucial.

Engineering EXPO (p. 7), on the other hand, is aimed at young people, the pre-college students. It is intended to introduce K-12 students to the world of engineering: its purpose, activities, and fun. We hope that many of these students will select an engineering discipline for themselves. This country needs to develop more engineers and Engineering EXPO is aiming for that.

—PS

IEEE

IEEE

IEEE Women in Engineering

At the January FWCS IEEE EXCOM meeting, a motion was passed to start a Women in Engineering chapter.

The founders would like to work with the IEEE student branch as well as others. Students can join the Women in Engineering Society as one of the societies that they can join for FREE (anybody can join) when they renew their IEEE membership for this year. Even those who have already renewed their membership can still update their profile and choose to join at www.myIEEE.org.

The WIE chapter will begin sending out communications on meetings and activities very soon.

IEEE

FWCS online community

This is a location where you can build your network. See Tom Blair tom_blair@ieee.org for more information or go to the site: https://www.ieeecommunities.org/ieee.floridawest

EWEEK Luncheon - The Future of Engineering

A discussion of the talent drain impacting the industry.

Date:	**Thursday February 22, 2006**	**Cost:**	**$10 Members , $20 Non-Members. (Includes Lunch) Space is limited to 35 attendees.**
Time:	**Registration & Lunch: 11:30am – 1PM**		
Speaker:	**Dr. Ralph E. Fehr III, Instructor – Power and Energy Systems, USF**	**RSVP:**	**Online at: http://www.ewh.ieee.org/r3/floridawc/ (Select Reservations)**
Location:	**TECO Hall, Tampa Electric Company, 702 N. Franklin Street, Tampa**	**Questions:**	**Tom Blair at 813-228-1111, ext 34407 or thblair@tecoenergy.com**

Your local IEEE PES/IAS Chapter is offering this Lunch & Learn session on the future of engineering presented by Dr. Ralph Fehr III.

Power systems is the oldest sub-discipline of electrical engineering, dating to the late nineteenth century. Over the years, many colleges and universities have developed formidable power engineering curricula, only to have them deteriorate over time, giving way to more glamorous areas such as microelectronics and wireless communication. Consequently, the number of graduates proficient in the study of power systems has been declining for several decades. Additionally, a large percentage of power system engineers in the workforce is approaching retirement age. The resulting net loss of power system expertise from the workforce could reach crisis proportions unless a significant number of high-quality power system engineers are produced in the next decade. To do so will require substantial changes in both universities and industry, both in the United States and abroad. Dr. Fehr will discuss these changes as he envisions them.

Dr. Ralph Fehr earned his B.S. degree in electrical engineering from the Pennsylvania State University, his M.E. degree in electrical engineering (power) from the University of Colorado at Boulder, and his doctorate in electrical engineering from the University of South Florida. He has worked in the generation engineering field designing power distribution and control systems for nuclear and fossil-fired power plants. Dr. Fehr also has worked for electric utilities for over 15 years in the operations, planning, and design areas, including transmission, distribution, and substation engineering.

Dr. Fehr has taught courses ranging from computer operating systems to mathematics to power system analysis for several institutions, including the University of New Mexico at Albuquerque, the Pennsylvania State University, the University of Colorado at Boulder, St. Petersburg [Florida] Junior College, and the University of South Florida at Tampa. He has also taught review courses for candidates for the professional engineer examination through the Florida Engineering Society for over ten years.

Dr. Fehr is a Senior Member of IEEE and is a registered professional engineer in New Mexico and Florida. His biography is published in *Who's Who in Science and Engineering* and *Who's Who in American Education*

Student Upgrade to Full Member

IEEE Student members who graduate and are elevated to full IEEE membership, will automatically receive a one-year discount of 50% off of the full higher grade IEEE and Society membership dues rates upon renewal. The offer is available once to IEEE Student members upon their graduation and elevation to full higher IEEE membership. The discount is available to all IEEE Student members graduating with an undergraduate or graduate degree.

IEEE Student members who previously graduated with a Bachelors degree and received a discount upon their elevation to full IEEE member grade, would not be eligible to receive the 50% discount again if they returned to school and completed an advanced degree program. www.ieee.org/web/membership/renew

E-Cycling Made Easier

We all have a stake in protecting the environment, and that includes producers, users, and recyclers of electronic equipment. Governments around the world are pressuring users and producers into environmental virtue through regulations. But a new program, based on a new IEEE standard, aims to entice rather than coerce. Find out more at http://bmsmail3.ieee.org:80/u/3649/

Students Fast-Track Hybrid Car

Engineering students at Dartmouth College leave the stereotype of the slow-but-economical hybrid car in the dust with the high-performance hybrid race cars they've built. Find out more at http://bmsmail3.ieee.org:80/u/3653/

—These are from The Institute Online News Letter, 9-8-06

IEEE

EMBS Chapter Coming to Tampa Bay!

We are pleased to announce that the formation of the IEEE-FWCS Engineering in Medicine and Biology (EMBS) chapter was approved during November's ExCom meeting. The objective of the EMBS chapter is to bring speakers in the field of biomedical engineering, as well as offer other support services to the EMBS community and Engineering community at large. The formation of this chapter was met with enthusiasm, due to the new possibilities that this chapter will bring to the FWCS. The continued success of FWCS EMBS chapter will depend on your interest and involvement. We still have a few positions including secretary and treasurer available to complete the team of Founding Officers. Interested persons should contact Ravi Sankar at r.sankar@ieee.org for details. All comments and suggestions for the upcoming activities of the chapter are welcome.

— Ravi Sankar

EdSoc Student Magazine

The IEEE Education Society's Chapters Committee has created a Student Activities Committee (SAC). The SAC is a team of approximately ten EdSoc student-members. These student leaders are involved in defining different aspects of the SAC, under the guidance of an advisory board. One of the SAC's first initiatives is the establishment of a continuing serial student publication.

The Multidisciplinary Engineering Education Magazine (MEEM) is a student publication of the IEEE Education Society Student Activities Committee (EdSocSAC) whose primary objective is to facilitate the publication of students' papers and information relevant to students.

To access the EdSoc's student publication initiative (author information, submission information, etc.) go to:http://www.ewh.ieee.org/soc/es/MEE.html

If you are a student, or have a student, that would like to be involved in this initiative (as reviewers, associate editors, etc.) or that has created (or can create) an exemplary manuscript, send email to the Editor In Chief, Emmanuel Gonzalez in Manila, Philippines (gonzaleze@dlsu.edu.ph).

Please visit the IEEE Education Society's Web site at: http://www.ieee.org/edsoc.

IEEE

IEEE★USA

IEEE-USA Salary Survey

In the December Signal, we highlighted the IEEE-USA Salary Survey. Now this:

The website ABOUT.COM has ranked the IEEE-USA Salary Survey as the #2 salary calculator online for tech professionals behind Salary.Com. The review states: "The IEEE salary survey is one of the most accurate out there for technology professions. Requires paid membership to access."

This is nice visibility for us. Congrats to our Employment & Career Services team.

This is a great place to start when you are considering a career move. Find out what you can expect and know where to start in negotiations.

Source: "Top Six Salary Calculators Online" at http://jobsearchtech.about.com/od/gettingthejob/tp/Salary_Calc.htm

2007 Power Engineering Society General Meeting

June 24-28, 2007 Marriott Hotel and Tampa Convention Center

The Local Organizing Committee (LOC) for this meeting is working hard to make sure this is another outstanding Conference hosted by the Section and its Chapters. The Committee is seeking volunteers to assist with this meeting, please contact one of the following Committee members if you would like to help with this conference.

Chair – Jim Howard (j.howard@ieee.org)
Vice-Chair – Jim Beall (j.beall@ieee.org)
Secretary – Donna Howard (dhoward@frcc.com)
Treasurer– Ralph Painter (rdpainter@tecoenergy.com)
Technical Committee Liaison – Tom Blair (thblair@tecoenergy.com)
Technical Tours – Randy Dotson (randy.dotson@lakelandelectric.com)
Companions Program – Donna Howard (dhoward@frcc.com)

For more information on this outstanding conference, please visit our web site at: http://ewh.ieee.org/r3/floridawc/pesias/

Multiple Coupled Resonator Filters and Multiplexers
MTT/AP/ED Chapter Meeting

Dr. Kawthar Zaki - University of Maryland
Dept. of Electrical and Computer Engineering

DATE/TIME: Tuesday, March 20, 2007, 6:00 PM

PLEASE RSVP Leave name & country of citizenship with Ken O'Connor at (813) 901 7246 by March 12th: Email: koconnor@trak.com

LOCATION: TRAK Microwave Corporation
4726 Eisenhower Blvd., Tampa, FL
For driving directions, contact Ken O'Connor or go to http://maps.google.com/ and search address.

ABSTRACT:

Multiple coupled resonator filters having general (symmetric or asymmetric) response are reviewed. Examples of the design of practical filters with symmetric or asymmetric response and / or topology are presented. Realizations of filters with various topologies with optimum responses, having certain advantages in packaging, in dielectric loaded resonators, metallic loaded resonators, combine resonators or waveguide resonators are presented. Design of diplexers and multiplexers are presented.

Watch for…

The FWSC PES/IAS chapter will have Bob Cummings in town to speak on recent NERC activities. He will be at a Lunch-and-Learn on March 14th in the Tampa area. Watch for other details. For more information, select "meetings" at http://www.ewh.ieee..org/r3/floridawc/.

Gunter—

Institute (EEI) NESC (Sub-committee 4). He is active in the NESC since December 1991. He has actively participated on the 1997, 2002, and 2007 NESC revisions. He is currently involved in teaching National Electrical Safety Code schools for the Southern Company and various other electric utilities.

Great Seminar on Motor Design and Softstart Control Applications at Tampa Armature Works.

In December, Tampa Armature Works (TAW) along with Teco / Westinghouse and Benshaw hosted a Seminar on Motor Design and Softstart Control Applications. Details of motor design to maximize efficiency were discussed. Also discussed were applications of softstarts to motors and the benefits and challenges of applying softstarts to motors. If you were one of the attendees to the Seminar you were treated to the brand new training and conference facilities that TAW had provided us for this event.

Specifically, IEEE FWCS PES/IAS would like to thank the following people for the hard work and dedication in arranging this beneficial training event.

We are very grateful for all the extra efforts by TAW, TECO/Westinghouse Motors, and Benshaw. Many thanks to the following people who, with their dedication and support, made this training possible: **Ray Bennett** & **Michael Prater**, TECO/Westinghouse, **Walter Newby III**, Benshaw Inc., and **Barry Sheets** & **Michael Bigger**, TAW.

. —TB

Photos from the event.

Major Changes—2007 NESC®

Mickey Gunter

Date: Tuesday, March 20, 2007

Time: Registration & Breakfast 8:30-9:00 AM, Seminar 9:00 AM – 3PM

Location: TECO Hall, Tampa Electric Company, 702 N. Franklin Street, Tampa

Cost: $75 Members, $150 Non-Members, $30 Students includes Breakfast, Lunch

5 PDH Credits will be awarded. Be sure to enter you name and PE number on the signup website as it appears on your license. Florida exempt provider #00015.

RSVP: Online at: http://time2meet.com/fwcs-pes4/index.html Make checks payable to: IEEE FWCS. Space limited to the first 50 registrants!!!

Send checks to: Ralph Painter, IEEE FWCS Treasurer 648 Timber Pond Drive Brandon, FL 33510-2937

Questions: Tom Blair at 813-228-1111, ext 34407 or thblair@tecoenergy.com

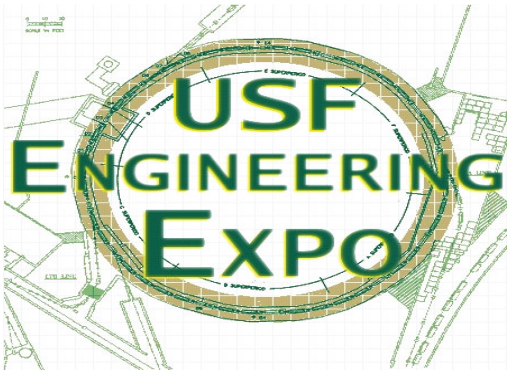
Your local IEEE PES/IAS Chapter is offering this seminar on Major Changes of the 2007 NESC®.

The Major Changes of the 2007 NESC® seminar is a one-day class focusing on the major changes in the 2007 Edition of the National Electrical Safety Code® (NESC®). The training will be about a 5 hour update on all the significant changes to the 2007 NESC using a Power Point presentation. It will include changes to the Introductory Rules and Definitions, Grounding, Substations, Overhead Clearances, Overhead Strength and Loading which will include the new Extreme Ice and Wind Loading Rules, Underground, and Work Rules. Examples will be shown on how to apply some of these rules. Also, time permitting, there will be a demonstration of a Pole Loading Program.

The class includes ample time for questions and attendees are encouraged to share their NESC® applications. Learning the changes in the NESC® is a must for personnel responsible for operating a safe utility system. This seminar is being sponsored by **Tampa Electric Company**.

Mickey Gunter has his Bachelor of Science in Industrial Engineering from Georgia Institute of Technology. He has over 38 years experience in Distribution Engineering Design, Standards, and Training. He presently serves on (3) ANSI C-2 National Electrical Safety Code (NESC) Sub-committees (Sub-committee 4, Sub-committee 7, and the Interpretations Committee); the Southeastern Electric Exchange (SEE) NESC (Chairman); and the Edison Electric

See Gunter, page 5



FEBRUARY 16 & 17 - 2007

Friday 8:00 am - 4:00 pm
Saturday 9:00 am - 3:30 pm

Engineering Expo is a showcase for the engineering organizations and companies to show the fun in engineering and how it is a part of every day life.

- **Physics: The Science of Everything**
- **Chemical Magic Show**
- **Laser Light Show**
- **Robot Demonstrations**
- **"Hands- on" engineering experience !!**

Visit: http://expo.eng.usf.edu

Engineering Expo is an event organized by the College of Engineering at USF-Tampa to celebrate the National Engineers Week. The event works as a venue to promote the engineering field, our institution, and the potential of our students. Over the last 34 years, this EXPO has grown to become one of the largest events held at USF. We want to use Engineering EXPO as a way to strengthen the communication and relationship between the University and Tampa Bay's community. Engineering Expo is a showcase for engineering societies, organizations, and companies to show the fun in engineering and how it is a part of every day life. It is focused primarily for K-12 students interested in science and engineering, but everybody is welcome, kids and adults. Visitors have the opportunity to participate in contests where they can have some "hands-on" engineering experience. Among the events and shows during the two days of engineering extravaganza are:

Fun with Physics
Chemical Magic Show
Laser Light Show
Robots
Rehabilitation Engineering and technology
Electrathon
Concrete canoe
Spaghetti tower contest
Multi Player Network Gaming
Engineering Boy Scout Merit Badge program
SECME Regional Competition
and much more.

The event is February 16 and 17, 2007, from 9:00 am until 3:30 pm. This is a FREE and entertaining event. For more information, visit: http://expo.eng.usf.edu —Monica Escobar, Director of Publicity, USF Engineering Expo 2007

Over 100 Engineers Attend the 5th Annual PL-UG Fest

By Jim Lumia, Chair—AES and Computer Societies

The 2006 PL-UG Fest occurred on October 26 at the Holiday Inn in Clearwater and was a full day event of technical presentations focused on hardware design using Complex Programmable Logic Devices (CPLD) and Field Programmable Gate Array (FPGA) technology. This was the 5th annual event organized by the Programmable Logic Users Group (PL-UG) in conjunction with the Florida West Coast Computer Society and the Aerospace & Electronic Systems Society (AESS). Over 100 electronic design engineers attended, matching last year's record PL-UG Fest attendance. There were three concurrent tracts of technical presentations by application engineers during the entire morning and afternoon.

The event was free for the attendees. Breakfast and snacks were sponsored by Semtronic Associates and a great lunch and the keynote speech were provided courtesy of Lattice Semiconductor. Plus there were plenty of nice door prizes for the attendees.

This year's presentation and workshop topics included the latest in design techniques, debug, test, silicon and tools from each of the major programmable suppliers and third party providers. In addition to the traditional programmable logic topics, the 2006 event included presentations on hard and soft processing cores, DSP solutions, high-speed serial and parallel IO interfacing, Linux, and other special or advanced topics associated with programmable logic solutions.

Attendees at one of the 21 PL-UG technical sessions (Pictures courtesy of PL-UG)

The 21 vendor presentations included:

- Actel: "Analog Fusion FPGAs", and "ARM Soft Core Processor"
- Agilent: "Using the FPGA Dynamic Probe to gain X-Ray Vision"
- Aldec: "SystemC Development"
- Asset InterTech: "In System Configuration of FPGAs and Flash Programming"
- Atmel: "EPLDs and Configuration Solutions"
- Avnet: "Xilinx FPGA DSP Workshop", and "uCLinux Development"
- GreenHills: "Software Defined Radio and INTEGRITY"
- Intersil: "Simplifying FPGA Power Designs Using Internally Compensated, Integrated FET Buck Regulators"
- Lattice: "PCI Express", "Mico32 Open Soft Core 32-Bit Microprocessor", and "The PLD of Power Management"
- LynuxWorks: "Linux 2.6 Development using an Eclipse based IDE"
- Mentor Graphics/TSI: "System Languages Overview (SystemC, System Verilog, and PSL)"
- QuickLogic: "Choosing the Best Programmable Logic for Mission Critical Applications"
- MontaVista: "Real-Time and Linux -- Linux licensing issues and the dynamics of developing with Linux"
- WindRiver: "Das U-Boot Development and Debugging"
- Xilinx: "Virtex 5 -- 65nm FPGAs", "Developing with the Virtex 5 MGT", "MicroBlaze Soft Core 32-Bit MicroProcessor"

All these companies in the presentation list had exhibit tables including vendors Nallatech and Compunetics. Once again, PL-UG Fest was a worthwhile event for the engineers and the vendors.

Lunch

Lunch (top) Plenty of interest in the vendors (bottom)

PL-UG is a non-profit organization. The yearly PL-UG Fest is a service for the local electronic engineers to network with their peers and see the latest vendor tools and devices. PL-UG encourages quality design and verification methods and tools associated with programmable logic devices. To join PL-UG, go to www.pl-ug.org.

Brain Teaser Challenge Column

—By Butch Shadwell

January BTC Last month our discussion of Chuck Yeager led to this problem; "While developing new microwave technologies we would build prototype MICs (microwave integrated circuits) on an alumina substrate. There was a tuning technique used at lower frequencies, involving small adjustable capacitances created and adjusted by twisting two pieces of insulated wire together. What were these adjustable capacitors called? There was a somewhat similar technique used on MICs too. Please describe it."

I did get a few correct answers to this BTC. It would be interesting to know the average age of my readers. I suspect a lot of you guys started out using a cat whisker on a galena crystal. Of course the trim cap I was referring to was the "gimmick". The wire's insulation became the dielectric for the capacitor, and the number of turns controlled the area of the electrodes. There were many variations on this design. I remember seeing a lot of gimmicks being manufactured with two pieces of varnish insulated copper wire held together in parallel by a wrap of thread. Then one could adjust it in one direction by just snipping off the end a little at a time with a pair of dykes. I mentioned the MICs which used an array of unconnected gold pads that formed a capacitor through the alumina substrate to the ground plane on the back. You could add or remove these small capacitances by moving small pieces of gold foil to tie them together. But I bet you already knew that.

February BTC I hope everyone remembered what Martin Luther King stood for on his national holiday recently. I think it is something we should all remember everyday. He said that no one should ever be judged by the color of their skin. I wonder what he would think of the fact that today every governmental agency and university considers race a key factor in determining the deserved status of all people. Personally, I have always been confused as to what to put on a form when it asks for my race. There is no authority or accepted standard on how one is categorized as to his or her race. I pray that one day soon this word and the ideas that provoke its use are erased from all human kind. Maybe then, Martin can rest in peace.

Back in the 60's many of the smaller B&W TVs used a voltage doubler circuit to generate the B voltage for the vacuum tube circuitry. It could produce a B supply voltage almost equal to twice the peak voltage on the mains. Usually one side of this power supply was tied to the AC neutral directly. How was the other side of the input to this doubler circuit tied to the AC hot leg? Hint: this component would sometimes leak and was often a point of failure. I hope I didn't give too much away.

Reply to Butch Shadwell at b.shadwell@ieee.org (email), 904-223-4510 (fax), 904-223-4465 (v), 3308 Queen Palm Dr., Jacksonville, FL 32250-2328

FWCS Officers 2007

Here are the newly elected Section officers.

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Richard Sanchez

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WEB PAGE: http://www.ieee.org/fwcs

WEB MASTER: Michelle Chang, michelle.chang@ieee.org

Feb. 2007 Calendar of Events (For more information see P. 1 *Inside this Signal…*)

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
28	**29**	**30**	**31**	**1**	**2**	**3**
4	**5**	**6** ***5:30 pm IEEE FWCS ExCom TECO Tampa***	**7**	**8**	**9**	**10**
11	**12**	**13**	**14**	**15**	**16** ***5:30 pm: Celebrate Engineering Banquet Tampa p. 1***	**17** ***Engineer'g EXPO USF NOTE: Feb.16 and 17 p. 7***
18	**19**	**20**	**21**	**22** ***11:30 am: Future of Enginering Lunch TECO Tampa p. 3***	**23**	**24**
25	**26**	**27**	**28**	**1**	**2**	**3**

Institute of Electrical and
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Florida West Coast Section
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Tampa, Florida 33614

IEEE/PES General Meeting, June, 2007 Tampa!
—Plan now to attend!

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