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THE

SUNCOAST

SIGNAL

THE INSTITUTE OF ELECTRICAL AND ELECTRONICS ENGINEERS, INC.

## Joint Section/PES/IAS & ASME Meeting Current Developments in Microturbine Applications and Fuel Cells

**DATE/TIME:** Wednesday, Jan. 13, 1999, dinner at 6 PM, and talk at 7 PM

**LOCATION:** TECO Data Center, 1898 Nick Nuccio Parkway, Ybor City  
Meeting and buffet in main conference room on 1st Floor.

**SPEAKER:** Mr. Frank Scovello, GE Power Systems, Schenectady, NY

**COST:** Engineers and Guests - \$10      Student Members - \$5

**RESERVATIONS:** Helen Prince (727)734-5546. Reservations must be in by January 11.

The January 1999 Meeting of the Florida West Coast Section of ASME will be a Joint meeting with the Florida West Coast Section of IEEE. Both societies are very interested in the latest commercial developments in a growing new field of electric power generation which will affect how businesses and residential units may receive electricity or generate their own, in the near future. Small to miniature gas turbine driven generators with new electrical output control technologies now can provide substantial electric power at rates competitive with large power stations. Such microturbine systems will be used not only for emergency power application, but for day to day operation of shops, restaurants, buildings and other businesses. Our speaker from GE Power Systems Division will also tell us of new developments in fuel cells, of units that can supply a single home, a neighborhood or a remote area - again, at competitive costs. Fuel cell technology, used in every spacecraft launched from Cape Canaveral, is now down to earth and could be in your back yard, some day soon.

Dinner will be provided with buffet of Ybor City specialties such as arroz con pollo (chicken and yellow rice), Ybor City caviar (black beans w/onions), cuban bread, etc., water, coffee, and iced tea.

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## Chair's Comment

By Al Rosenheck

Happy New Year! I hope you all had a happy and prosperous holiday season.

I want to thank you all for your vote of confidence in electing me to serve as your Chairperson for 1999. I am happy to have serving with me as Section Officers Quang Tang, Vice Chair, Diane Hanecki, Treasurer, and Jules Joslow, Secretary as well as a fine roster of Executive Committee appointees. If you happen to look at the Signal page 2 side bar of past year's newsletters you will recognize many of these people as habitual volunteers. As the institute and particularly the Sections are dependent upon volunteers, we encourage our members to actively participate in our activities. You are welcome to attend our monthly Executive Committee meeting, generally held on the first Tuesday of the month at the TECO Data Center. If you want to assume an active role there is no better way than coming to our Executive Committee meetings! If you don't want to be a volunteer, that's OK too. Do however give serious thought to attending our local section, chapter and society meetings. Lots of hard work and preparation go into arranging meetings that are professionally interesting. You are welcome at any of these meetings and do not need to be a member of the sponsoring society to attend. General interest meetings are often promoted as combined Section/Society/Chapter meetings.

In February we will have a combined Section/Computer and AES Society meeting featuring a demonstration of on-line investing presented by Charles Schwab. Technically interesting in its use of computers and the Internet, but even more important it is a technology tool that can help you achieve retirement and financial independence goals.

Finally, I would like to extend our thanks to my predecessor, Mark McKeage, for his hard work in maintaining our section success. Mark has set a high level, which I hope to follow. Contact me or any of our officers with your questions, comments or suggestions.

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## James Beall Earns Leadership Award

We are very proud to announce that James Beall, former Florida West Coast Section Chair and past Region 3 Director has been selected by the Regional Actives Board to receive their coveted Leadership Award. Jim has provided guidance and leadership at the local, Florida Council, Region 3 and Institute levels for many years, and this recognition is well deserved. Congratulations Jim.

### 1999 IEEE EXECUTIVE COMMITTEE FLORIDA WEST COAST SECTION

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All material for THE SUNCOAST SIGNAL is due by the Friday following the 1st Thursday of the month preceding the issue month. Address all correspondence to: **Quang Tang**  
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# January PES/IAS Meeting

## MacDill Air Force Base Tour

- DATE/TIME:** Wednesday, January 27, 1999, 11:15 am - 1:30 pm
- LOCATION:** Officer's Club (Eagle Nest which is located on the 1<sup>st</sup> floor, extreme East Side of the building overlooking the bay).
- RESERVATIONS:** Reservations are required! Please complete and return reservation form below. Reservations must be in by January 15th.

For those not familiar with the base, the Visitor's Center is located just north of the base on Dale Mabry, just past MacDill Federal Credit Union on the west side of the street. You must stop at the Visitor's Center and get a one-day pass. They will have the list of expected attendees, so **reservations are important**. The "Guard Shack" on base will not have the list and without a pass, you will be required to turn around. Maps will be available at the Visitor's Center, but the directions to the Officer's Club are included below.

Once the Guard Shack passes you through, continue on that road until you come to the light located at the Memorial Park where the 3 planes are on display. Turn left, then right at the next light, which places you on Bayshore. Go south until you come to the piers on your left. The Club is located on Florida Keys.

If you have questions or need more information, please call or email Captain James Reed at MacDill AFB at 828-8354 or [reedj@macdill.af.mil](mailto:reedj@macdill.af.mil). He will be unavailable after January 8th. After this date, please address all questions to Quang Tang at (813)963-0994. The Officer's Club needs a head-count by January 15th so it's important that your reservations are made by then.

The event will begin with lunch starting promptly at 11:30. At 12:00, Captain Reed will present a short overview of the engineering functions that his organization performs. Following that, the US Central Command Engineer will discuss the role of the US and the challenges it faces in the Persian Gulf. We will also hear from Joint Communications Support Element personnel regarding its roles/challenges. The meeting will conclude with a bus ride to the JCSE compound to take a look at some of their communication equipment. This should be a very interesting tour and share some of the engineering challenges that these units experience. We look forward to seeing you there.

### PES/IAS January Meeting - MacDill Air Force Base Tour

Wednesday, January 27, 1999 11:15am - 1:30pm

Name \_\_\_\_\_  
Address \_\_\_\_\_ City/Zip \_\_\_\_\_  
Phone: \_\_\_\_\_  
Member @ \$10 ea \_\_\_\_\_ Non-Mem @ \$20 ea \_\_\_\_\_ Student @ \$5 ea \_\_\_\_\_  
Entree selection: Chicken or Beef  
Please mail completed form and check made out to IEEE-FWCS to: Quang Tang,  
Seminole Electric Cooperative, Inc., 16313 N. Dale Mabry Hwy, Tampa, Florida 33618

# January MTT/AP/ED Meeting

## Broadband Wireless Access Standards

- DATE/TIME:** Wednesday, January 20th, 1999 6:00 p.m.
- LOCATION:** Raytheon E-Systems St. Petersburg, 1501 72nd Street North, St. Petersburg
- RESERVATIONS:** Leave name & country of citizenship with Greg Bonaguide at (727)302-3367. Join us for dinner after the meeting. Bring a guest; non-members welcome!
- SPEAKER:** Dr. Roger Marks, NIST

### ABSTRACT:

Broadband wireless access (BWA) systems are being developed worldwide to address the critical "last-mile" problem in telecommunications. The essence of the problem is that, while the world's data transmission capacities are growing at an enormous rate, few users have access to high-speed interconnections to fast networks. Both business and residential users are seeking alternatives to the conventional telephone-based network connections available to them.

Several wired alternatives for broadband access, including fiber, cable modems, and digital subscriber lines, are being deployed. However, these deployments have limitations and often require tedious infrastructure reconstruction. BWA is an alternative that may offer quicker infrastructure build-out at a lower cost.

BWA systems are being developed worldwide in many areas of the spectrum. In many cases, large bandwidths, on the order of 1 GHz, are becoming available, typically at millimeter wavelengths. Following initial deployment of one-way video systems in the United States in the early 1990's, Canada in 1996 awarded nationwide licenses in the 28 GHz range. The U.S. followed with a nationwide auction of 1.3 GHz in the 28-31 GHz range in early 1998. Nations throughout the world are taking a similar approach. Many of the proposed systems are cellular, requiring elevated terrestrial base stations. Satellite-based systems are also well into development, and stratospheric systems using airplanes and dirigibles are underway.

Recently, U.S. National Institute of Standards and Technology and the U.S. National Telecommunications and Information Administration, both agencies of the U.S. Department of Commerce, have been developing the National Wireless Electronic Systems Testbed (N-WEST), an experimental facility for characterizing the performance of wireless systems and the dependence of their performance on components, subsystems, modulation, propagation, interference, and other factors. N-WEST intends to distribute its data widely among its participants with the intention that they will come to compatible conclusions on technical grounds and thereby to consensus regarding appropriate operational standards and component specifications. N-WEST is focusing its early effort on millimeter-wave BWA.

### BIOGRAPHY:

In early 1998, Roger B. Marks founded the National Wireless Electronics Systems Testbed (N-WEST) to develop laboratory facilities for and coordinate standards for BWA communications systems. With the Support of 46 Supporting Companies, N-WEST proposed a BWA Study Group within the IEEE "802" LAN/MAN Standards Committee. This group was chartered by 802 in November 1998, with Marks as Chair. Marks was selected by the IEEE Microwave Theory and Techniques Society (MTT-S) to address this topic as a Distinguished Microwave Lecturer for the years 1999-2001.

Dr. Marks received his A.B. in Physics in 1980 from Princeton University and his Ph.D. in Applied Physics in 1988 from Yale University. Following a postdoctoral appointment at the Delft University of Technology (The Netherlands), he has pursued a professional career with U.S. Commerce Department's National Institute of Standards and Technology (NIST) in Boulder, Colorado.

The author of 67 journal and conference publications, several of which have received awards, Dr. Marks has investigated the electrical characterization of high-speed microelectronic circuits and MMICs, developing fundamental theory and calibration methods including the multiline TRL method. For this work, he received an IEEE Technical Field Award (the Morris E. Leeds Award) in 1995, as well as the 1994 Automated Measurements Technology Award (from the Automatic RF Techniques Group [ARFTG]) and the U.S. Department of Commerce Silver and Bronze Medals.

Dr. Marks developed the IEEE Radio and Wireless Conference (RAWCON) and chaired it in 1998 and 1999 as a follow-up to the Wireless Communications Conference that he developed and chaired in 1996 and 1997. He served as Vice-Chair of the 1997 IEEE MTT-S International Microwave Symposium, organizing the Plenary Session, initiating the student travel grant program, and implementing other innovations. He also chaired the 49th ARFTG Conference in 1997. He has been on the Technical Program Committee of the International Microwave Symposium and several other conferences.

Dr. Marks lives in Denver, Colorado with his wife, Robbie, and their children, Dan and Amy.

**RESERVATIONS:**

Please leave name, number and country of origin with Greg Bonaguide at (727) 302-3367 or e-mail [gmba@callisto.eci-esyst.com](mailto:gmba@callisto.eci-esyst.com)

**DIRECTIONS:**

From Tampa, take I-75 South to I-275 south across Tampa Bay to Exit 12 (22nd Ave N.). From Sarasota, take I-75 North to I-275 north over Sunshine Skyway Bridge to Exit 12 (22nd Ave N.). Turn west on 22nd Ave. past Tyrone Mall to 72nd Street N. Turn left at the traffic light to the Engineering building. Park in the lot farthest south of complex. GILL ROBB WILSON CONFERENCE ROOM - 2ND FLOOR - ENGINEERING BLDG.

## **FWCS Reviews IEEE Applications for Senior Members**

The IEEE Admissions and Advancements (A&A) Committee and the Florida West Coast Section met December 12, 1998 at the Tampa Airport Marriott hotel to review worldwide IEEE upgrade applications to Senior Member status. The review, one of 12 held around the world each year, considered some 140 applications. Led by Jim Rowland, A&A chair and Maria D'Alessio, IEEE Administrator for Membership development, 10 FWCS Senior members participated in the review.

Judging from the quality and background of the applicants, the status of becoming a IEEE senior member is well recognized in the technical community by employers and universities. Do you have the qualifications to upgrade your membership status? Need an application or advice? Contact John Conrad, our membership chairman, at (813)926-4004 or any of our Executive Committee for more information.

# January Brain Teaser Challenge

by Butch Shadwell

With the current popularity of the genus *Insecta* in major motion pictures, it's time for a nature oriented question. As many bugs eat seeds, this month I am asking you to identify the miniature vacuum tubes used in avionics and other special electronic systems 20-40 years ago, that were named for their similar appearance to the mature ovule that if planted would develop into a mighty tree.

Oakey-dokey!

Reply with the Florida West Coast Section Suncoast Signal reference to Butch Shadwell by the 20th at (904)223-4465 (voice), 904-223-4510 (fax), b.shadwell@ieee.org. Only the names of correct respondents are mentioned in the solution column on the next Signal.

## December Brain Teaser Challenge Solution

"Ruperts cloud" was a loosely veiled reference to the electron cloud that is at each energy level. The outside energy level, also know as the valence electrons, has a maximum number of 8. As the atomic number increases, the sub-shells absorb the additional electrons. I received a couple of very sophisticated answers that offered a different conclusion. If one of those writers finds my answer in error, please send me an email to help me find the error of my ways.

Of course Popeye's spinach obscured the fact that super-heterodyne receivers solve several very important problems with radio reception. For the uninitiated, a Super-heterodyne receiver after only one or no tuned RF amplifiers, converts the incoming carrier to the "intermediate frequency" by mixing it with the output from a tuned local oscillator. The local oscillator is adjusted so that the difference between it's output and the carrier frequency of interest (usually the lower side band) is equal to the IF frequency. The signal is then further amplified by the IF amplifier which may have several successive stages permanently tuned to the IF frequency. In this scenario, the only part of the receiver that must be tuned to select a carrier frequency is the local oscillator. If we used a series of tuned RF amplifiers, we would have to have a gang of tuning capacitors (or inductors), all perfectly synchronized, so that all of the stages of RF amplification were tuned to the same frequency at the same time. With an IF "strip", you only have to tune it once and then make sure the incoming signal is converted to match it's frequency.

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## Coming Soon!

Saving for retirement? Building a diversified portfolio? Looking for long term capital growth? Managing your Roth IRA? Then MARK YOUR CALENDER for the joint February Section and Computer/AES Society meeting. You will not want to miss this important meeting on online investing. Learn how to set up and access your own accounts on the Internet. With a mouse click you're connected to current market news and research data, and ready to trade securities and manage your own account.

Date/Time: Wednesday, February 17, 1999, 6:00 p.m. at TECO Data Center (1 block from Ybor Square). Refreshments will be served

Subject: Online investing from a guest speaker from Charles Schwab

For more information contact Al Rosenheck at (941)395-2117 or rosenheck@aol.com. Further meeting information will be contained in the February Signal.

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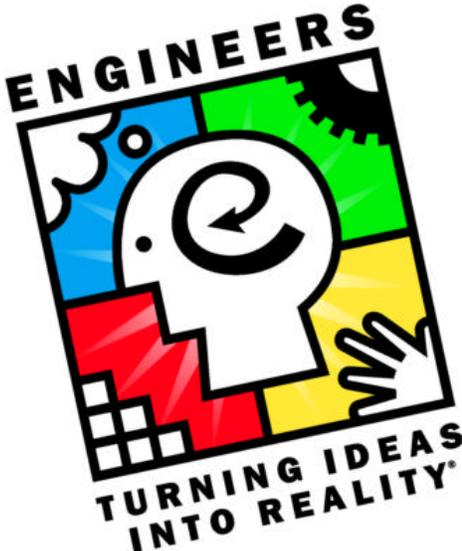
**1999 Review Seminars  
For  
PE Electrical and EIT/FE  
April Examinations**

Review seminars for the PE (Electrical) and Engineer In Training / Fundamentals of Engineering (EIT/FE) exams will begin:

Tuesday, January 12 for the EIT/FE Exam  
& Thursday, January 14 for the EE Exam

Seminars are conducted from 7-10 P.M. (Tues or Thurs) for ten weeks. The registration fee is \$200 and includes text. The seminars will be held at the St. Pete Campus of the University of South Florida

To register, contact: Alan M. Keith, P.E., P.O. Box 14042, (EC-51), St. Pete, FL 33733.  
[Alan.M.Keith@fpc.com](mailto:Alan.M.Keith@fpc.com)  
Phone (813) 384-7937 FAX (813) 384-7994  
Pinellas Chapter, Florida Engineering Society



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## January 1999 Calendar of Events

| Sunday       | Monday | Tuesday   | Wednesday   | Thursday | Friday | Saturday |
|--------------|--------|---|---|----------|--------|----------|
|              |        |   |   |          | 1      | 2        |
| 3            | 4      | 5<br>IEEE<br>Executive<br>Committee<br>Mtg at<br>TECO<br>Data Ctr<br>6:00PM | 6   | 7        | 8      | 9        |
| 10           | 11     | 12  | 13<br>Section/AS<br>ME<br>MicroTurbi<br>ne at<br>TECO<br>Data Ctr<br>6:00PM | 14       | 15     | 16       |
| 17           | 18     | 19  | 20<br>MTT/AP/E<br>D<br>Mtg at<br>Raytheon<br>E-Systems<br>6:00 PM           | 21       | 22     | 23       |
| 24<br><br>31 | 25     | 26  | 27<br>PES/IAS<br>Mtg<br>MacDill Air<br>Force<br>Base Tour<br>11:15 AM       | 28       | 29     | 30       |

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