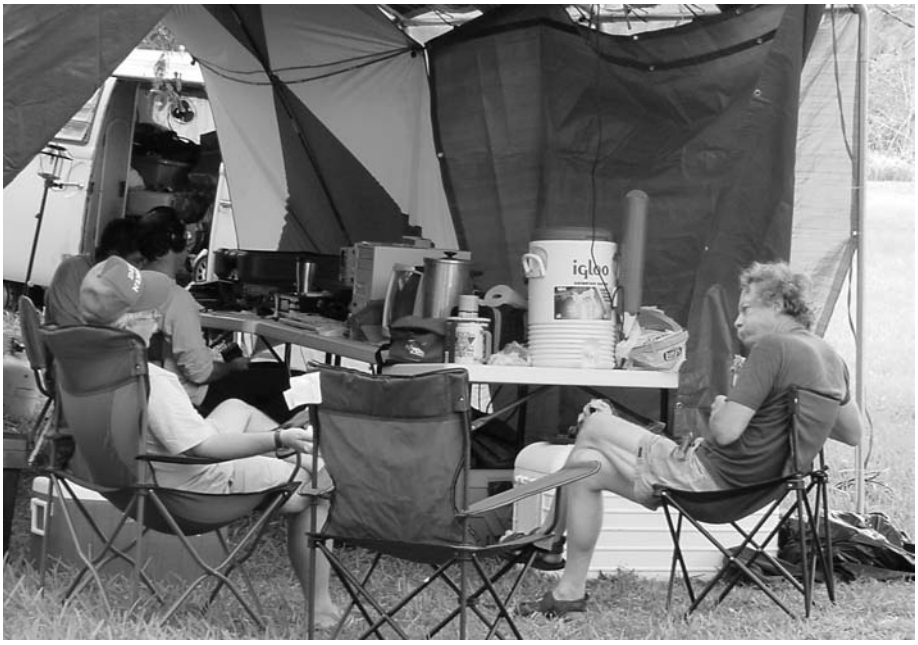
SPARC GAP

St. Petersburg Amateur Radio Club **April, May, June 2002**

Rah, Rah Field Day … June 22-23!



Field Day will be June 22-23 this year. Set up should start around 9 a. m. with operations from 2 p. m. Saturday through 2 p. m. on Sunday. The SPARC and Metro clubs will stage at the Bay Pines Memorial Veterans Hospital, where it has been for the past two years. SPARC equipment includes Ken Dale's Kenwood 450 HF rig on 20-meters running off the SPARC generator. All other involved equipment is member owned.

Bush Says 73 from fire station QTH

Jennifer Hagy
ARRL PR Director

Members of the Northern Florida Amateur Radio Emergency Service Net (NFAN) were thrilled last month when President George W. Bush addressed the group via ham radio from a Daytona Beach fire station.

The Amateur Radio station had been set up to demonstrate to the president ham radio's capabilities.

"I want to thank all the volunteers who help make sure that Florida is prepared for any kind of emergency," Bush said. NFAN members meet on a particular ham radio frequency regularly, and were pleasantly surprised to hear the president on the air.

The Volusia County Amateur Radio Emergency Service (ARES) was among several area volunteer groups that Bush spotlighted for their value to the new Office of Homeland Security.

American Radio Relay League (ARRL) president Jim Haynie said he was extremely gratified that President Bush recognized the valuable service amateur radio operators provide in emergencies. "Volunteerism goes straight to the core of all radio amateurs who provide their communication skills, time and equipment in times of communications disruptions," said Haynie. "I know that all hams in the

(Continued on page 2)

Newest kick with your PC … Connect to RepeaterLink!

By Paul E. Knupke, Jr. N4PK

Computers have been a part of ham radio for a number of years. From logging, to antenna modeling, to packet radio and radio control, computers have become an integral part of our ham shacks. Over the past several years, Internet usage among hams has provided us with a new degree of connectivity. We can exchange programs, disperse information, have instant access to call sign databases and quickly get information about practically any part of ham radio from the comfort of our shack computers.

Internet voice applications started to appear in the mid-nineties with the introduction of programs such as Iphone, and WebPhone. It didn't take long for several innovative hams to realize the possibilities of using the Internet as a tunnel to connect hams together. RepeaterLink was soon born, it used Iphone, voice actuated (VOX) circuitry and a special program that provided a layer of security. RepeaterLink allowed hams to use software on a computer along with a headset to be able to connect to distant repeaters using the internet.

While RepeaterLink was innovative, it had some problems: The security layer wasn't all that secure, and sometimes non-hams would appear on a repeater that had RepeaterLink installed. In addition, Iphone wasn't the most stable program and it had a tendency to crash. Lastly, the VOX control was fairly crude in functionality.

A WebPhone based system came along and was implemented by some repeater owners who wanted to just link their distant repeaters together. There was no "headset" access. Repeater owners had to verify other repeater owners and set them up in their phone book. This system was much more secure and WebPhone seemed to be more stable than Iphone, but it just never caught on. At one time, Dana Rodakis, K4LK had both RepeaterLink and WebPhone connections to his repeaters in Pinellas County.

The idea of linking repeaters to repeaters using the Internet intrigued several hams in British Columbia, Canada, so much that they explored the existing systems thoroughly before they decided none of them did what they wanted. In early 1998, David Cameron, VE7LTD, looking at the various Internet voice

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Another club?

Look to N9MIU and KU4BT to conjure up something crazy, like ..

By Mark Farr N9MIU

Hello to one and all reading the SPARC Gap!

I would like to tell you about a new contesting group in SPARC. John Stark, KU4BT, Rick Rutan, K4BNE, Ken Larrison, W4KEN and myself, N9MIU have been talking about using the SPARC club station, W4GAC, more often. So, we decided to start a contesting group.

We have had W4GAC open several times now for both CW and SSB contest and found that club members were interested in playing radio. We thought this was great and decided to have the club station open for contesting, special events and general use once or twice a month. We will try this and as long as there is interest and operators are happy we'll have W4GAC open!

The classes Dee, N2MNC, and Mark, NP3R, conducted created an infusion of new hams. The contesting group thought that opening the club station would offer time for the new hams to practice what they learned in classes. There will be "Elmers" around to assist you, answer questions and see that you have a great time playing radio.

All groups need an identity, one that reflects the group's personality. So, after careful and laborious mental sessions, we found a name that fits! I hope you are sitting down, this is a serious matter, not to be taken lightly, so don't turn the lights out now. (I'm building the suspense up pretty well aren't I!)?

John Stark KU4BT …. And which of the two does he belong to?

Mark Farr N9MIU …. Are these two hams (?) really for real?

Drum rolls please: THE NERVOUS TWITCHERS and FONE FREAKS! I'll bet you can't tell which is the CW side and which is the SSB side, can you? Okay, you are pretty smart and you know which is which! See, those days of studying and classes paid off!

I hope you are able to play radio when the station is open. You don't have to talk, but we will encourage you to pick up the mike and make a contact, try out your CW skills and have fun playing radio!

...*Nervous Twitchers and Fone Freaks, eee, gads!*

By John Stark KU4BT

We have started a contest group at SPARC. Some of you are aware that this group was established as a way to keep the memory of one of SPARC's most senior members alive. He was Ken Dale, late of the N2KD call, who passed away last July 1. Ken's widow donated to the club the HF rig we are using in the W4GAC radio room.

Those members of SPARC or the VE teams during the past 20 years don't need an article or a club to remember him. Ken was a one of a kind, a hard to forget, ham who harkened back to the days before most of us were licensed, or even conceived.

As a ham, Ken's accomplishments were legendary, almost unbelievable. His accomplishments were based on great intelligence and operator ability. Ken did not own expensive, top of the line equipment, nor did he erect tall towers with giant beams, nor did he use high power. What Ken possessed were superior operating skills honed by years of practice, patience, and determination. He was a high-speed code op with a seemingly unlimited range. He also used the very latest digital modes, right out there on the cutting edge of ham technology.

Ken served in WWII as a medic, although most of his work seemed to lean toward his mortician skills. He served in every campaign in the European theater. Ken worked for Grumman after the war, was instrumental in the American space program, and helped develop state-of-the-art aircraft. He was on the SPARC board for years.

I went into this detail to let new club members know that to emulate Ken's operating skills will lead you to the top of hobby, and an honorable goal it is.

On to the contest club.

It is composed of two groups, the NERVOUS TWITCHERS (CW) and the FONE FREAKS (SSB). You can be a member of both. We are working on the design of a special badge. To earn this badge, you need to participate in the contests and log 50 contacts.

Fifty CW contacts gets you into the NTs and 50 SSB contacts gets you into the Fone Freaks. For you new licensees, this is your chance to learn some of the secrets of the hobby and learn what to do with that ticket.

We have run two CW contests so far and had 10-12 members participate in each one. Contributing CW operators were Kyle, Ken, (W4KEN), Rick Rutan, and myself. We are upgrading SPARC's logging software to a Windows-based product and we would like to work one or two contests a month.

Everybody wants an Elmer, take advantage of this while you can.

Bush

(Continued from page 1)

United States stand ready to do their part in America's Homeland Security Program." Haynie, who was re-elected this month, said that defining amateur radio's role in homeland security would top his list of initiatives during his second term.

Today, there are nearly 700,000 amateur radio operators in the United States and more than 2.5-million worldwide.

IRLP may be just the "link" you want in your shack

(Continued from page 1)
programs (Voice over IP, or just VOIP) chose to implement a internet linking project on the Linux operating system instead of Windows.

Linux was chosen because there was a VOIP package called SpeakFreely that he could make use of without having to shell out considerable money and the source code was available. Linux also could run on relatively inexpensive computers, which would keep the cost down. In addition Linux is known to be very stable. David envisioned the possibility of the computer being installed at repeater sites or other remote sites, so having a computer and software that is low maintenance was a key factor in the decision to use Linux.

David wanted to allow repeater users to be able to control the linking with touch-tone (DTMF) commands. After designing a control board and writing and modifying software David installed the first system to interface with the two-meter repeater at the University of British Columbia in Vancouver on November 12, 1998. A few days later the second system was installed in Vernon, BC in south-central British Columbia.

The third system was installed in Grand Forks, BC followed by a system in Calgary, Alberta. By the end of 1999 there were 10 nodes scattered throughout Canada. The first U. S. system joined in January 2000. The first system outside of Canada and the U. S. came online in January 2001 and on the eastern Caribbean island of Dominica.

Since the system was designed to provide a capability of linking radio users together, David named the system "Internet Radio Linking Project." IRLP for short. As word got around what they were doing other repeater owners contacted David about joining the IRLP. A couple of systems joined the IRLP every month over the next two years. By spring 2001 the IRLP had grown to approximately 100 systems in Canada, the United States, Australia and the Caribbean. Growth of IRLP really took off in the second half of 2001 when the system surpassed 300 systems.

As of late March there are more than 370 systems that belong to IRLP. There are now systems in New Zealand, Sweden, South Africa and Great Britain in addition to most U. S. states and all Canadian provinces. You can view the current list of IRLP systems (or nodes) at status.irlp.net on the web.

In the Tampa Bay area the first IRLP node was installed by Steve Siesel, K4KSA, in July 2001. You can access the node on 444.500+ in Largo and 444.725+ in St. Petersburg (both require a sub-audible tone of 131.8 Hz). For information on using the K4KSA node (node number 453) contact Steve at steve@k4ksa.org.

The second node in the Tampa Bay area was installed in December by Ken Salhoff, KG4QAC, in Tampa and for more information on the Tampa Node #488, email Ken at ksalhoff@tampabay.rr.com. The third node was installed in February in New Port Richey by John Townsley, AE4GB, for more information on node #789 email John at ae4gb@arrl.net.

I am currently installing an IRLP node which will hooked up to a UHF repeater in Largo. As mentioned above, IRLP requires only modest computer hardware. My IRLP computer is only Pentium 75, with 48M of RAM and a 514M hard drive. I was given the computer and my only investment was to add a CD-ROM, a network card and a sound card. I have about $50 total into this computer! Sounds almost like a "hamfest special."

IRLP supports two types of connections: Point-to-Point connection and connecting to a reflectors. Point-to-Point is just connecting two nodes together. A reflector is a computer that has lots of bandwidth which allows many IRLP nodes to be connected together. It isn't uncommon to have a round table discussion with hams in several countries while connected to a reflector. Currently there are nine reflectors. The Denver Reflector (also know as Reflector #2) is the most popular.

Steve's IRLP node has seen much use from visitors who use it to call back home to talk with friends and family. IRLP has been quite popular with hams traveling who find it not practical to carry a HF rig and antennas.

For more information or IRLP please visit www.irlp.net. There is also a IRLP mailing list available where you can sign up on the IRLP web page. If anyone would like a demonstration of how IRLP works please contact Steve or myself (n4pk@arrl.net) and we'll be glad to demonstrate it!

Sit back and remote your TX from far away

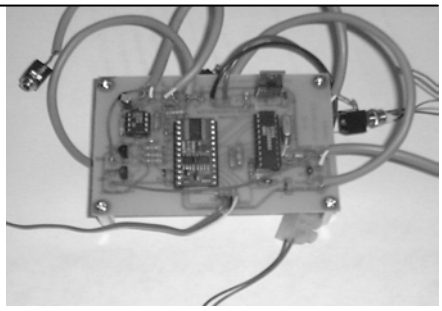
By DEE TURNER N2NMC
SPARC Vice-president

Remote base stations are nothing new, but this easy to build and inexpensive interface offers a number of usable options not found on other such interfaces.

A remote base station allows you to access most of the functions of your base HF TX from a remote location, either a hand-held or mobile link radio. This interface differs from most of the commercially available ones in two respects: 1) It uses an inexpensive, user-programmable microcontroller called a Basic Stamp to control the HF radio, and 2) It controls the HF radio via the radio's standard computer connector, greatly expanding the capabilities. You can read the HF radio frequency, mode, etc., directly from the controller.

I saw the project when it first came out several years ago and was interested because it was designed for the ICOM 706 I worked at that time. However, switching to other radios is easy because of the programmable Basic Stamp. I bought the Basic Stamp and DTMF controller chip online from parallaxinc.com on the Web. Parallax also provides the free software. All other parts I purchased locally at Radio Shack. The parts were listed in the 1989 QST.

Remote control of a base station is covered in FCC and ARRL rules and the best in the ham bands. Also, you must communicate with your base station in both directions on a frequency above 222.15 MHz.



The Basic Stamp board wired

I knew John Hansen W2FS, the creator of the interface, from his other projects and so I decided to built it. However, I was handicapped in one major aspect – I had to build it one-handed, since I broke my right wrist in-line skating the other day. Oh, well, on with it and it went swimmingly. I still have some programming to do and more tinkering before I get it working the way I want it to, but that will come.

There are dozens of applications for the interface. Suppose you are sitting in your back yard with your handheld and your HF TX is in the house. You want to toggle 20 meters and listen to your favorite net, but you don't want to leave the sunshine and fresh air. You simply toggle you HT with the correct Morse Code, provided that you already have programmed it correctly, and you're controlling your HF base TX. It sounds simple and fun, but remember, you've got to build, program and learn the interface first.

For help and more information, contact parallaxinc.com, or give me a call at 548-7474.

A short history of the SPARC repeaters by WA4AKH

By Emmett West WA4AKH
SPARC Repeater Trustee

The Two-Meter SPARC repeater on 147.060 first signed on the air in 1974 under the guidance of Woody Huddleston, K4SCL. Its call sign was WR4ALM.

In those days the FCC issued call signs for repeaters (currently the trustee's call sign is used) and was the first repeater in Florida on that frequency. It was located at the St. Petersburg Fire Department Administration building at 1st Ave. N and 15th Street on the fire department's tower, some 150 feet above ground.

The equipment used was a G.E. Progress line, all tubes. Later it was moved to the St. Petersburg Times' radio tower, nearly 300 feet above ground resulting in terrific coverage, easily heard at Weeki Wachee.

Some years later, a man mowing the grass at the Times' plant cut a guy wire, toppling the tower. The Times opted to not replace the tower and the SPARC repeater was moved to the 300 Building on 34th Street N, losing the beautiful signal coverage because the antenna was down to about 175 feet.

Emmett West WA4AKH

Later the repeater was moved to the old Mound Park Hospital, now called Bayfront, again losing altitude. Then in 1986 the repeater was moved again, due to the hospital request we clear the roof due to helicopter operations. It was moved to the present location on the Skyline Building with the antenna at 175 feet and located at 2600 9th Street N. It is an unobstructed site and serves the area quite well, being farther north than the hospital location.

While at the hospital location, Woody introduced the 220 MHz machine. And after moving to the Skyline Building the 440 MHz machine was introduced. All three repeaters provide excellent coverage for lower Pinellas County and reach into the Hillsborough and Manatee-Sarasota areas. The 220 machine has an output on 224.660 MHz and the 440 machine output is 444.475 MHz.

For technical buffs, the machines are: 2-meter is a G.E. Master Pro, all solid state except for the transmitter's final stage; the 220 is solid state, using two Midland 13-509 radios, one for receive and one for transmit, and a linear amp on transmit, and the 440 is also a G.E. Master Pro. All repeaters have pre-amps on the receivers.

Woody was the original trustee and the "daddy" of the SPARC repeaters on 2-meters and 220. He remained trustee until March 31, 1986. Then, Emmett West became trustee and remains so to date, rather unique because we have had only two trustees in 28 years.

We invite you to use all the repeaters as they are club property and belong to you as club members.

Are you wired for the correct connections, or is your skin resistant?

By Daniel Metzger K8JWR
The Hertzian Herald

It often strikes me as ironic that our radio technology was originally called 'wireless' because no component is more basic to its operation than wire. Indeed, my project bench is often a maze of wires. But, as with other components, choosing the right wire for a particular job requires an understanding of it's characteristics.

Copper wire is commonly available in AWG (American Wire Gauge) sizes ranging from 0000, 000, 00, 0, 1, 2,.... up to gauge 44. Size 0000 is 0.460 inches in diameter, and No. 44 has a diameter of 0.002 inch. In the middle range, No. 30 has d = 0.010 inch. Wire diameter decreases by a factor of two for every six size numbers; so No. 26 has half the diameter of No. 20. Resistance increases by a factor of two for every three gauge numbers. For example, No. 13 copper wire has 2.0 ohms per 1000 feet, then No. 16 has 4.0 ohms per 1000 feet. Another way of saying this is that resistance is cube-root-of-two or 1.26 times higher for each number increase in gauge.

One of the most practical questions about wire is, "What size wire do I need to carry a particular current?" For wires in bundles or in confined areas and a temperature rise of 10 degrees C (18 F), the following table may be used: No. 28 (wire wrap) 3/4 A; No. 22 (hookup wire) 2 A; No. 18 (lamp cord) 5 A; No. 12 (house wire) 10 A.

For a single wire in free air or if temperature rises to 35 degrees C (63 F), these allowable currents may be increased by a factor of two. Stranded wire is sized to have approximately the same resistance as equivalent-sized solid wire. For example, No. 18 stranded may consist of 16 strands of No. 30, or 65 strands of No. 36 wire. The advantage of stranded wire is that it flexes more easily and resists breaking under continuous flexing.

At high frequencies, magnetic fields within the wire force nearly all of the current to flow at the surface of the wire, leaving the inner core relatively useless. This is called "skin effect." Copper-clad steel antenna wire conducts quite as well as solid copper because all the RF current flows on the skin anyway At audio frequencies single-wire conductors (such as antennas, coax cables and power lines) experience skin-effect problems for wire sizes larger than about No. 10. When wound in coils, wire sizes larger than No. 22 are seriously affected. At a frequency of 100 kHz, single wires larger than No. 22 and coils of wire larger than No. 42 suffer increased resistance from skin effect. Above 1 MHz, virtually all wire sizes are seriously affected.

To give you a practical example of what this means, a single-layer 100-turn coil of No. 32 wire on a 1/2-inch diameter form will have a DC resistance of 4.2 ohms, an inductance of about 50 uH, and a reactance of about 640 ohms at 2 MHz. The Q might be expected to be 640/4.2 or 150, but skin effect will raise the AC resistance to about 42 ohms, and the Q will actually be about 15.

WCF celebrates 2 anniversaries

The West Central Florida Section celebrated it's second-year anniversary and the one-year anniversary of the K4WCF repeater system by holding an amateur radio demonstration and display at the Prime Outlets Mall in Ellenton on February 15.

Demonstrations included 2-meter section-wide communications, HF, APRS, SSTV, ATV, hand-held satellite operations, ARES operations, amateur radio's role in Homeland Security and NTS traffic operations.

Section Officials on hand for the festivities included Section Manager Dave Ambrust, AE4MR; Asst. Section Manager, Paul Toth, NA4AR; Section Public information Coordinator, Jack Doyle, WX1JAD, and Section Affiliated Club Coordinator, Frank Morton, AC4MK.

During the special event three nets (the daily NTS traffic net, the weekly SSTV net, and the WCF Section net were controlled live from the mall location. A "special events check-in" was conducted during the event. Geoff Haines, N1LGI, controlled the NTS net and provided his Air Search and Rescue vehicle for display.

Toth controlled the SSTV net and conducted demos on SSTV and APRS. Doyle controlled the WCF Section Net and provided his mobile communications Special Services Unit for net operations and display.

Pinellas County Emergency Coordinator Dan Hawthorne, AI4ET, provided his vehicle for HF demonstrations; Jon Link, K4III, brought his famous "Bicycle Mobile," cover story of the September QST magazine.

Comedian Burt Wizeman, KI4FH, demonstrated satellite communications as well as entertaining the public. Steve White, W4SNW, of Camp Flying Eagle/Boy Scouts of America; Danny Guarro, KG4OMN, and Kevin Chartrand, KG4NNL, stood by as NTS traffic originators.

Other representation at the event included: Sarasota Emergency Radio Club; Tamiami Amateur Radio Club, Venice; Manatee Amateur Radio Club; Sarasota Amateur Radio Assn.; Sun City Amateur Radio Club; Clearwater Amateur Radio Society; Brandon Amateur Radio Society; Pinellas County ARES; Sarasota County ARES; Manatee County ARES; Civil Air Patrol; Boy Scouts of America/Camp Flying Eagle, and National Weather Service SKYWARN.

It was a great event, giving us not only a reason to celebrate, but another opportunity to promote the many benefits and services amateur radio provides to the community.

Job well done and thanks from Abilities!

From: FRANK DELUCIA
To: Ken Hopkins
Sent: January 22, 2002
Subject: RE: Marathon

Thanks so much for your concern, Ken, and your volunteer efforts on Sunday. I'm very appreciative of your support of our work on behalf of people with disabilities. Yes we were the lead charity and the charitable beneficiary of this event. A large Abilities banner was at the finish line, and a large Abilities Foundation banner was prominently displayed in front of the podium at the awards ceremony.

The overall field grew, however, which is a very good sign. From our standpoint, your efforts were most worthwhile and are helping to establish an exciting community event, of which Abilities is delighted to be a part.

Again, many thanks for all of your efforts in our behalf.

Needed … many good workers!

By Paul J. Toth NA4AR
Asst. WCF Section Manager

Four years ago, I left northern New Jersey and my responsibilities there as SEC to move to west central Florida. So, accepting the task of moving ARES forward in the WCF is not totally foreign territory. We have had four years to get to know and work with each other on a number of projects, including the creation of our new section. I am looking forward to this new challenge and hope you are as well.

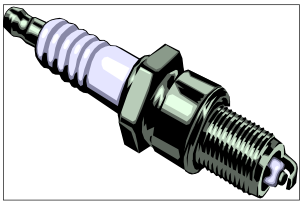
Many believe the events of Sept. 11 changed the landscape for emergency communications and the role amateur radio has with it. From my perspective, Sept. 11 served to bring focus and clarity to the mission that ARES should have been fulfilling all along. And, it is that mission we will be focusing on in the coming weeks and months in west central Florida.

Our immediate task, collectively, will be to bring clarity to the ARES mission in our communities as well as the section because it is that mission that will drive everything else we do: Recruiting, training, logistical support and organization. We will measure our successes based on how well we can collectively meet the goals and objectives of the mission.

I am going to be asking our emergency coordinators and all hams to forget stereotypes and pre-conceived notions about ARES and amateur radio communications support. We need to start thinking "outside of the box". I will be asking each of you to start turning over stones you probably haven't noticed lying along the path. And I am going to challenge your creativity, your ingenuity and your communications skills.

The new West Central Florida ARES will have something for every amateur radio operator, whether you are a current ARES volunteer or not. I believe each of us has a stake in helping our communities and our neighbors when they need our help and communications expertise the most.

One of the first challenges will be finding a special amateur radio volunteer in Pinellas County with leadership skills and a willingness to serve as our ARES emergency coordinator. If you are up to the challenge, please contact me at na4ar@arrl.net.



SPARC GAP
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33731-4026

Mailing
Address
Goes
Here

Next club meeting Friday, May 3, 2002.
Next SPARC license classes will be announced at the next meeting.

In This Issue... | **Nervous Twitchers and Fone Freaks? … A loony story on page 2.**

DATE LOG - 2002

SPARC meetings - First Friday every month, 7:30 p. m., 818 4th St. N, St. Petersburg
Testing sessions - Fourth Monday every month, Gulfport Senior Center.
Class schedule will be announced at next meeting.
Florida QSO party, April 27-28, at SPARC radio shack, 818 4th St. N.
Lake Maggiore Swap Meet\Tailgate party, May 5, 9th St. S & 38th Ave.
Field Day, June 22-23, Bay Pines Veterans Memorial Hospital grounds.

AREA REPEATERS & WEB SITE

SPARC repeater: Nightly, 6:30 p. m., 147.06+, 224.66-, 444.475+.
Web site: www.qsl.net/W4GAC - Webmaster Dee Turner N2MNC.
CARS repeater: Wednesdays, 8 p. m., 146.970-, 224.940-, 444.150+, 444.450+.
Metro repeater: Mon-Wed-Fri, 7:30 p. m., 147.360+, 127.3.
WCF Section Net: Sun 7:30 p. m., Mon, Wed, Fri 9 p. m., 145.430+ & 442.950+(100Hz).

SPARC'S 2002 BOARD

President - Donn Davis N4KII	**527-9636**
Vice-president - Dee Turner N2MNC	**548-7474**
Secretary - Grace Harris KG4CTG	**894-1447**
Treasurer - Susan Dillon KD4FEZ	**302-0611**
Board - Mark Farr N9MIU	**895-9201**
Norm Martin AG4BI	**712-8964**
Bill Zulas KG4HPM	**725-4020**
PIO & Newsletter Editor	
Phil Gulick KG4IGX	**392-3481**
Special Events Co-ordinator	
Ken Hopkins WA9WCP	**525-8411**

New Members Joined in 2001

Benjamin W. Beattie	KG4MRM
Judith A. Beattie	KG4MRL
Robert W. Buchanan	KG4MRK
Sandra S. Buchanan	KG4MRJ
Jim Carroll	KD4KJN
Link Charlot	K4AFX
John Coniglario	KG4IGX
Chris Covell	KG4MRF
James A. Davis	AA3XQ
William (Gib) Gibson	KD4FI
James V. Grogan	
Robert (Bob) Hamel	WA4CVC
Daniel Hawthorne	AI4ET
Ken Hopkins	WA9WCP
Rebecca Hopkins	KA9EFE
Harold Petersen	KB9LXM
Michael Pici	KG4IYB
Samuel J. Poolso	KG4MRI
Kurt Reardon	KG4KXL
C.Michael Ritchey	KG4PMC
Kay Ritchey	KG4PMC
Jim Schilling	KG4JSZ
Smokey Stover	KI4CU
David W. Trewin	KR4U
Ralph Warmack	W4TNY
Thomas R. Wedding Sr.	KG4HGP
Robert J. Witham	KG4QFY