PAARA NEWSLETTER

VOLUME 61, NUMBER 3, MARCH 2011

K6OTA

K6YQT



CALENDAR

W6ARA

March 4, PAARA Meeting, 7:00 p.m. ****Location Change!**** MENLO PARK COUNCIL CHAMBERS 701 Laurel ST., MENLO PARK

March 16, Board Meeting, 7:00 p.m. *All are welcome!* Palo Alto Red Cross 400 Mitchell Lane, Palo Alto

March 16, DEADLINE for PAARAgraphs submissions. Send items to Robin Yee, KI6YTA@ARRL.net



W6OTX

Don't miss our next meeting! MARCH 4, 2011

Go to **www.paara.org** for information about the speaker for our March meeting.

President's Corner

Welcome to another month of PAARAgraphs, and what appears to be some increased solar activity. We've also had a fun-filled month from late January to mid-February. I hope you all had a chance to attend the Winter Banquet, and the last PAARA general meeting.



The sun is waking up! As of a

couple of days before this writing, we had our first Xclass flare of solar cycle 24 (it was X-2.2). It is also the first X-class flare since the end of 2006. This energy was directed right at Earth, and caused an HF radio blackout as a result of the high x-ray flux. We should also be seeing a geomagnetic storm from the particle flux. While this would appear very grim for conditions in the short term, it is not uncommon to have very good propagation after large events such as this. We can also be cheered by the overall increased activity that this presages. The STEREO satellites are now at their peak coverage of the sun and that means that there are now clear pictures of the sun's far side that we have never been able to obtain before. This will help greatly to predict near term space weather. We've lately had a series of sunspots, and have seen the solar flux index (SFI) over 100 for the first time in a few years. I heard from Bob, K6TR, that someone at the K6LRG contest station recently worked Europe on 10 meters. If we are lucky, we may see significant activity on 10 meters for Field Day this year. That

(Continued on page 25) Pres Corner

Be sure to check out the ALL NEW PAARA WEB-SITE!

www.paara.org

PAARAgraphs—March 2011 Celebrating 74 years as an active ham radio club-Since 1937

VE Exams, 3rd Saturday each month, 10:30AM, 145.23- PL=100Hz Redwood City Main Library, Community Conference Room 1044 Middlefield Road, Redwood City, CA contact: http://amateur-radio.org/ or Al, WB6IMX@att.net

ELECTRONICS FLEA MARKET Sponsorship by A.S.V.A.R.O. (Association of Silicon Valley Amateur Radio Organizations) Second Saturday of month, March-October, 6am-2pm Howard M. Krawetz, N6HM 650-856-9761 Contact: http://www.electronicsfleamarket.com

LIVERMORE SWAP MEET. Now in Robertson Park, Livermore, every first Sunday of the month. 7 am to 11:30 am. Free admission for buyers. For further info, see www.larkswap.com_or contact Ian Parker, W6TCP at swapmeet@livermoreark.org

PAARA Palo Alto Amateur Radio Association Meets 1st Friday 7:00pm each month at Menlo Park Rec. Center; Net 145.230 - PL 100Hz Mondays at 8:30. See our website at <u>http://www.paara.org/</u> for more information. Or contact: Joel Wilhite KD6W, KD6W@ARRL.NET, 650-325-8239

FARS Foothills Amateur Radio Society Meets 4th Friday each month at 7:30pm contact: http://www.fars.k6ya.org/

NCDXC Northern California DX Club meets 2nd Friday 7:30pm each month repeater for member info 147.360, Thursday 8:00PM contact: http://ncdxc.org/ or Mike Gavin W6WZ, (650) 851 8699

OCWA Chapter 11 Northern California Quarter Century Wireless Association Meets third Wednesday monthly at Harry's Hofbrau in Redwood City @ 11:30 AM. Guests are welcome. Saturday morning net on 146.850 MHz, PL 114.8

NorCalQRP Northern California QRP Club meets 1st Sunday each month

contact: http://www.norcalgrp.org/ SPECS Southern Peninsula Emergency Communication System meets each Monday 8:00pm on Net 145.27, 440.80 MHz contact: http://specsnet.org/ or Tom Cascone, KF6LWZ, 650-688-0441

SCARES South County Amateur Radio Emergency Service meets 3rd Thursday 7:30pm each month, San Carlos City Hall. Net is on 146.445 [PL 114.8] & 444.50 (PL-100) 7:30 Monday evenings.

contact: President Gary D. Aden, K6GDA 650-743-1265(D),650- 595-5590 (N) Web: http://k6mpn.org E-mail: pres@k6mpn.org

SCCARA Santa Clara County Amateur Radio Association Operates W6UU & W6UU/R, repeater 146,985-pl Nets: 2m, 7:30pm Mon; 70cm, 442.425+ (pl 107.2) Thur. meets 2^{nd} Mon each month @ 7:30 PM. contact: http://www.gsl.net/secara/or Clark Murphy KE6KXO 408-262-9334 ARRL/VEC license testing contact 408-507-4698

SVECS Silicon Valley Emergency Communications Operates AA6BT repeater (146.115 MHz+) contact: http://www.svecs.net/ or Lou Stierer WA6QYS 408 241 7999

TEARS The Elmer Amateur Radio Society Dedicated to operational training, knowledge building & FCC exam testing. KV6R repeater under construction.

Contact AA6T@ARRL.NET . Most members are Extra class or VE's. See ORZ dot com/kv6r for class info

WVARA West Valley Amateur Radio Association W6PIY six-meter repeater on 52.58mHz. Normally, six-meters is linked with 147 and 223, while 441 and 1286 repeaters are linked UHF VHF.

52.58 (-500) 151.4 ctcss 147.39 (+600) 151.4 ctcss 223.96 (+1.6) 156.7 ctcss

441.35 (+5.0 88.5) ctcss 1286.20 (-12m) 100.0 ctcss

Meetings are 3rd Wednesday of every month. contact: <u>http://wvara.org/</u>, Bill Ashby N6FFC, 408-267-3118, N6FFC@Juno.com, or N6FFC@ARRL.NET

American Red Cross, SANTA CLARA VALLEY CHAPTER contact: http://santaclaravalley.redcross.org/ or Scott Hensley KB6UOO, (408) 967 7924 fshensley@Novell.com

(please send changes to PAARAgraphs editor: KI6YTA@arrl.net)

Please contact Rick Melrose to settle your 2011 membership dues so you can keep receiving your PAARAgraphs.

Palo Alto Amateur Radio Association, Inc. PO Box 911 Menlo Park, CA 94026

Officers			
President	Kristen McIntyre, K6wx	510-703-4942	
	kristen@alum.mit.edu		
Vice President	Position Vacant		
Secretary	Rick Melrose K6RDM	408-341-9070	
	k6rdm@arrl.net		
Treasurer	Ron Chester, W6AZ	408-243 2221	
	ron@taxhelp.com		

Directors

50 799-1607 (cell)
08-369-1913
08-246-7531
50-465-8210 (cell)
)

Appointed Positions

Membership	·	650-366 0636
Database	Rick Melrose K6RDM	408-341-9070
Chaplain		
Public Affairs		
Station Trustee W6OTX		Gerry Tucker, N6NV
Station Trustee K6OTA		Ron Chester, W6AZ
Property Manager		,
Fund Raising Coordinato		408 396 4745
e	bob@rgktechsales.com	
Badge Coordinator	Lynn Gentry, KG6JPV	
Historian		
Raffle Coordinator	Jim Rice, к6АК	650-851-2274
Ticket Master	Position Vacant	
Field Day Coordinator	Doug Teter, KG6LWE	650-367-6200
ASVARO Rep	Rolf Klibo, N6NFI	650-856-2748
	n6nfi@arrl.net	
Webmaster	John Miller к6мм	
	webaron@gmail.com	
Technical Coordinator	Joel Wilhite. KD6W	650-325-8239
	kd6w@arrl.net	
QSL Manager	Rob Riley, KI6INR (cell) 65	0 799-1607
	ki6inr@arrl.net	
Speaker Coordinator	Position Vacant	

PAARAgraphs Staff

Editorial Board		
Robin Yee KI6	YTA Kristen McInty	re ĸ6wx
Ron Chester W6	AZ Vic Black AB6	SO
Joel Wilhite, KE	06W	
Editor	Robin Yee, KI6YTA	
	KI6YTA@arrl.net	
Advertising	Ron Chester, W6AZ	408-243-2221
Member Profiles	Position Vacant	
Technical Tips	Vic Black, AB6SO	650-366 0636
1	ab6so@smrn.com	
Photographer	Bill Young, K6vwo	
C 1	jdsinger@sbcglobal.net	

PAARA 2011 General Meeting dates ____1/7, 2/4, 3/4, 4/1, 5/6, 6/3, 7/8, 8/5, 9/9, 10/7, 11/4, 12/2-

PAARAgraphs—March 2011 Celebrating 74 years as an active ham radio club—Since 1937

(Continued from page 23)

would really help us increase our score.

Speaking of Field Day, the FD packets for 2011 have been released from the ARRL. Doug, KG6LWE, our Field Day Coordinator, has called the first organizational meeting for 2011, so our FD preparation is now officially under way. Our big challenge will be to beat our score from last year. We have our usual great FD team, and I'm sure we can use your help too. Please don't hesitate to contact Doug and let him know that you're interested in helping out.

The PAARA/FARS Winter Banguet for 2011 was a real success. I'm sorry if you had to miss it, but the talk by Jerry, K6MD, was really an experience not to be forgotten. Jerry spent much of the hour telling us of his first hand experiences with combat medicine in the war zone in Iraq. There were striking pictures and descriptions of life over there that I think encouraged us all to step out of our relatively cozy lives here to spend some time vicariously with Jerry's kids, as he called them. Jerry is a true military hero, and it was an honor to have him speak at the Banquet.

The PAARA sponsored ASVARO flea market is coming up soon, and we need your help. On March 12th, just eight days after the March PAARA meeting, we will be making the first Electronics Flea Market of 2011 happen. This is an important fundraiser for our club each year. It's a big job putting it all together so that we can bring you all of the ham radio and electronic junk you like to peruse and collect! Please consider helping us out. In particular, people to make coffee in the morning and pick up donuts are needed. If you can help out in any way, please contact me directly. My contact info is in the masthead of PAARAgraphs.

One other thing I thought I'd mention is that I had the first successful QSOs with the iPad application I wrote for PSK-31 at the January Amateur Radio - Technology Day at the SLAC National Accelerator Laboratory. I had a lot of fun writing it, and there was nothing like the thrill of making those first contacts. There was even some DX from Russia, Argentina, and Japan. There is even a Youtube video, courtesy of Ricky, KD6KXR. Just search for my callsign.

Thanks to everyone for making PAARA continue to be The Friendliest Club Around. We look forward to seeing you at our next meeting in the Menlo Park City Council Chambers. Remember that we will be there through at least April. Until then ...

GUD CONDX ES GUD DX TO U DE K6WX.

Board Meeting Minutes

Minutes for the meeting held on 2-16-11 were not ready in time for this issue of PAARAgraphs to go to print.

However, as long as you are here, be sure to go to page 27 and check out the COOL PRIZES for the March PAARA Raffle!

73

(Continued on page 26)

Which RAFFLE PRIZE do *YOU* plan to win?

Tri-City VE Group 2011 Test Sessions

- Where: Hurricane Electric 48233 Warm Springs Blvd Fremont, CA
- When: Saturday, March 12, 9:00 a.m. Tuesday, April 12, 6:30 p.m. Saturday, May 14, 9:00 a.m.

For more information, contact Rita, <u>KI6SSQ@arrl.net</u>, (510) 703-7090 or Bernhard, <u>AE6YN@arrl.net</u>, (510) 364-0611 or visit <u>www.sbara.org</u>.

Congratulations to the winners



of the February 2011 Raffle

1st Prize: Joseph Lucchesi / K6JLU / Yaesu FT-1900R 2m / 55W / Mobile 2nd Prize: Larry Hedberg / KD6EUG / Samlex SEC-1223 / 23 Amp Power Supply 3rd Prize: Jim Thieleman / KI6KVW / Battery Tender **Junior 12V Charger** 4th Prize: Bill Parsons / AF6AE / "Array of Light" Book / by Tom Schiller, N6BT / Thanks for the donation Tom! 5th Prize: Darryl Presley / KI6LDM / Two FRS / **GMRS** Radios 6th Prize: Robert Fenn / KC6TYD / Kill-A-Watt / AC **Electricity Usage Monitor** 7th Prize: Greg Miller / WY6P / CQ Amateur Radio Calendar 2011-2012 8th Prize: Ralph Hunt / AG6Q / Log Book

> THANK YOU FOR YOUR SUPPORT of PAARA's exciting monthly raffles!

PAARA had a remarkable year in 2010! If you are not yet a member, please join PAARA now and experience fun 2011 events with the "friendliest club around." K6AK Jim

PAARA Exemplary Service Award Gerry Tucker, N6NV 2005 Rice Family 2006 Jim K6AK, Lisa KG6KQS, Kyle KG6MSK Wally Porter, K6URO 2007 Vic Black, AB6SO 2008 ??? - 2009



PAARAgraphs—March 2011 Celebrating 74 years as an *active* ham radio club—*Since 1937*

PAARA "The Friendliest Club Around"

March 2011 Raffle Prizes

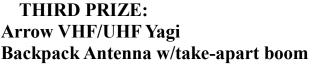
FIRST PRIZE: SignaLink[™] USB Sound Card - Radio Interface



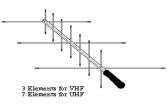
- Supports Virtually All Sound Card Digital and Voice Modes
- User-Friendly Interface with Front Panel Controls
- State of the Art Built-In Low-Noise USB Sound Card
- Complete Radio Isolation
- Simple Installation and Setup

SECOND PRIZE: Yacht Boy 550PE AM/FM Stereo/Shortwave Radio

- 14 Shortwave Bands / 1711 29.995 KHz
- Autoscan and Direct Keypad Tuning
- 200 Station Memory Presets with Memory Page Customizing
- Programmable Alarm and Sleep Timer with Favorite Station Wake-Up
- Sockets for AC Adapter and External Antenna
- Earbuds / Stand / Protective Pouch / Weight 10 oz.



Work a Satellite with an HT



A027 Up-link 145.850 Down-link 436.800 UO14 Up-link 145.975 Down-link 435.070

FOURTH PRIZE: V ICE / Coaxial Lightning / EMP Suppressor / UHF-VHF / SO-239



DONATED BY ICE COMMUNICATIONS THANK YOU, ICE!

FIFTH PRIZE: Two Uniden FRS/GMRS Radios w/batteries SIXTH PRIZE: Clip-On Super Bright LED Light w/Flex Arm SEVENTH PRIZE: Stereo Headphones w/Deep Bass

Since February 2003, **204 Radios**, including FOUR Elecraft K3s, a Yaesu FT-847, an Icom 706 MK IIG, a Yaesu FT-897D, and TWO Elecraft KX1s have gone to Fellow Hams.

Special Thanks to Bob, Howard, Jon, Mark, and everyone at HRO for their continued support!

FIRST PROJECT by Bob Van Tuyl, K6RWY

INTRODUCTION

The San Jose RACES staff in the Emergency Operation Center use headphones during an event. As a new hearing aid wearer I became concerned that I would be unable to wear headphones. To test that ability I purchased a headset. I tried to purchase an interface for the headset, mike, and Push-To-Talk (PTT) to my HT, but one is not available for purchase. Furthermore, it appeared that the interface required a RC circuit in the interface. The owner of the headset company also grumbled about this requirement.

Once upon a time I completed a degree in Electrical Engineering. However, I found that software engineering was a lot of fun and I spent nearly 4 decades building and fixing software. I did not even own a decent soldering iron (I do now).

The HT's manual showed a circuit. A 2K resistor is in series with the PTT and a 10 uf capacitor is in series with the microphone. Both are connected and fed into two parts of a mono plug. The earphones are connected to another mono plug. The two mono plugs are connected to an interface cable with two mono jacks on one end and a four (4) connector 3.5 mm plug.

PROTOTYPE

Did I mention that the circuit described in the manual was for a TNC interface? So I did some math. The impedance (if I remember correctly) of a capacitor is $1/2\pi$ fC. Speech starts at about 300 Hz, so the impedance of a 10 uf Capacitor is about 53 ohms. Being a perfectionist (i.e. idiot?) I decided one (1) ohm would be better. This leads to a 500 uf capacitor.

I went shopping. I found some parts and built a breadboard.

It seemed reasonable to connect the breadboard directly to the radio with a 4-connector 3.5 mm plug. Unlike other 3.5 mm plugs, the 4-connector plug does not have little tabs with holes in them to which the wires are soldered. Nope, the 4-connector plug has a tiny object about the size of a pencil lead with little plastic barriers between two or three connectors (I found two different versions of the internal connectors). The solder pad is about a 1/16" circular pad. My skills were not up to the challenge. I looked high and low for a plug with better solder pads but no joy. I found various cables with 4-connector plugs attached with the idea of cutting the other end and wiring the cable to my breadboard. Frustration ensued. Nothing worked. I spent hours trying to get one of these cables to work.

(Continued on page 29)

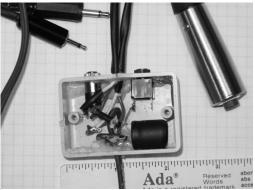
(Continued from page 28)

The backup plan was to use the interface cable provided by the HT manufacturer. It only required a 2.5 mm Mono Plug and a 3.5 mm Mono Plug (one for the PTT/Mike and the other for the earphones). Wired them up, plugged them in and it worked. I asked people if they could hear me and they could!

MARK 1

An HT is small. Packing around a breadboard did not seem like a good idea. So I needed to package it. I went shopping. I found a two inch plastic box that seemed large enough to hold the parts and some jacks. I put it together and it worked. No problem.

I happened to visit my brother about this time. He has been an electronic technician for 40+ years. I talked about this project with him and he said "You don't need a 500 uf capacitor, one uf would work!"



Yikes, shot down by my brother.

This got me to thinking about the circuit and how it might work. I noticed that it took about a second or two for the HT to switch from receive to transmit. There was just this noticeable pause before the red light changed to green. About then I remembered that there is a resistor-capacitor time constant value given by RC. For the 500 uf capacitor RC is 1 second. So I have a low impedance for the audio from the mike but the switch time is long.

Figure 1 - Mark 1

MARK 2

I went shopping for more parts. This time I found a 68 uf capacitor. Mark 1 used a thumb actuated PTT. It wasn't a good match to my hand. I found another PTT with a trigger finger switch. It had a ¹/₄ inch plug on the end. That had to go. I closed my eyes and cut off the plug and soldered on a new 3.5 mm Mono Plug.



I built this version in the same box as Mark 1, a two inch long plastic box. Now I needed four holes in the box, two for the headset, one for the PTT and another for the connection to the HT. The box would only support two holes in a side.

Built it, tested it and it appears to work well. Not only is the audio ok, but the switching time is now fast enough (RC is 0.136 seconds). But the physical arrangement is awkward. With plugs on both sides it would not fit in a little pouch on my belt.

(Continued on page 30)

(Continued from page 29)

About this time I decided that the soldering iron that I was using was not very good. I looked around for a better one and found a temperature controlled iron. The next box was built with the new iron. A good decision.

MARK 3

So the electrical problems had been resolved but the mechanical arrangement was not ideal. I went



looking for a plastic box that was a little larger. I found a three inch and a four inch long box. One of those should work. I punched holes in the three inch box. Four holes fit on one side of the box. It also had a convenient circuit board shelf. The cable to the HT in Mark 2 was also too long. And I discovered that the two Mono plugs could be made into one plug with some heat shrink wrap.

The final version fits nicely into a pouch about the same size as the one used for the HT. The cable between the two devices is just long enough to connect the two. All the other plugs are inserted on the same side as the cable. Some Vel-

Figure 3 - Mark 3

cro will be used to dress up the lines to the headset and PTT.

CONCLUSION

The project was started to test my hearing aids in headphones. I am happy to report that the hearing aids work fine in the headphones. I also noticed that when listening to the HT without headphones I need the volume control set to the maximum setting. With the headphones the volume control is about one fifth of the maximum setting.

As a new ham, I found this project was engaging and eventually satisfying.

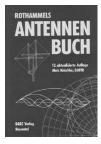


QST QST QST QST QST

Radio Amateurs in Germany have a huge encyclopedic antenna book as big or bigger than the ARRL Antenna Book. It is Rothammel's Antennenbuch, first published in 1959 and now in its 12th edition. Its 997 pages contain much that is different or simply not in other antenna books. It is published in German, not English, and is available only from the publisher DARC Verlag GmBH in Germany. The book costs 48.60 EUR, or about \$65 USD. However, shipping and handling from Germany are expensive, about \$40 per book when ordered individually. So we are considering a group purchase that would enable PAARA members to obtain copies at a reduced shipping rate per book. If you are interested in joining the group purchase and obtaining a personal copy of Antennenbuch, please send your name, phone number, email address, and a deposit of \$40 to Steve Stearns, K6OIK, P.O. Box 4917, Mountain View, CA 94040-0917, After all signups are in, Steve will send out a confirmation with the final price, which will be between \$65 and \$105 per book depending on the number of people who sign up. Your book should arrive approximately three weeks after the order is placed. In addition to discovering new antennas, this opportunity is an excellent motivation to learn German.



First edition, 1959



12th edition, 2001



Registration for IDXC 2011 Is Now Open!

The 62nd Annual International DX Convention sponsored by the Northern California DX Club will be held at The Holiday Inn Hotel & Conference Center in Visalia, California from April 15 - 17, 2011.

If you're a DXer or interested in any aspect of Ham radio, then IDXC is the place to be. Top DX operators from around the world will be there. You'll match those familiar callsigns with new faces, and shake hands with the person you have had a sched with for the past 10 years but never met.

Learn the secrets for big signals on top band. How to have fun adventures chasing IOTA, attend the contest forum, antenna forum, DX forum, or Contest Academy. There are seminars for everyone from the seasoned pro to the beginning DXer. Visit the Exhibit Hall, where you can talk to the people who design and use the best DX equipment. There will be great raffle prizes the likes of which top even the famed Dayton Hamvention. We're even planning to have an old-fashioned Swap Meet! And don't forget the YL's — we will have something special for them as well.

For more information, visit http://www.dxconvention.org/.

We'll be seeing you soon!

Your 2011 IDXC Co-Chairs,

John Miller, K6MM Kevin Rowett, K6TD

P.S. If you would like to help out with Raffle Tickets, Registration Table, Hospitality Suite, Magic Card Tricks, etc, contact John K6MM at webaron@gmail.com.

PAARAgraphs—March 2011 Celebrating 74 years as an *active* ham radio club—*Since 1937*

James Farrey Sales Manager

James Electronics Ltd 1355 Shoreway Road, Belmont, CA 94002 Tel: 650•592•6718 x 350 Fax: 650•802•1520 Direct: 650•802•1511 jfarrey@jameco.com

www.jameco.com

YOUR AD HERE See the next page for details

The following badges are ready for pickup:

KG6GYY Art; KF6SRD Chuck; KG6QKN Francis; K6FEW Frank; K6TSR George; N6GYR George; KG6ZWQ Henri; N6JCY Joani; KG6QKQ Kali; K6FTF Mark; K4AZY Mike; KJ6GBC Tony; & K6VVK Vincent

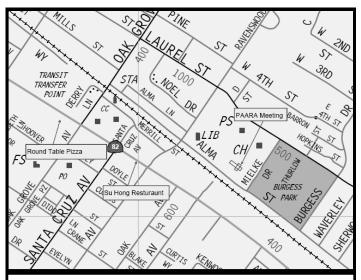
> lf you would like to order a badge, see Lynn Gentry, KG6JPV.

PAARA Weekly Radio Net

Info and Swap Session every Monday evening at 8:30pm on the N6NFI 145.230 MHz repeater.

Week <u>Control Operator</u>

- 1st Doug Teter KG6LWE
- 2nd Robin Yee—KI6YTA
- 3rd Jack Pines W1VSL
- 4th Marty Wayne W6NEV
- 5th Mike Bray N6MEB



Directions to PAARA meeting: http://paara.org/meetings/



Food will be served at **6:00** sharp, so guests will be on time for the PAARA meeting. Those arriving late will be responsible for their own food order.

5:30 pm—at Su Hong Restaurant 1039 El Camino Real Menlo Park

across from Kepler's Book Store on El Camino Real Walking distance from Caltrain!

Palo Alto Amateur Radio Association P.O. Box 911, Menlo Park, California 94026-0911 Club meetings are on the first Friday of each month, 7:00pm at the Menlo Park Rec Center, 700 Alma Street, Menlo Park, CA.

Radio NET & Swap Session every Monday evening, at 8:30pm, on the 145.230 –600 MHz repeater, PL 100Hz.

Membership in PAARA is \$20.00 per calendar year, which includes one subscription to PAARAgraphs \$6 for each additional family member (no newsletter). Make payment to the Palo Alto Amateur Radio Association, P.O. Box 911, Menlo Park, CA 94026-0911

Permission is granted to reprint from this publication with appropriate source credit.

PAARAgraphs—March 2011 Celebrating 74 years as an active ham radio club-Since 1937



2. For Profit organizations and/or individuals: \$5-business card size, \$25-half page, \$50 full page or back cover per issue.

These fees may be reduced or waived in exchange for a valuable consideration that is given to the Association or its general membership. Such consideration must be in addition to any existing arrangements with ne association. The PAARAgraphs editors reserve the right to reject any ad deemed to be not in the best interest of the Association. All fees payable in advance by the year with "scanner-ready" copy or text-only ads. Give payment and copy to Ron Chester, W6AZ

PAARAgraphs — March 2011

Accept no substitutes. Produced and printed in California USA

Palo Alto Amateur Radio Association, Inc. PAARA*graphs* Newsletter P.O. Box 911 Menlo Park, California 94026



STAMP

 \mathcal{M}

