

PAARAgraphs



The Official Newsletter of the

Palo Alto Amateur Radio Association, Inc.

Celebrating 81 years as an *active* amateur radio club—*Since 1937*



The Race to Crack the Nazi Code

Ralph Simpson

The Enigma machine was a cunning invention and major advance in cipher technology, which gave the Germans confidence in the secrecy of their messages during World War II. This was a reasonable confidence but proved to be wrong and eventually fatal. The story of the Allies conquering the overwhelming odds against breaking the Nazi code is a story of ingenuity and intrigue. Alan Turing led the Allies efforts to break the Enigma, which significantly shortened the war and ushered in the age of computers.

The success of cracking the Enigma was kept secret for 29 years after the end of WW2, despite 15,000 people working on the effort. This secrecy is especially incredible for us living in the age of the internet, WikiLeaks and Edward Snowden. Over 35,000 Enigma machines were manufactured, but only 350 are known to exist today. You will see one of these rare machines and have a chance to type in your own secret messages.

Biography

Ralph Simpson worked in the computer industry for 32 years, at IBM and Cisco Systems. He is now retired and volunteers at a local history museum. He wrote a book on cipher history called, *Crypto Wars: 2000 Years of Cipher Evolution*. He is also an avid collector of cipher machines, which you can see on his website, *CipherHistory.com*. Ralph lives in San Jose in a restored Victorian house, which is also home to his Cipher History Museum and a very understanding wife. They have three grown children.

Upcoming Events

- | | |
|------------|--|
| April 6 | PAARA General Meeting, 7:00 PM |
| May 4 | Cubberly Community Center, Room H-6, 400 Middlefield Rd, Palo Alto |
| June 1 | |
| April 18 | Board Meeting, 7:00 PM |
| May 16 | Everyone welcome! |
| June 20 | Location: Marty, W6NEV, QTH |
| June 23-24 | Field Day begins at 11am PDT Sat and runs to 11am Sun |



President's Corner

April

Finally the Electronics Flea Market has a new venue. FYI, I have a request about that for all of you. We've also heard that solar activity is the lowest it's been in a very long time, but that doesn't mean that radio activity stops for us. And lastly, Field Day is only 3 months away now, so start thinking seriously about it.

In case you haven't heard, the ASVARO Electronics Flea Market will be moving for the month of April (the 14th) to the Sunnyvale Fry's parking lot at 1077 E Arques Ave in Sunnyvale. Parking for buyers will be free! This represents a major step forward for the Flea Market, the last of its kind in the area. There were many restrictions placed on the vendors and sponsoring clubs at De Anza College that might be different at our new ven-

(President — Continued on page 4)



Mr. Ohm's Laws *WILL* be Obeyed! de Rich, W6APZ

While acting as net control for our local Palo Alto portion of the SPECS net on 147.54 MHz, hams checking in reported having difficulty hearing my signal. When I checked the output power of my Yaesu FT-8800R I found it was only 32 Watts instead of 50 Watts. Time to send the radio in for repair, I thought.

Then I thought again. Better do a few more measurements. I checked the voltage going into the back of the radio from my PowerWerx SS-30DV power supply. It measured only 11.7 volts, yet the voltage on the back of the supply measured 13.8 VDC. I was using the power cord that came with the radio, so why the voltage drop?

The FT-8800 operating manual shows a transmit current of 8.5 Amps. Using Mr. Ohm's Law:

$$R = (13.8 - 11.7)/8.5 = 0.247 \text{ Ohms}$$

Only a quarter of an Ohm in that DC cable, yet at 8.5 Amps it accounted for a 2.1 voltage drop!

Upon shortening the cable to the minimum required to get from the power supply to the radio set next to it, my full output was restored. No need to send the radio in for repair. BE WARNED: *Mr. Ohm's Law is always enforced!*

Field Day Schedule

March 28th:	First Planning Meeting
June 21 st , 5pm:	Setup Begins
June 22 nd all day:	Setup
June 23 rd morning:	Setup
June 23 rd , 11am:	Field Day Begins
June 24 th , 11am:	Field Day Ends
June 24 th , 11am:	Take down Begins

PAARAtrip

Intel Museum Tour

May 26, 2018

Tour

Intel Tech Museum
 2200 Mission College Blvd
 Santa Clara CA 95054

Picnic

Baylands Park
 999 E. Caribbean Drive
 Indian Grass Circle 1
 Sunnyvale CA 94089

Set aside Saturday, May 26 for a trip to the Intel Technologies Museum and with a BBQ to follow. The museum tour is at the Intel Mission College Blvd campus starting at 10 AM sharp. The tour takes about 1 hour. Following will be a picnic at the Sunnyvale Baylands Park Indian Grass Circle 1 picnic area beginning about 12 Noon.

Tour and Picnic cost is \$10

This is a drive yourself event and there is plenty of parking, but carpooling is always more fun. We will meet at the Intel visitor parking lot at 9:45 A.M. Following the tour, meet at the Sunnyvale Baylands Park, Indian Grass 1 Picnic area.park. A map will be published soon.

Sign up and Pay at:

paara.org/pages/events-current.html

Bluetooth HT John Kristian, KM6LQZ

For public service events, I've been using an HT with a Bluetooth headset. It worked well at the Los Altos Festival of Lights Parade, which is an infamously noisy environment with marching bands and loud recorded holiday music. The combination of a foam earplug and an on-the-ear headphone made it easy to hear Net Control over the noise, and a boom microphone helped get my signal through.

Bluetooth means there's no wire dragging on my ear, which is a big improvement for me. In less noisy environments, I've used an ordinary in-the-ear telephone headset, which is more comfortable and less geeky. Of course, there's a minimum geek level when you're wearing a lime green reflective vest!

My rig is a Baofeng HT wired to a Sena SR10 Bluetooth adapter. I wear them clipped to my belt, with the HT in back and the Sena in easy reach in front. For the



noisy parade I used an Mpow Pro headset.

If you'd like to know more, contact me at KM6LQZ@ARRL.net.

Feb. 28th and Mar. 21, 2018, Board Minutes

As you may recall, the February meeting was delayed due to board members not being able to meet on the usual date. This pushed the meeting into the publication date for PAARAgaphs. This report covers the content of both meetings. They were both held at Marty's QTH. The 2/28 meeting commenced at 7:20 PM and the 3/21 meeting commenced at 7:18 PM. In attendance at the 2/28 meeting were Kristen McIntyre, K6WX (Pres), Marty Wayne, W6NEV (VP), Jim Thielemann, K6SV (Secretary/Membership), Ron Chester, W6AZ (Treasurer, via video conference), Darryl Presley, KI6LDM (Dir), and Joel Wilhite, KD6W (Dir & Technical Coordinator). A quorum was present.

In attendance at the 3/21 meeting were Kristen McIntyre, K6WX (Pres), Marty Wayne, W6NEV (VP), Jim Thielemann, K6SV (Secretary/Membership), Ron Chester, W6AZ (Treasurer, via video conference), Joel Wilhite, KD6W (Dir & Technical Coordinator), Walter Gyger, K6WGY (Dir), Larry Rebarchik, N6DB (Dir), and non-Board member Clark Martin, KK6ISP, (ASVARO Representative). A quorum was present. From this point on, no distinction will be made as to which meeting the various discussions are from.

Kristen, (K6WX), opened with a discussion regarding her new position with the ARRL, Pacific Division Vice Director. She mentioned talking with Ward Silver, N0AX, at length on various ARRL topics. Most of the conversation revolved around how important clubs are to ham radio, attracting "fresh blood," and the initial impression of the ARRL they give to new League members. As a result of her new role with the ARRL, further discussions with Ward has led her to agree to give a talk on "Alternate Hybrid Contesting" at the DX Convention in Visalia in April. She which could also involve unlicensed Hams. The idea being to attract new hams with activities that might be of interest to new or unlicensed hams. The "contest" part of the activity doesn't have to be anything like an actual "ham contest" but more like an activity pitting one

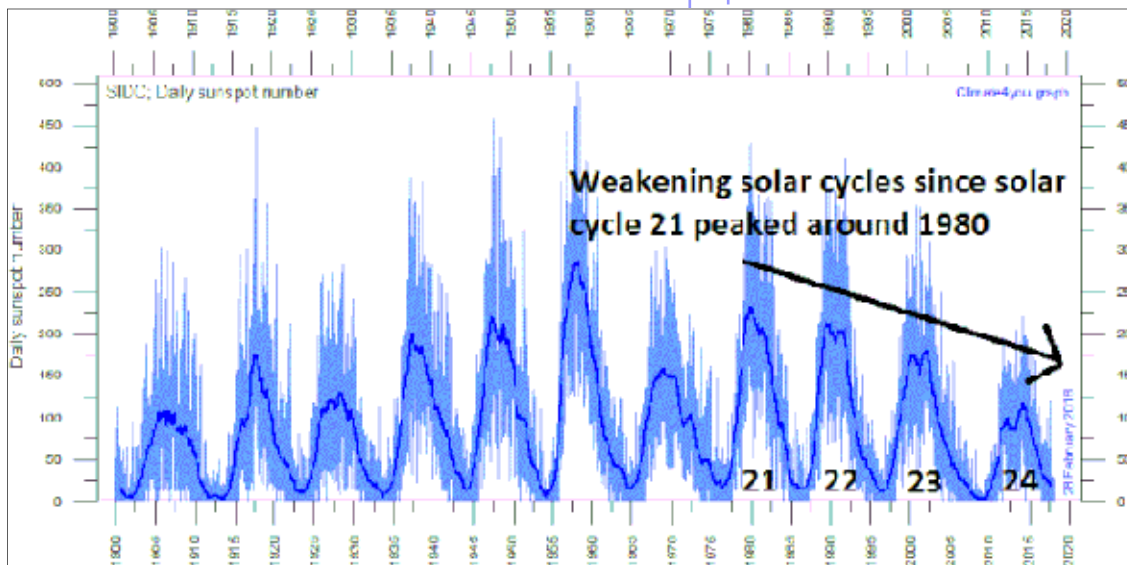
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(President — Continued from page 1)

ue. There is one thing, though. This upcoming April market will be a trial month. We need to show Fry's that this activity is safe, valuable, and easy to manage. To that end, I'd like to ask all PAARA members that can possibly make it to come on out and support the event. Let's show Fry's that we know how to do a great event and can make sure it's also cleaned up properly. If we can do that, we can hope to enjoy many years there in a mutually beneficial relationship. With a bit of effort, we might even be able to have hotdogs again. Wouldn't that be nice? So, please come out and support the Flea Market, support the vendors, and support the sponsoring club for April - SCARA. PAARA will be doing its part in September this year, so we hope to have your help at that time. I'll see you on the 14th!

statistical analysis of other cycles and epicycles suggest that we might be in for an extended period of low solar activity. What that implies for other factors like the sun's energy output is unclear, however, for radio it at least means that we will be working the low bands a lot more. That doesn't mean that there won't be openings on the upper bands. It just means we have to look more carefully for those openings. With modes like FT8 and PSK31, we can still sustain QSOs with this diminished solar activity. There is much fun still to be had, so I urge you to not get discouraged and get out there on HF.

Field Day is the premier club operating activity for demonstrating our radio skills to the public and to other hams. PAARA always works hard on Field Day, both as a demonstration and as a competition. We will once again be at Bedwell



Solar activity has been extraordinarily low over the last few months, including long strings of zero sunspots. The recent local average has been around 5 for the sunspot number. The solar flux index has been in a sustained period where it is below 70. Just being below 70 is an extraordinary thing. And I was recently told that the Maximum Usable Frequency, or MUF, was only around 12.5 MHz for a day. That means that 20 meters wasn't even open. We've seen a weakening trend over the last 4 cycles, from cycle 21 through the current cycle 24. Of course, we can't say what will happen for sure with cycle 25, but some forecasts based on a

Bayfront Park in Menlo Park. It's June 23rd and 24th this year, so mark your calendars. That may still seem a bit far off, but there is a lot that goes into making Field Day a success, so we are starting now. As I write, our first Field Day planning meeting is about to take

place. If you are interested in helping out or operating this year, please contact one of our FD coordinators - Doug, KG6LWE, or Marty, W6NEV. They will be happy to get you on the right list so that we can get you into the game. In particular, we need good CW OPs. You can let me know if you're interested in that. Don't hesitate to contact us if you have anything for or about Field Day to discuss.

That's it for another month. I'm headed to the IDXC in Visalia on April 20 - 22. If you are there, I'll see you then. If not, at the next PAARA meeting. CU ON THE BANDS DE K6WX

(Minutes — Continued from page 3)

ham or team against another in some activity that also involves radio. If you have any ideas on various activities that involve some aspect of ham radio activities that could also engage unlicensed hams, let Kristen know.

Vice President's Report: Marty, W6NEV, announced that the April 6th speaker will be Ralph Simpson who will give a talk on "Crypto Wars 2000 Years of Cipher Evolution". He also reported having speakers lined up through July. After that, he's looking for suggestions for future speakers. Please see Marty or any board member with any ideas you may have for a speaker.

Secretary's report: Jim, K6SV, reported that there were 2 new members joining in March. March is the month when members who haven't renewed are cut from the roster. For whatever reason, this year 69 members were cut bringing the membership to 146. Previous members will receive a postcard this month instead of PAARAgaphs urging them to renew. The board discussed why so many hadn't renewed. Likely we'll contact members who haven't renewed after the cards go out to try and learn why there were so many who didn't renew. You can always renew at a meeting, mail a check, or by using PayPal www.PAARA.org/pages/members-main.html link.

Treasurer's Report: Ron, W6AZ, reported that the proceeds from the February and March meetings were on a par with this time of year. Overall, the club finances remain in good shape. Ron recently contacted the IRS by phone to clarify the exempt organization status of PAARA. The IRS confirmed that we are exempt under Internal Revenue Code Sec 501(c)(7), our determination letter having been issued on 3/31/71, which is the code section for Social Clubs. A Sec 501(c)(7) organization is a member organization limited to receiving no more than 35% of its gross income from non-members. Ron presented a breakdown of PAARA income over a three-year period and a discussion followed about how we can stay within the 35% limit on gross income from non-members. This discussion will continue at future

Board meetings.

Under Old Business,

The 2018 Flea Market (EFM) season is upon us. The great news is the next Flea Market on April 14th, will be at the Sunnyvale Fry's Electronics store! As the April event will be the determining factor regarding Fry's interest in hosting the Flea Market for future months, please show up and show your support for the new location and the Flea Market. Also note, PAARA is sponsoring the September 8th Flea Market.

Marty, W6NEV, announced the next PAARAtrip will be to the Intel Museum on May 26th. The tour will be followed by a picnic at the Baylands Park. Members are encouraged to consider operating portable from Baylands Park. Cost for the PAARAtrip is \$10 which covers the cost of food at Baylands Park. You will provide your own transportation. See the website or elsewhere in this issue for more information.

Darryl, KI6LDM, updated the Board, via email, on his compilation of Bay Area hams who have either renewed or received their 1st licenses. He reported that Rachel Kinoshita, KK6DAC, mailed out the cards from the January list Darryl created. He has created the list from February which had 45 new hams. Rachel will be mailing cards to those hams in the next week or so.

Joel, KD6W, reported having almost gathered all the parts needed to add a microwave link to support high-speed internet to the repeater site. This link will be a backup for the wired link that currently is at the site. Installation is planned in the next few weeks.

The Board discussed Lifetime memberships. This is still an open topic but there was some conversation about the award and what it might look like. Stay tuned for more information.

There are several other items on the agenda that haven't been worked on very much or could wait until the next meeting, thus at this point there is no new news on them.

The PAARApLink, held on March 3rd, had a low attendance. Those who attended had a great

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time. The board will try to schedule the next one leaving more time to get the word out.

Under New Business:

The 1st Field Day planning meeting will be on 3/28/18. This starts the Field Day “season” which leads up to the event on June 23rd & 24th. Please let Doug, KG6LWE, or Marty, W6NEV, know if you’re interested in setup, operating, tear down or anything else. Kristen, K6WX, is in need of a co-captain for the CWA station during the day as she has to tour other sites during the day in her new role with the ARRL. Also note, Field Day T-shirts are for sale via the PAARA

website, link on home page, at a meeting or by contacting Marty. Remember the LAST day to order is May 18th. The cost is \$25 regardless of size S — 3XL. They are also available in “T”, tall, for the same price.

The February Board meeting was adjourned at 9:03 PM and the March meeting was adjourned at 8:51 PM.

Jim Thielemann, K6SV
 Secretary/membership

Please welcome, New members:

John Burke AJ6BJ
 Christine Pastrikas KK6PNV



March Raffle Winners

Left to Right

- | | | |
|-------------------|--------------------------------|------------------------|
| 3 rd : | Cupholder HT Mount | Rob WO6NDR (ex-KI6GCL) |
| 8 th : | Grilliput Portable Grill | Steve, WB6KIO |
| 9 th : | 12 Compartment Boxes | Steve, WB6KIO |
| 5 th : | Auto Emergency Kit | Karen KK6NGA |
| 7 th : | General Protractor | Frank, AF0XX |
| 1 st : | Baofeng UV5R, V2+ | Joe, WBJOE |
| 2 nd : | Self Adjusting Pipe Wrench set | Rachael, KK6DAC |
| 4 th : | Midland FRS Radios | Rachael, KK6DAC |

Not Shown

- | | | |
|-------------------|--------------------|--------------|
| 6 th : | Auto Emergency Kit | Cliff, KN6DH |
|-------------------|--------------------|--------------|

Palo Alto Amateur Radio Association, Inc.

PO Box 911 Menlo Park, CA 94026

Officers

President	Kristen McIntyre, K6WX kristen@alum.mit.edu	510-703-4942
Vice President	Marty Wayne, W6NEV w6nev@arrl.net	408-234-8023
Secretary	Jim Thielemann, K6SV thielem@pacbell.net	408-839-6815
Treasurer	Ron Chester, W6AZ ron@taxhelp.com	408-243 2221

Directors

Director ('17-'18)	Joel Wilhite, KD6W kd6w@arrl.net	408-839-5948
Director ('18-'19)	Walt Gyger, K6WGY walt@tradewindsaviation.com	408-921-5901
Director ('18)	Larry Rebarchik N6DB n6db@arrl.net	650 465-8210
Director ('18)	Darryl Presley, K16LDM k16ldm@arrl.net	650 255-2454

Appointed Positions

Membership	Vic Black, AB6SO ab6so@smrn.com	650-366 0636
Database	Jim Thielemann, K6SV thielem@pacbell.net	408-839-6815
Chaplain	Rick Melrose K6RDM K6RDM@yahoo.com	408-341-9070
Public Affairs	<i>Position Vacant</i>	
Station Trustee W6OTX, K6YQT, W6ARA....	Gerry Tucker, N6NV	
Station Trustee K6OTA...	Ron Chester, W6AZ	
Property Manager	Gerry Tucker, N6NV	
Asst. to the Treasurer....	Bob Korte, KD6KYT bob@rgktechsales.com	408 396 4745
Badge Coordinator	Doug Teter, KG6LWE dteter@wawi.com	650-367-6200
Historian Position	<i>Position Vacant</i>	
Raffle Coordinator	Jim Rice, K6AK	650-851-2274
Field Day Coordinator ...	Doug Teter, KG6LWE	650-367-6200
ASVARO Rep.....	Clark Martin, KK6ISP kk6isp@comcast.net	
Webmaster	John Miller K6MM webaron@gmail.com	
Technical Coordinator ...	Joel Wilhite, KD6W kd6w@arrl.net	408-839-5948
QSL Manager	Marty Wayne, W6NEV	408-234-8023
Speaker Coordinator	Marty Wayne, W6NEV	408-234-8023

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Photographer.....	<i>Position Vacant</i>	

VE Exams

Redwood City Main Library, Community Conference Room, 4th Saturday 10:30 am each month and De Anza Park, Sunnyvale, 2nd Saturday 10:30 am each month except November and December. See website for details and exceptions: <http://amateur-radio.org> or Contact 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-September, 6am–12 noon

Contact: <http://www.electronicfleamarket.com/>

PAARA — Palo Alto Amateur Radio Association

Meets 1st Friday 7:00pm each month at Room H-6, Cubberley Community Center; Net 145.230 - PL 100Hz Mondays at 8:30. See our website at <http://www.paara.org> 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.k6va.org>

NCDXC — Northern California DX Club

Meets 3rd Thursday 7:30pm each month,

Repeater for member info 147.360, Thursday 8:00PM

Contact: <http://ncdxc.org> or Mike Gavin W6WZ, (650) 851 8699

QCWA 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

50 MHz & Up Group

Meets 1st Thursday each month at 7pm in the Texas Instruments Building E conference room in Santa Clara.

Contact: <http://50MhzandUp.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, Belmont EOC, Belmont City Hall, One Twin Pines Lane, Belmont CA 94002. 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 2nd Mon each month @ 7:30 PM.

Contact: <http://www.qsl.net/sccara> 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 QRZ 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.

VHF: 52.58 (-500) 151.4 ctcss UHF:

147.39 (+600) 151.4 ctcss 441.35 (+5.0) 88.5 ctcss

223.96 (+1.6) 156.7 ctcss 1286.20 (-12m) 100.0 ctcss

Meetings are 2nd Wednesday of every month except July, August and December.

Contact: <http://wvara.org>, Bill Ashby N6FFC, 408-267-3118, president@wvara.org


American Red Cross,

Santa Clara Valley Chapter

Contact: <http://santaclaravalley.redcross.org> or Scott Hensley KB6UOJ, (408) 967 7924

shensley@Novell.com

(Please send changes to [PAARAgaphs editor](#))



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 Sales Manager

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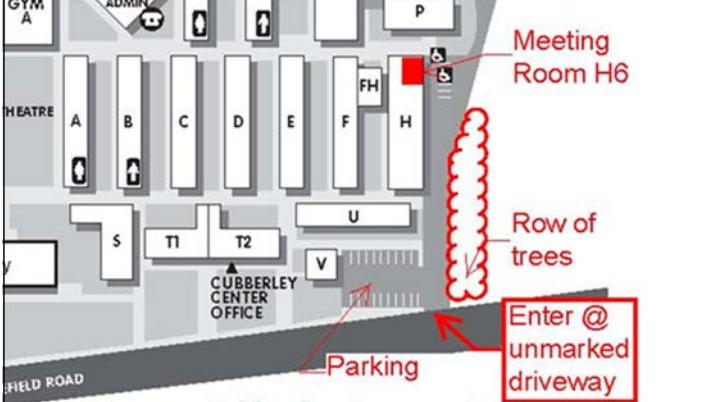
Badges are ready for pickup.

If you would like to order a badge, see **Doug Teter, KG6LWE.**

PAARA Weekly Radio Net
 Info and Swap Session every Monday evening at 8:30pm on the N6NFI 145.230 MHz repeater

<u>Week</u>	<u>Control Operator</u>
1 st	Joel KD6W
2 nd	Doug - KG6LWE
3 rd	Jack - W1VSL
4 th	Rob - KC6TYD
5 th	Rob - KC6TYD

If you're interested in trying out at Net Control, Contact Doug, KG6LWE. It's good practice, and lots o' fun! Give it a try.



Cubberley Community Center
 4000 Middlefield Road, Palo Alto, CA 94303
 650/329.2418
 650/856.8756 fax
www.cityofpaloalto.org

Meeting Location — Middlefield Road between San Antonio and Charleston in Palo Alto. 4000 Middlefield Road

<http://www.foto.mail.ru/list/shkurkin>

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Palo Alto Amateur Radio Association
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 California 94026-0911

Club meetings are on the first Friday of each month, 7:00pm at the Room H-6, Cubberley Community Center.

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

Membership in PAARA is \$25.00 per calendar year, which includes one subscription to PAARAgaphs \$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

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ARV'S, W6UUT (SK)
 → WEDNESDAY ←
HAM RADIO LUNCHEON
 Our 11th year!
 - Starting February, 2018 -
BLACK BEAR DINER
Sunnyvale, California
 415 East El Camino Real
 (Just "North" of South Fair Oaks Avenue on El Camino Real)
11:30 AM ~ 3:00 PM
 Website: www.blackbeardiner.com

 Many food choices available from the breakfast, lunch or dinner menus. Ample parking is available. Walk in & "bear" left for our location in the restaurant!



 NOT A CLUB, CLOSED GROUP OR CLIQUE; AMATEUR RADIO OPERATORS AND FRIENDLY PEOPLE ARE ENCOURAGED TO ATTEND!
 Call in on the N6NFI Repeater, 145.230 MHz, PL^o 100Hz

Ilse Beck, E. A. , KI6IBM
 Beck Business Services

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PAARA W6OTX DMR Repeater Frequencies	
144 – 144.9625 up 2.5 MHz	DMR—NOR CAL Brandmeister Network
440 – 444.475 up 5 MHz	DMR
1.2G – 1284.15 down 12MHz	Off line
1.2G – 1249.15 half duplex	Off line

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Subscription Problems? Contact Database Manager: Jim Thielemann, K6SV,
 408-839-6815, thielem@pacbell.net

PAARAgaphs Ad Rates

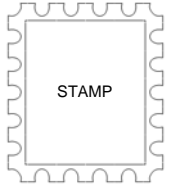
PAARAgaphs accepts paid advertisements from non-members. (short personal ads remain free for members in good standing). **All ad rates listed are per issue.**

- Not-for-profit ads by association members for ham-related items and wants. No cost for business card-size ads (additional space at \$2.50 per business card size per issue).
- 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 the association. The PAARAgaphs 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**

PAARAgaphs — April 2018

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 PAARAgaphs Newsletter
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FTM-400XD
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