

PAARAgraphs



The Official Newsletter of the

Palo Alto Amateur Radio Association, Inc.Celebrating 85 years as an *active* amateur radio club—*Since 1937*

“HF Propagation with a twist”

Mikko Sannala, AB6RF

I will present a few basics of the normal ionospheric propagation in a new light, and hopefully clear up some common misconceptions along the way. Then we'll take a closer look at the physics of the ionosphere, and how to read ionograms to get a real-time view into what the ionosphere is actually doing right now.

And to put all that knowledge into practical use, we'll talk a little bit about NVIS and circular polarization.

Bio.

Mikko Sannala, AB6RF, was born and raised in Finland and probably got the spark for everything radio from his late grandfather who was one of the early radio amateurs in the country. The 2nd World War put an end to grandpa's radio hobby. Mikko started his radio hobby by listening to international shortwave broadcasters during the Cold War, and did some illegal CB DX'ing before joining the local ham radio club in his childhood home town. He has a degree in Electrical Engineering, with emphasis in Communications Systems. In professional life, Mikko has worked as an RF engineer for com-

(Speaker — Continued on page 4)

**This meeting will be held at
Cubberly Community Center and Zoom
(See Ad Section for Location)**

Masks Are Required at Cubberly


Time: Feb 4, 2022 07:00 PM Pacific Time

<https://us02web.zoom.us/j/86847896468>

Login ID: First name and Call Sign

Meeting ID: 868 4789 6468

Upcoming Events

Feb 4***	PAARA General Meeting, 7:00 PM
Mar 4	In-Person and Zoom Meeting
April 1	*** IRL & Zoom Meeting 
Feb 16	Board Meeting, 7:00 PM.
Mar 16	Everyone welcome! Zoom Meeting,
April 20	eMail President for details!
Feb	Electronic Flea Market Cancelled

President's Corner

February 2022

I hope everyone enjoyed the Home Brew presentations at the January meeting. The presentations were both interesting and included a wide range of topics. Considering this was our 1st big meeting with most of the presentations being via zoom and members present IRL (in real life), I think it went reasonably well. There were a few technical snafus but I feel everyone enjoyed the meeting. What do you think? Please reach out to a board member if you have any comments about the meeting. Of note, there were only about 12 IRL participants and 42 on zoom! All but 2 of the Home Brew presentations were conducted using Zoom. We're guessing the low IRL turnout was largely due to concerns with the Omicron variant of Covid.

*(President — Continued on page 4)*

Repurposing for Ham Radio Hiroki Kato AH6CY

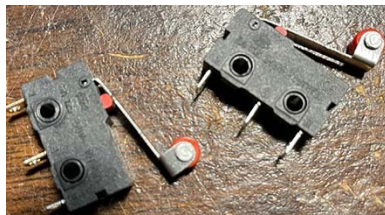
During the annual home brew night in January, 2022, I presented a portable vertical antenna



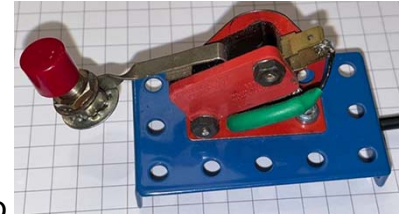
made of Illy coffee cans. Illy coffee cans (and other similar cans) could also be handy for other ham projects. I used one as an enclosure for the 2021 Pacificon QRP project called the Sputnik40 regenerative receiver.



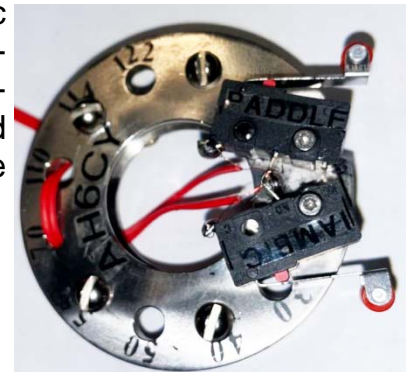
Microswitches are inexpensive, durable, precise and compact on/off switches. They can be used to build practical CW keys. My favorite micro-switch is this one with a small roller handle.



Here are a few straight keys I built.



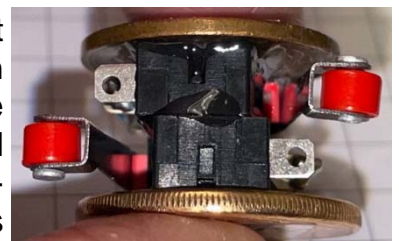
Here are two paddles for iambic keys. Two micro-switches are epoxied together and screwed to the base.



This one is made with two repurposed foreign coins sandwiching two micro-switches.



You may have noticed the lead wires (and plugs) are repurposed free earbuds that airlines give out on long distance flights. The round bases are repurposed metal pieces I picked up at flea market for pennies. I have no idea what they were originally for.



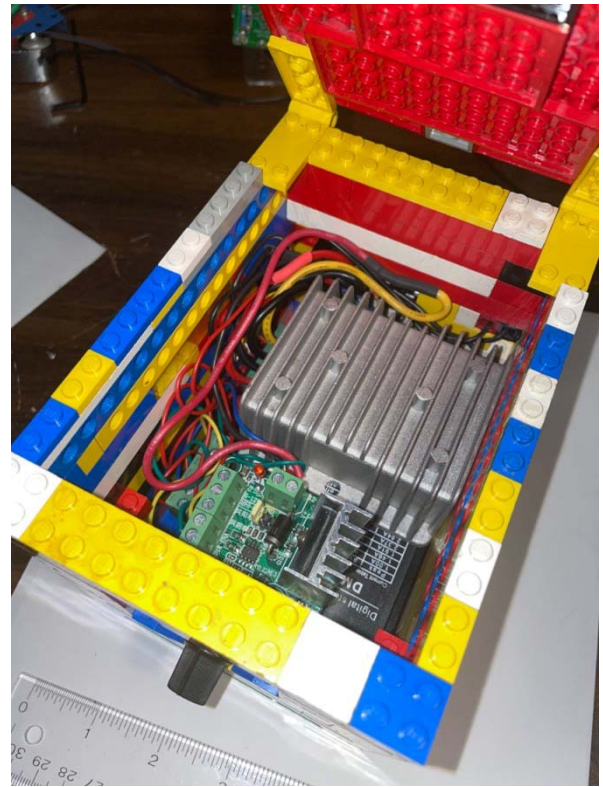
(Repurposing — Continued from page 2)

I have literally thousands of ERECTOR and LEGO toy pieces left by my kids and grandkids who have moved on to other playthings. I have built a number of enclosures for different ham projects using these toy pieces. Here are some of them.

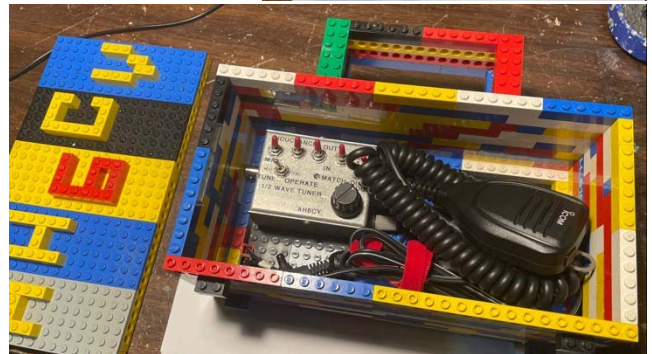


The receiver is a direct conversion CW receiver based on the Oct. 2021 QST article and the transmitter is the Tuna-Tin S based on the Dec 2020 QST article. Notice the translucent front dial cover of the transmitter is a repurposed hearing aid battery case.

I built the enclosure for the stepper motor controller using LEGO pieces for my home-brewed magnetic loop antenna. The hinge pieces allow it to open/close the cover easily.



This is a utility box with a handle made of LEGO pieces.



(Repurposing — Continued on page 4)

(Repurposing — Continued from page 3)



This odd looking thing is actually a pretty efficient 40-10 meter center-loaded high-Q vertical antenna made of a contractor's cardboard tube that was left over from my house remodeling project. I had a SSB QRP QSO with a W9 station on 40m from Palo Alto's Baylands Open Preserve.



-the end-

(Speaker — Continued from page 1)

panies like Rohde & Schwarz, Intel, Broadcom, and most recently Google.

He's licensed in Finland and in US, enjoys experimenting with antennas, building things, and rag chewing with anyone on HF, on DMR, or on the local repeater.

(President — Continued from page 1)

Please join me in thanking the following hams for their Home Brew presentations. Rich, W6APZ, home-made end-fed wire antenna. Andy, KR6DD, a follow-up to his flag antenna featured in the December issue of PAARAgraphs. Beau, K6EAU, Arduino DTMF generator. Joel, KD6W, pro camera mod to add an HDMI output. Joe, WB6JOE, low-cost solar panel, charge controller, and Lithium battery. Hiroki, AH6CY, coffee can antenna. Roy, KM6EOO, homemade GPS synchronized SDR radios. They all demonstrated the wide range of projects and interests hams get involved with.

From our good friend, Ron Chester, W6AZ, PAARA treasurer for 20 years, I received an interesting email. It seems back in the day, late 1800's, farmers created a method of communicating across their large ranches using telephones on their barbed wire fences. Now that's some early ingenuity! I liked the comment in the story regarding using the necks from broken soda bottles as insulators. Here are a couple of links for more information:

<https://www.texasstandard.org/stories/atrocious-but-efficient-how-ranchers-used-barbed-wire-to-make-phone-calls/>
 &
<https://rodgermarion.com/2015/03/04/barbed-wire-telephones/>

This story reminds me of the lightbulb antenna for RF. If you hadn't heard of it, some information can be found at:

<https://hamsignal.com/blog/light-bulb-antenna-basics-and-faq>.

Another interesting bit of news, "Scientists Built the World's Thinnest Antenna" out of DNA! This nanoantenna receives and transmits light, receiving in one wavelength and depending on the protein movement it senses, transmits light in a different wavelength. You may say that it can't be so but, here's the link to the story:

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https://www.sciencealert.com/scientists-have-made-the-tiniest-antenna-ever-using-dna?utm_source=ScienceAlert+-+Daily+Email+Updates&utm_campaign=39724b3286-MAIL-CHIMP_EMAIL_CAMPAIGN&utm_medium=email&utm_term=0_fe5632fb09-39724b3286-366094929

Not much use to amateur radio, but rather interesting nonetheless.

In ham radio, we are interested in the different layers of the atmosphere. We keep an eye out for what the sun is up to as it affects the various layer's ability to reflect radio waves and in turn our ability to make contacts to the far reaches of the earth. As we all know, on Jan 15th we woke up to a tsunami warning triggered by the eruption of a volcano in Tonga. What does that have to do with the atmosphere outside of throwing a bunch of ash into the air? It seems the event was detected by instruments far from Tonga, including satellites! Additionally, there was some disruption in radio waves due to the eruption. Scientists are now looking to see what effect the concussion waves are having on space. For more information see:

https://www.sciencealert.com/the-tonga-volcanic-eruption-was-so-powerful-it-sent-ripples-out-into-space?utm_source=ScienceAlert+-+Daily+Email+Updates&utm_campaign=4492931ebd-MAIL-CHIMP_EMAIL_CAMPAIGN&utm_medium=email&utm_term=0_fe5632fb09-4492931ebd-366094929

As mentioned in the last issue, the board discussed the recent radios acquired by PAARA from the last two SK's as well as some other equipment. As you'll read in the minutes, the board decided to hold off on any final decisions until a bit more information is gathered on the estimated current value of the items in our position. I know some members are interested in the list and we want to get it out so the inventory can be reduced. Several members of the

board are working on making that happen as expediently as possible.

As the February issue goes to press, I along with 3 others that I know of will be on our way to Quartzfest 2022 in Quartzsite, AZ. This is the 25th year it's being held but my 1st trip to participate. Not only am I looking forward to camping there for a week, but I'm also looking forward to connecting with a bunch of like-minded people. I haven't decided yet, but there's a possibility I'll stay down in that area for about a month so I can also attend the Yuma Hamfest. Kristen, K6WX, loves that show so I may just have to hang out for 3 weeks to see what the hubbub is all about.

At the end of Quartzfest is the Winter Field day, January 29 & 30th. I hope a number of you will participate in this event. It's a great way to start warming up for Field Day in June. Keep your ears open for those of us who operate from Quartzfest.

73, Jim K6SV

Get on the air to keep the airwaves alive!

Minutes: PAARA board meeting 1/19/21

Present were: President Jim Thielemann K6SV, Vice President Rob Fenn KC6TYD, Secretary Ric Hulett N6AJS, Treasurer Bob Korte KD6KYT, Board Members Darryl Presley KI6LDM, Doug Teter KG6LWE, Walt Gyger K6WGY. A quorum was present. The meeting was called to order at 7:12 pm.

President's Report: Welcome to the first board meeting of 2022. We all remember the folderol around Y2K, just 22 years ago! PAARA is 85 years old this year: We should have an event or activity to celebrate this anniversary. A POTA (Parks On The Air) may not be the best event, as there would be only a few operators, and quick QSOs. Possibly a special event station would be better, or a joint club multi-station activity. The best time would be around October: We hope that Covid will be under better control by then.

We will put together a survey to determine the level of member interest, with some options:

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(Continued from page 5)

Special Event Station, Member Operating Event, etc.

Secretary's Report: PAARA membership is 175. Over the last few months, we have gained several new members: Leigh Ann Weiland, K6WXO, Glenn Story KN6HHM, David KN6KBA and Stephen KN6KLA Lee, Mark Howitson KN6MCW, Wolf Witt KN6RDF and Jeff Kember KJ6SRJ. Welcome to you all!

We have 69 members who have not renewed for 2022: If that's you, please renew: Visit the membership tab at PAARA.org, or send your check to "PAARA Membership, P.O. Box 911, Menlo Park, CA 94026 "

Treasurer's Report: Our operating expenses remain low: This month we paid printing for PAARAgaphs. Bob is working with our bookkeeper to categorize checks and payments.

VP / Program Chair Report: Last meeting we had 14 people in attendance at Cubberley, and 42 folks on Zoom. This was good attendance in all, but the smallest in-person crowd we can remember.

The guest speaker for February will be Mikko Sannala AB6RF. His topic: "Propagation, With a Twist". The raffle prizes for February have been selected.

Old Business

PAARA President, Jim K6SV, repeated the urgent need for newsletter articles. Remember, it is member-created content that makes PAAR-Agraphs special!

Please jot down your recent ham experiences and ideas, even if brief, and send to Jim.

Education Committee, Rob: No action this month. Media program in progress. Need presenters, and a venue. We discussed possible topics, including 'getting over mike-shyness'.

Sheila Foley, our new accountant has the books up to date. Bob provided input on expenses and deposits so she could post them.

PAARA-owned equipment

Over time, PAARA has acquired a substantial store of amateur equipment. The board discussed how we should handle this gear. We

agreed informally that we should sort the gear into three categories:

- Gear for PAARA to keep (for Field Day, Pacificon Special Event Station, etc)
- Gear to sell to members or online
- Equipment to be scrapped. (Members will get a chance to pick over the scrap pile before it's gone)

Ric N6AJS has created a roster of gear and shared with the board.

The board will address this further at the February board meeting.

Ric will contact Diana Lloyd (widow of Cliff, KN6DH) about removal of antennas from her house.

New Business

Rich W6APZ wants to put up a beam. The club will offer guidance and help with this.

Jim is attending Quartzfest this month. If he is not back in time, Rob KC6TYD will conduct the PAARA meeting on February 4.

The meeting was adjourned at 8:42 pm.

Respectfully submitted

Ric Hulett N6AJS

Member Equipment Sale

Rich, W6APZ

Contact W6APZ@comcast.net to purchase or for more information.

For Sale: 1.2 GHz Yaesu FT-911 HT. It puts out 1 Watt on the band and works well. HTs for this band are not readily available. My rock-bottom price is \$145. Manual with specs Available.

This HT can work (with or without the battery) with the Yaesu PA-6 from the 12 Volt car socket or any 12 Volt supply. This Adapter/Charger also works with other Yaesu battery packs. It also works with the other Yaesu HTs such as the FT-411 and FT-811. This has been very lightly used and is in like new. My rock-bottom price is \$15.

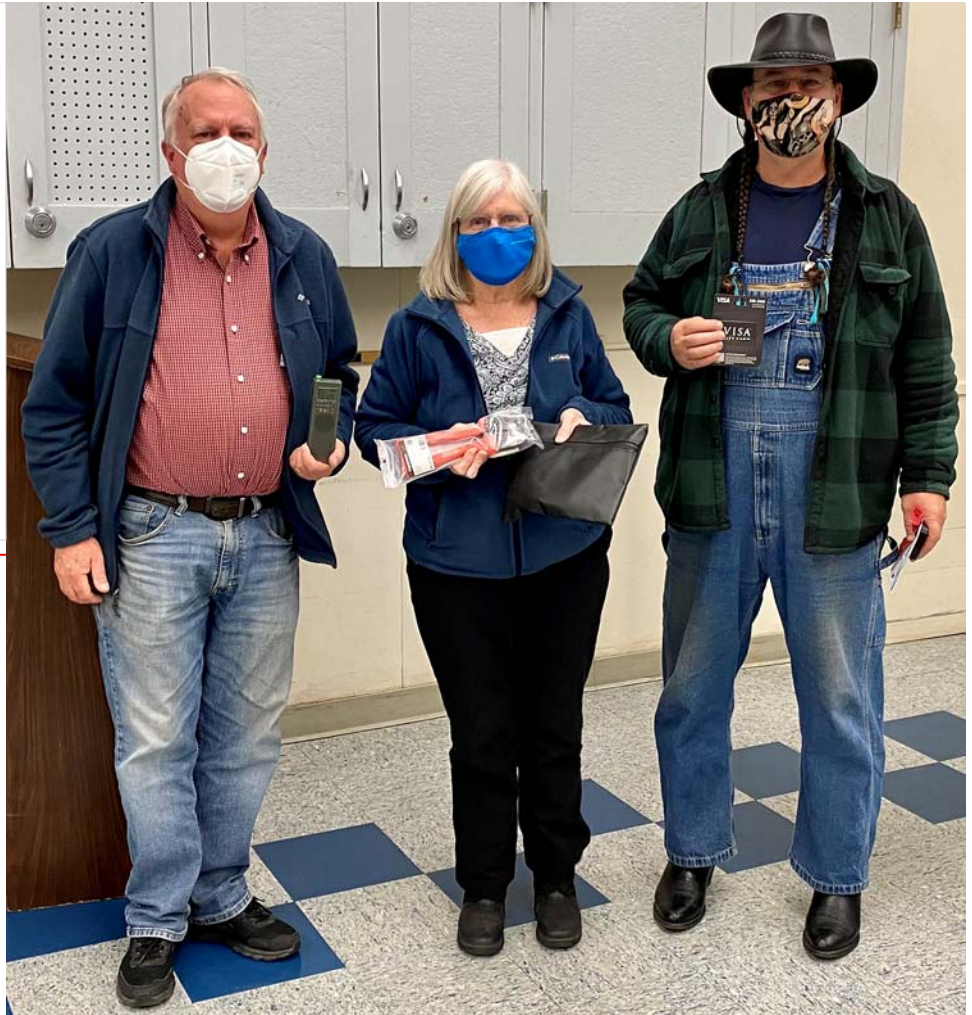
In addition, I have the M2 23CM22EZB, 1250-1300 MHz, 18.2 dBi Yagi antenna that has been inside all the time I've had it except for field days. This is the same antenna used at W6YX according to their website. To purchase this antenna from M2 would

(Sale — Continued on page 7)

January Raffle Winners

Left to Right

- 1st Ric N6AJS, County-comm GP-5B/SSB
- 3rd & 4th Karen KK6NGA, Powerwerx TRICRIMP & Countycomm EDC Items
- 2nd John KJ6JPS, \$60 Gift Card



Feb Raffle Prizes

1st Surecom SF401 Plus 27Mhz-3000Mhz Radio Portable Frequency Counter Meter with CTCSS DCS Decoder



2nd OLIGHT Swivel 400 Lumens LED Compact Rechargeable Magnetic COB Work Light



3rd Uniden (BC20) Bearcat 20-Watt External Communications Speaker



4th IRWIN VISE-GRIP Wire Stripper, Self-Adjusting, 8-Inch



(Sale — Continued from page 6)

cost you \$338 Plus tax and shipping which comes to about \$378. It is in excellent condition. My rock-bottom price is \$225 which is a very good deal. Specs Available.

For mobile use, I have the Diamond NR200NA, tri-band antenna that covers 2, 440, and 1.2 GHz. It offers 3.15 dB gain on 2 meters, 6.3 dB gain on 70 cm (440), and 9.7 dB gain on 1.2 GHz. This is an unusual high gain mobile antenna, IF you can find it for sale. It lists for \$85 from DX Engineering, with a long wait time. It would cost you \$93 with tax and delivery. My rock-bottom price is \$55, and it's immediately available and in excellent condition.

I can supply the manuals for the above, just ask: W6APZ@comcast.net

EDH-11: 6xAA battery case for ALINCO DJ-580, DJ-180, DJ-280, DJ-480, DJ-582 etc. This case can hold six AA batteries to power your Alnico at 9 VDC. This case is not new, but is in excellent working condition. The List price (if you can find one new) is \$29, but I'm willing to let it go for only \$10.

Palo Alto Amateur Radio Association, Inc.

PO Box 911 Menlo Park, CA 94026

Officers

President	Jim Thielemann, K6SV	408-839-6815
	thielem@pacbell.net	
Vice President	Rob Fenn, kc6tyd	650-888-9060
	kc6tyd@gmail.com	
Secretary	Ric Hulett, N6AJS	408-332-4593
	energyconserved@sbcglobal.net	
Treasurer	Bob Korte, KD6KYT	408 396 4745
	bob@rgktechsales.com	

Directors

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	kd6w@arrl.net	
Director ('20-'21)	Walt Gyger, K6WGY	408-921-5901
	walt@tradewindsaviation.com	
Director ('21)	Doug Teter, KG6LWE	650-367-6200
	dteter@wci.com	
Director ('21)	Darryl Presley, K16LDM	650 255-2454
	ki6ldm@arrl.net	

Appointed Positions

Membership	Vic Black, AB6SO	650-366 0636
	ab6so@smrn.com	
Database	Ric Hulett, N6AJS	408-332-4593
	energyconserved@sbcglobal.net	
Chaplain	Rick Melrose K6RDM	408-341-9070
	K6RDM@yahoo.com	
Public Affairs	<i>Position Vacant</i>	
Station Trustee W6OTX, W6ARA....	Gerry Tucker, N6NV	
Station Trustee K6YQT...	Doug Teter, KG6LWE	650-367-6200
Station Trustee K6OTA...	Ron Chester, W6AZ	
Property Manager	Gerry Tucker, N6NV	
Badge Coordinator	Doug Teter, KG6LWE	650-367-6200
	dteter@wci.com	
Historian Position	<i>Position Vacant</i>	
Raffle Coordinators	Rob Fenn, KC6TYD,	rtyd@aol.com
	Shrikumar, KA6Q	
	shri.paara@enablers.org	
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	408-839-5948
	kd6w@arrl.net	
QSL Manager	Marty Wayne, W6NEV	408-234-8023
Speaker Coordinator	Rob Fenn, kc6tyd	650-888-9060

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	walt@tradewindsaviation.com	
Member Profiles	<i>Position Vacant</i>	
Technical Tips	Vic Black, AB6SO	650-366 0636
	ab6so@smrn.com	
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.k6ya.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

50 MHz & Up Group

Meets 1st Thursday each month at 7pm in the Summit Room at the Sunnyvale Sports Basement, 1177 Kern Ave, Sunnyvale
 Contact: <http://50MhzandUp.org>

San Mateo Radio Club W6UQ.ORG

Meets, 3rd Friday, January through November
 Tuesdays, [Directed] Net, 7pm, N6ZX 145.370Hz -600KHz PL107.2Hz
 Contact: <http://W6UQ.org/calendar>

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, 10M (28.385) 8PM Thur.
 Meets 2nd Mon each month @ 7:30 PM.
 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 KB6UOO, (408) 967 7924 shensley@Novell.com

(Please send changes to PAARAgaphs editor)

EXCESS SOLUTIONS

ELECTRONIC SURPLUS MEGA-STORE!

We have completed our move, you should visit to see the new store!

- ✦ That's right...Excess Solutions in San Jose recently lost the lease on their old site as the property was sold. We have moved to new premises very nearby at the far end of S. Seventh St., just before Tully Rd. It's easy to find!
- ✦ Techs, Developers, Experimenters, Hobbyists and Creators will once again have access to the basic electronic parts, hardware and infrastructure that Silicon Valley was built upon!
- ✦ Support your local surplus store...there are few left, and you know how much this vital Silicon Valley resource is needed!

Hardware - Nuts - Bolts Screws
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 Springs - Feet - Clips - Motors

Computers - Monitors
 Modems - Cases
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 Semiconductors - Wire
 Switches - Relays - Cables
 Capacitors - Shrink Tubing
 Fiber Optics - Connectors

Tech Benches - Work Stations
 Conference Tables - Desks
 Chairs - Kiosks - Lunchroom
 Furniture - Other Office Items

Tools - Wrenches - Sockets - Pliers
 Screw & Nut Drivers - Arbor Presses - Solder &
 Desolder Equipment - Test Equipment

Security Cameras - Shelving
 Lighting Systems
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 Process Equipment

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 San Jose, CA 95112

(Approx. 5 blocks down Seventh St. from old site!)

1-408-262-3900 --or-- visit us online!

Web: www.excesssolutions.com


eBay Stores: "excess-solutions"



Store Hours

Mon. - Thur. 8:00 - 6:00, Fri. 8:00 - 5:00, Sat. 10:00 - 3:00





James Farrey
 Sales Manager

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 Direct: 650•802•1511 jfarrey@jameco.com

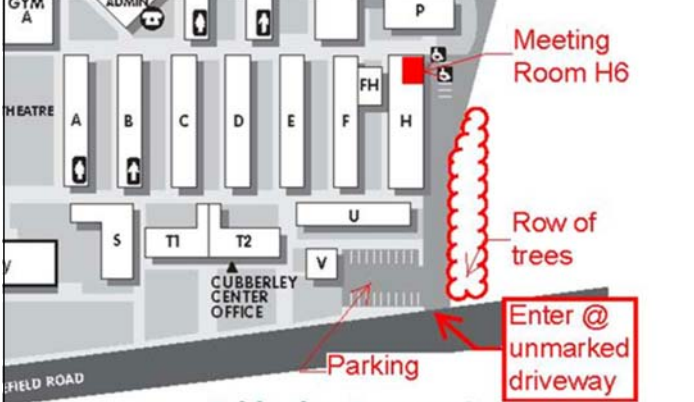
www.jameco.com

PAARA Weekly Radio Net

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

Week	Control Operator
1 st	Joel - KD6W
2 nd	John - W6JMK
3 rd	Ric - N6AJS
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

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 KJ6GUK General License, PAARA member
 777 Woodside Rd., Suite B, Redwood City, CA 94061
 Email: KARLDRESDEN@juno.com

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 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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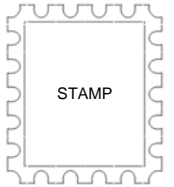
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PAARAgaphs — February 2022

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