



PAARAgraphs

Celebrating 62 years as an active ham radio club—Since 1937
Newsletter for the Palo Alto Amateur Radio Association, Inc.



CALENDAR

- Dec 3, **PAARA Meeting, 7:30**,
Menlo Park Recreation Center
700 Alma Street, Menlo Park
 - Dec 8, **PAARA Board Meeting, 7:30**
Red Cross Bld., 400 Mitchell Ln., Palo Alto
 - Jan 7, **PAARA Meeting, 7:30**
 - Jan 12, **PAARA Board Meeting, 7:30**
 - Jan 14, **PAARA Winter Party**
"Michaels At Shoreline Restaurant", 2960 N Shoreline Blvd, MtView
 - Feb 4, **PAARA Meeting, 7:30**
 - Feb 9, **PAARA Board Meeting, 7:30**
- 2 m CODE PRACTICE, 2000 to 2030 PST Tues
W6APZ 145.23 repeater



PROGRAM

December 3, 1999
7:30 P.M.

Speaker:

Dick Kors, KM6EP
"MINI-SATELLITES"

Join us for pre-meeting eyeball
6 pm— at Su Hong Restaurant , 1039 El Camino Real, Menlo Park

—PAARA Radio NET every Monday evening at 8:30 P.M., local time—
on the 145.230 -600 MHz repeater, PL tone off



PAARA PONDERINGS

de VIC BLACK, AB6SO

Congratulations to new PAARA member **John Coker** for his new callsign **KF6ZEZ**. Also congratulations to PAARA member **Andy Korsak** for his new sequential callsign **KR6DD**.

Rich Tidd KE6HNY from the San Mateo Co. Sheriff Office of Emergency Services reports new DTMF codes for the **KE6TPH 146.865 (-114.8)** repeater Emergency Auto Patch. To access the speed dial codes, simply key up, identify yourself, input the code numbers desired using your DTMF pad, then unkey. Code *910 dials the telephone Operator. Code *911 dials the San Mateo County "9-1-1 Emergency" dispatcher and is strictly for Emergency Use Only. Code *912 calls the "AAA Emergency Road Service 1" Toll-free 1-800-222-4357 (for AAA Members Only). Always identify yourself as calling from amateur radio. Otherwise the dispatcher's caller ID will think you are located at the repeater site. Don't forget to end your call with #. This will hang up your call. These are the same access codes as the SCARES repeater 444.500 + no PL. The numbers are available to anyone 24 hours per day, 7 days per week. A new repeater controller is being installed. We'll keep you informed if these codes change. Remember that these tax supported speed dial codes are for emergency use only and are not to be abused. Abuse 'em and lose 'em.

For a copy of the 145.230 Repeater Emergency Autodial codes, send a copy of your license with a Self Addressed Stamped Envelope to: 523 Repeater, P.O. Box 391288, Mountain View, CA 94039-391288. The repeater is located at 500 feet elevation near the big radio astronomy dish you can see from I-280 on the hill behind Stanford. It has excellent coverage throughout the Bay Area.

Are US ham call signs being sold? Several hams and ham families, acting as trustees, have acquired a large number of "club" calls. Many of these "clubs" include only one active

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Miscellaneous Dates

Flea Market at Foothill (info at: <http://joslin.com/FleaMarket>)
 Watch for schedule in the Spring

PAARA Palo Alto Amateur Radio Association
 meets 1st Friday 7:30 each month, Net 145.230 each Monday 8:30,
 contact: Andreas Junge N6NU.....(650) 233 0843

EMARC Electronics Museum Amateur Radio Club
 meets 4th Friday 7:30 each month,
 contact: Sheldon Edelman 650-858-2176, Edelman@richochet.net

NCDXC Northern California DX Club
 meets 2nd Friday 7:30 each month, repeater for member info 147.360, Thur 8:00PM,
 contact: Bob Mammarella KB6FEC 408 729 1544.

NorCalQRP Northern California QRP Club
 meets 1st Sunday each month,
 contact: Jim Cates 3241 Eastwood Rd., Sacramento, CA 95821.

Perham Foundation,
 contact: Jerry Tucker WA6LNV 650-961-3266

SPECS Southern Peninsula Emergency Communication System
 meets each Monday 8:00PM on Net 145.27, 440.80 MHz, www.specsnet.org
 contact: Tom Cascone, KF6LWZ, 650-688-0441 .specs@svpal.org

SCARES South County Amateur Radio Emergency Service
 meets 3rd Thursday 7:30 each month, San Carlos City Hall.
 Net is on 144.45 & 444.50 (PL-100) 7:30 Monday evenings.
 contact:

SCCARA Santa Clara County Amateur Radio Association
 Operates W6UU repeater 146.385+ Nets: 2m, W6UU, 7:30 Mon; 10m,
 28.385, 8:00 Thur. meets 2nd Mon each month.
 contact: Jack Ruckman AC6FU

SVECS Silicon Valley Emergency Communications
 Operates WB6ADZ repeater (146.115 MHz+)
 contact: Lou Stierer WA6QYS 408 241 7999

WVARA West Valley Amateur Radio Association
 operates W6PIY repeater 147.39+, 223.96, 441.875, 1286.2
 meets 3rd Wed every month.
 contact: Glen Lokke Jr. KE6NBO at 408 971 8626, or glokke@pacbell.net

Disaster Services,
PALO ALTO CHAPTER, American Red Cross
 Meets 3rd Wed. each month 7:30PM,
 HF, packet, BBS, ATV, OSCAR Gateway, NASA satellite,
 contact: Alan Ball 650-688-0423.
SAN JOSE CHAPTER, American Red Cross
 contact: Scott Hensley KB6UOO, 408 249 7093, fish@richochet.net

VE Exams, 3rd Saturday each month, 11AM, 145.23- PL=100Hz
 American Legion Hall, 651 El Camino Real, R.C.
 contact: Al Montoya at WB6IMX@worldnet.att.net

Palo Alto Amateur Radio Association, Inc.
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andreas@attech.com

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vic.black@adept.com, ab6so@smrm.com

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ARES Officer.....Lily Anne Hillis, N6PGM(650) 325 5484

Club Historian.....Steve Stuntz, K6FS.....(650) 322 4952

Advertising.....Bob Korte, KD6KYT.....(650) 595 1842

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andreas@attech.com

*New Committee 12/98

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 Terry Conboy, N6RY (925) 944 5388 '99
n6ry@qsl.net
 Steve Stuntz, K6FS (650) 322 4952 '99
 Doug Schliebus, K1DIT (650) 851 0727 '00
schliebus@aol.com
 (see "Calendar" for Board meeting times, visitors welcome)

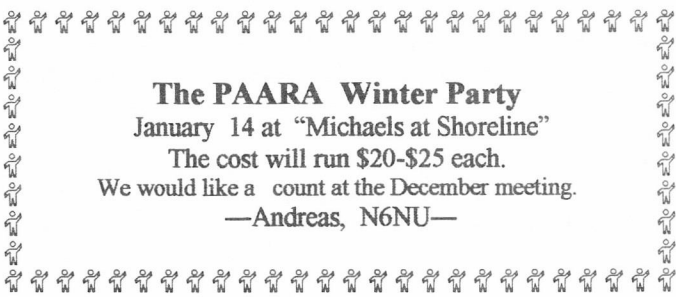
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PAARA Website <http://www.qsl.net/paara/>

December Contest Calendar 1999

~Vic Black, AB6SO~
 (for rules and exchanges, see www.contesting.com)

- 3-5 ARRL 160-Meter Contest 2200Z, Dec 3-1600Z, Dec 5
- 4, 5 TARA RTTY Sprint 1800Z, Dec 4-0200Z, Dec 5
- 11, 12 ARRL 10-Meter Contest 0000Z, Dec 11-2400Z, Dec 12
- 11 OK DX RTTY Contest 0000Z-2400Z, Dec 11
- 18, 19 Croatian CW Contest 1400Z, Dec 18-1400Z, Dec 19
- 26 RAC Canada Winter Contest 0000Z-2359Z, Dec 26
- 31-1 Internet CW Sprint 2300Z, Dec 31-0100Z, Jan 1



The PAARA Winter Party
 January 14 at "Michaels at Shoreline"
 The cost will run \$20-\$25 each.
 We would like a count at the December meeting.
 —Andreas, N6NU—

Cell Phone Privacy

This information appeared in the August 28th (electronic) edition of the New York Times —ARNS

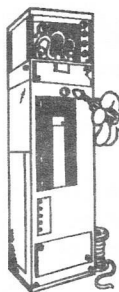
Federal and local agents can already monitor cellular phone calls after obtaining a court warrant. But under the rules announced Friday by the Federal Communications Commission, they will also be able to determine the general location of a cell phone user by identifying which cellular antenna was used by the phone company to transmit the beginning and end of any call under surveillance.

The rules will permit agents to identify all callers on a conference call and monitor such conversations even after the target of the inquiry is no longer part of the conversation. And they will enable agents to determine whether suspects are making use of such common cellular phone features as call forwarding and call waiting.

Although the number of intercepted communications approved by federal and State courts over the last decade has nearly doubled, reaching 1,329 last year, law enforcement officials say they have had difficulty keeping up with the explosive popularity of cellular phones. Senior officials at the FBI have spent years seeking new authority beyond just monitoring the calls as mobile phones have become inexpensive and ubiquitous.

At the same time, privacy advocates have warned that broad-

(Continued on page 113) Cell Phone



WEB WANDERINGS

de Vic Black, AB6SO

Recently the FCC has been slow in processing vanity call sign requests because of problems with its new computerized Universal Licensing System, or ULS. A good site to check the status of your application is <http://www.carroll-usa.com/vanity> maintained by **Michael Carroll**.

The site lists vanity call signs awaiting FCC action, soon-to-be available call signs along with links to the FCC call sign guidelines. It lists available call signs by format including 1x2, 2x1, 2x2, 1x3, and 2x3. There's also a listing of interesting creative call signs including the Hawaiian special event station I work each year, AL0HA, but not including the station I look for each year from Christmas, Arizona, N0EL.

Bill Heinzinger W9OL from Harwood Heights, a Chicago suburb, has made a chart with the required number of IRC's (International Reply Coupons) or Green Stamps (i.e. US Dollars) needed by foreign hams to return an envelope containing a QSL direct to the US. His chart is at <http://www.dataflo.net/~w9ol/IRChart.txt>. Bill also lists the amount of local currency that \$1.00 US can be exchanged for. Sometimes \$1 US isn't enough to buy one unit of postage. Some countries don't accept IRCs and still others charge more than \$1 to exchange \$1! Bill lists this information when known.

We've been following the antics of **Jim Hale KJ5TF** with great interest. Remember that Jim has been trying to attain WAS (Worked All States) using a combined total power of less than one watt (i.e. average 20 mW or less per QSO). Here's a short note from Jim with his final announcement. "Thanks to everyone for the encouragement these past months. Tonight 10/27/99 I reached my goal of working all 50 states with less than 1 watt total. Thanks a lot to **John K1JD** in RI, and **John NU0V** in IA for tonight's skeds. **K1JD** and I got down to 50mW on 20M, and **NU0V** & I got down to 30mW on 40M. My previous power for RI was 100mW and 150mW for IA. I was standing at 1.105w, and knocked off 170mW in these two skeds. Check my website for the updated link near page bottom. Next: mW DXCC! 72/3's and sometimes 71's! de **Jim KJ5TF** <http://www.qsl.net/kj5tf>. Milliwattting Editor ARCI QRP Quarterly and member of the Arkansas QRP Club."

Stamp collectors who are interested in topicals will be pleased to note that a limited edition ham radio stamp is being issued to commemorate a DXpedition to **Rowley Shoals**. The stamps will be sent only to hams and SWLs and so will be a rarity. **Mal Johnson** has requested that the following message be distributed to all amateurs worldwide. "Today I received confirmation from 'Australia Post' that they will print a limited quantity of special legal 45 cent Australian postage stamps. This will be a dual stamp featuring **VK9RS** on the **Rowley Shoals**, September, 1999. For those Amateurs who are interested in stamp collecting, the legal stamp will be available in 4 weeks time. Mailed on a returned envelope to Amateur Radio operators and SWLs only, the stamps commemorate our historic 'VK9 Rowley Shoals DXpedition'. Requests by email:

vk6lc@iinet.net.au or postal address:

9 Abinger Road, Lynwood, 6147, Western Australia. **VK9RS** Manager **Malcolm K.**

Johnson VK6LC, 29 October, 1999."

From Dec 31, 1999 to Feb 29, 2000 the members of Cray Valley Radio Society (CVRS) will celebrate the Millennium from the Greenwich Meridian in London using special event call sign M2000A. They will operate using 5 stations on HF, 6m and 2m. QSL via G4DFI at owen.g4dfi@virgin.net. For further information contact **Bob**, BRS-32525 at brs32525@compuserve.com or visit their web site at <http://www.qsl.net/m2000a>. If you plan to visit London during that time, you may become a temporary member of their club for \$4 and operate the station. Note that Jan 1, 2000 IS NOT the start of the new millennium. The general public thinks it is, though, because the news media has misled the public. Maybe the CVRS is celebrating the end of the old Millennium.

Honorary PAARA member **Kenny Silverman K2KW**, who spoke to PAARA about the world record breaking 6Y2A contest DXpedition, reports that their contest group, Team Vertical, will once again enter the CQ World Wide CW DX Contest on all six bands using only Force 12 vertical antennas. This year they will operate multi-multi from Coche Island (IOTA SA-012) using call sign 4M7X. From November 20 to December 1 they will sign using YV7/homecalls. Team members are **N6BT**, **N6BV**, **N6TV**, **KE7X**, **AG9A**, **K9ZO**, **NT1N**, **W4SO**, **K2KW**, **AD6E**, **YV5EED**, **WA5VGI**, plus others. QSL 4M7X, YV7/K2KW, and YV7/W4SO via **WA4WTG**. QSL others via their homecalls.

Information about 4M7X and the 6Y2A operation is at the Team Vertical web site at <http://pages.prodigy.net/k2kw> or contact k2kw@prodigy.net. Note that prefix 4M7 is new to CW so you'll want to snag it if you are working for WPX (Worked All Prefixes). Earlier, team member and Force 12 owner **Tom Schiller N6BT** spoke to PAARA about the first amateur radio operations from Myanmar (Burma) in over 40 years.

During Show and Tell at the November PAARA meeting, **Dick Kors KM6EP** gave us a preview of his planned talk for the December meeting. Dick has been acting as an advisor to the Orbiting Picosatellite Automated Launcher (OPAL) program at Stanford along with PAARA members **Bill Rausch AA6PA** and **Lars Karlsson AA6IW**. OPAL exposes graduate students to the design, construction, testing and operation of satellites with objectives of building and launching satellites for less than \$50,000 in less than one year.

The launcher consists of a mother satellite, which will eject daughter picosatellites once it achieves orbit. **Dick** showed us some picosatellites carrying ATV and \$88 Alinco HTs that had been repackaged in Coke cans and tested by going aloft in rockets from the Black Rock Desert east of Gerlach, Nevada. The Stanford program is under the tutelage of **Bob Twiggs** who spoke to PAARA 3 or 4 years ago about his students' work in launching the Webersat ATV satellite from Weber State University. For background information about **Dick's** talk, visit the group's web page at <http://ssdl.stanford.edu/opal/index.html>.

Magazines. They come and they go. Word has just been received that CQ-VHF will no longer be published. It originally was spun off of CQ in order to appeal to Technician Class op-

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member. One individual was issued more than 40 call signs. The most egregious offenses involved desirable vanity call signs or 1x2 and 2x1 Extra Class exotic call signs, such as for Guam and the Marianna Islands. When I downloaded the first 100 Extra Class Guam licenses from the Internet, about 80 - 90% were issued to foreign addresses. This has upset Guam hams since there are no more Extra Class call signs left for the residents. How did so many calls get issued to foreign hams? What are they being used for? Are they for sale much like registered Internet domain names, which are owned by "cybersquatters"? How can they be sold?

The VEC system allows Extra Class hams to set up VEC operations outside the US. This helps US citizens living abroad, and others, to test for licensing or upgrading without traveling to the US. FCC rules don't require citizenship to earn a US license. Let's look at a hypothetical situation.

Suppose a Japanese amateur travels to Guam, gets a US Extra Class license then goes back to Japan and sets up a VEC operation. Now any Japanese operator can go to him and test for a US license so long as he has a US address. If the address provided is in Guam (typically the QSL bureau), the new licensee can request a Guam prefix. When the license is sent in the US Mail, it turns out that the US address is no good so the license isn't delivered. Then the licensee requests an address change to his Tokyo address and a replacement Guam license is automatically sent there.

Now the newly licensed ham, as trustee, can request club call signs with Guam prefixes for non-existent clubs. It would be easy then to "transfer" the call (i.e. offer the call signs for sale) to anyone who wants to be trustee for one of the exotic club licenses to use for contesting. There is no direct evidence yet that this has happened, but there is no other explanation for why one person would want as many as 40 Guam call signs. **Riley Hollingsworth**, the FCC's head rules enforcer, has been busy recently going after people who abuse the call sign system in the US. Many excess club call signs have been voluntarily surrendered, but other suspicious call signs still remain and are being investigated. Time will tell if the scenario I just painted is actually at work. Stay tuned for more news later (film at 11).

Is the end of the world (as we know it) near? A new perceived threat to the ham bands is called "Home Phone Networking" technology. This new technology transmits computer data signals over existing home telephone and AC mains wiring. Because it modulates data signals at 5.5 to 9.5 Mhz, and is literally transmitting an HF radio signal using unshielded phone wires as transmission lines, many hams feel that the 40 meter amateur band has just become a shared band with high speed data services. The networking technology is eventually expected to use the entire HF spectrum up to 30 Mhz.

The fear is that the networking signals will raise the noise floor to the point that the 40 meter band will be unusable. In addition, there is a concern that hams will interfere with computer, Internet and TV signals to the point that the overwhelming mass of consumers will demand an end to 40 meter use by hams. Telephone companies are eager to offer the new services to their customers so they can compete with cable TV systems. This is occurring at a time when the FCC is in transition from an industry regulator to a market facilitator.

My thought is that if this is truly a problem, the RFI is going to come from and interfere so badly with the consumer products themselves that the system will collapse under its own weight, regardless of ham radio. Who will the consumers complain to when it's the same service (at their neighbor's house) that they are subscribing to that's causing the trouble with dropped bits on their digital TVs?

A note from the owner of the new Red Hot Radio Co. may help ease our concerns. "Guys, panic not! I work for the company that makes the chips that everyone is using for the new 10Mbps home networking technology that's now on the shelves in the computer stores. There are several other hams on the technical committee that specified this stuff, too. Without going into details, which I'm not allowed to do, I can tell you that there is a large notch filter on both the TX side and RX side that covers the 40m band completely. I made sure of it! In fact, the signal levels are so small that the TX filter isn't really required. Outside of 40m the signal is pretty much undetectable, too. Real-life tests prove the theory that 40m ingress and egress on the 10Mbps system are non-issues. Ham radio doesn't particularly bother it and it doesn't bother ham radio at all. Important, yes. A problem, no. **Dave Fifield, AD6A.**"

On the weekend of October 30/31 the PAARA Mobile Special Interest Group gathered at the local RF "hot spot", Cañada College, for the CQ World Wide Single Side Band DX Contest. Most of our Mobile Expeditionary Forces members are not truly competitive contesters so the main idea was to have fun working DX on a sunny afternoon. We circled the wagons together and operated on 10, 15 and 20 meters using Hamsticks, Screwdriver antennas and **Ron Carmichael's** 3-element tri-bander on a portable mast.

Propagation was superb following a geomagnetic storm earlier in the week. Even operating from batteries on low power (to prevent car-to-car interference) into less than optimum antennas, we were able to work Europe, Africa, Asia, North and South America and Oceania simultaneously. Conditions were so good that **Jeff Steinman N5TJ** operating the EA8BH station as a single operator entry, reportedly worked more than 10,000 QSOs during the 48-hour contest. He passed the previous QSO record 33 hours into the contest.

Participants at the Cañada College parking lot included **John Coker KF6ZEZ**, **Jon Zweig AD6FX**, **Ron Carmichael KQ6RS**, **Gerry Williams KA6VCD**, **Andreas Junge N6NU**, **Krishnan Yegnashankaran N6ZPX** and **Vic Black AB6SO**. **Steve Jeffrey W9ABZ** set up on 6 meters to work some Northern California locals. German visitor **Gerd Sapper DJ4KW**, who just finished a DXpedition to the Maldives Islands, used his US call **AC6YM** and a new Elecraft K2 to rag chew QRP throughout the US on his preferred mode, CW, on the non-contest 12 and 17 meter bands. **Gerd** is one of the three founders of the international High Speed and Very High Speed CW Clubs in Europe.

Did you ever get the impression that the bands "should" be open, but there just wasn't anyone there? On Sunday at precisely 4 p.m. local time the DX contest ended. Ten meters, from 28.3 to 28.7 MHz, had been wall-to-wall S9 signals from all over the world. Suddenly, after some "Thank Yous" and "Bye-Byes", the band went completely silent. Very eerie. ☺ ☺

ROTORS

From the Web pages of Craig Henderson-N8DJB, C.E.O. of Rotor Doctor. This appeared in the August-September 1999 edition of the "LOG", the newsletter of the West Park Radiops, Glenn Williams-AF8C Editor. —ARNS

The general line of bell rotors was developed at Cornell-Dubilier Electronics about 1950, starting with the TR-2 and TR-4 series of rotators designed for the newly popular directional TV antennas. As Ham Radio antennas became larger and larger during the 50's, the need for larger rotators became evident. So sometime about 1956, work started on a heavier design with a separate brake feature to keep the antennas from windmilling.

The Ham-M was the result of beefing up considerably the TV rotator design with stronger, heavier gears, the wedge brake, and an improved south-centered meter marked in degrees from 0 to 360. The first Ham-M's, series 1 and 2, debuted in November, 1957 and used a wiring format that was different and not compatible with later units.

Ham-M series 3 showed up late in 1959 after numerous complaints about the wiring, meter flutter and the backward scale. Series 3 revised wiring DOES MATCH the current models. There is an improved grounding system for the meter feedback circuit, and a north-centered scale. Ham-M's continued until 1974 through Series 4 and 5 with minor improvements in reliability.

HAM-2 or HAM-II debuted around 1974-1975. Aside from rumors, the most logical explanation for the change was a reworked design for the separate brake control because as antennas continued to grow in size, the instant stopping feature of the older style was causing more and more breakdowns. The rotator units were the same. The new control was larger, therefore lending itself nicely to later options. Early Ham-II control covers were two shades of brown; later model covers were black and white. Both controls had a gold faceplate and three plastic levers for direction control, along with front-mounted calibration and on/off switches.

HAM-3 or HAM-III came out in the spring of 1977 to fulfill the needs of contesters and other big-guns whose antennas continued to get yet larger. The wedge brake style which had served so well for almost 20 years was being overloaded more and more often by monoband yagis with boom lengths larger than the average tri-bander. The pointed steel brake wedge evolved into being squared off on the end. A new brake housing design was built to match. This was an incredible improvement, and is still being used. Also at that time, the control was modernized internally with a printed circuit board to replace the old point-to-point wiring style. A disc pre-brake was also added to the motor to stop coasting.

HAM-4 or HAM-IV came soon after the Ham-3, about January 1979, because all these new larger antennas tended to break the die-cast ring gear used until then. The improvement consisted of making the ring gear out of low-grade stainless steel machined to match other gears and the main casting. The other most noticeable change was the switch to black plastic covers on the control unit, with a black faceplate.

Other changes within the next few years included changing the old rotary on/off switch to a toggle switch and redesigning

the indication potentiometer to improve the grounding for more reliable meter indication.

In 1981, TELEX-HYGAIN bought the rotator portion of CDE and continued to build the world's most popular rotators, the Ham-4, T2X, and several smaller models. However, as the years progressed, the material in the brake wedge somehow changed, and problems started to develop (such as broken wedges) in 1985. Late in 1987, C.A.T.S. produced some hardened steel wedges and Hygain followed suit in November of 1988. This was the last major change to date on this series and its popularity continues.

Starting in September 1977, CDE produced a restyled unit commonly called the T2X or TailTwister. It used much heavier castings, was painted a flat black color, and contained an extra row of ball bearings located at the bottom of the a thicker brake casting. Therefore, the T2X rotator will support heavier antennas, and is much more tolerant of side thrust when pipe-mounted with a lower adapter. Originally, the T2X had a specially-made wedge that was much different than the smaller models, but this proved to be a problem. After several different designs the whole brake assembly was changed in 1984 to a similar, but not identical system like the Ham-4. One point worth mentioning is that all internal components such as the motor and all gears are the same as the HAM4. This is not widely known. The only other change from the HAM-4 is the use of LED indicators in the control for showing activation of the brake and direction levers. ☺ ☺ ☺

(Continued from page 110) Cell Phone

ening the ability of law enforcement to monitor more than simply the content of such calls would be deeply intrusive. Law enforcement officials have asserted that since the location of wired telephones was already public information; there is no intrusion of privacy in determining the location of wireless phones.

The telephone industry was also resistant to change and had sought to delay some of the technical changes in their systems that were announced Friday on the ground that they would be too expensive to implement. Industry executives said Friday that they would be unable to meet the regulators' timetable and thus would seek permission to delay complying with the new rules.

Friday's ruling was a clear victory for the law enforcement groups and a setback for the privacy organizations. The decision follows years of fruitless negotiations between the phone companies, the Justice Department, privacy groups and telecommunications regulators that began in 1994, after Congress approved major legislation called the Communications Assistance for Law Enforcement Act. ☺ ☺ ☺

NEW PAARA MEMBER
John Coker, KF6ZEZ
 —Thanks to Vic, AB6SO



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(short personal ads remain free for members in good standing).

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1. 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).
2. For Profit organizations and/or individuals: \$5-business card size, \$25-half page, \$50 full page or back cover.

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 Bob Korte


ELECTRONIC COMPONENT SUPPLY
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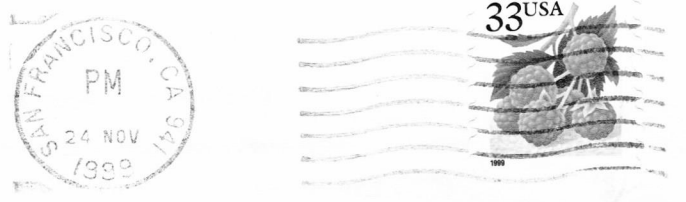
PAARA · Palo Alto Amateur Radio Association · P.O. Box 911, Menlo Park, California 94026-0911

- Club meetings are on the first Friday of each month, 7:30pm at the Menlo Park Recreation Center, 700 Alma Street, Menlo Park, CA.
- Radio NET every Monday evening, at 8:30pm, on the 145.230-600 MHz repeater, PL tone off.

Membership in PAARA is \$12.00 per calendar year which includes a subscription to PAARAgaphs, \$6 for additional family members (no newsletter).
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December 1999

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



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