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504 Lakemead Way
Redwood City CA 94062

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PAARA

Graphis



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AMATEUR
RADIO ASSN.

MENLO PARK C.D. RADIO CLUB, K6YQT

VOLUME 23 NUMBER 4

APRIL 1979

PAARAGraphs is the official organ of

The Palo Alto Amateur Radio Association and the Menlo Park Civil Defense Radio Club

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Membership in PAARA is \$4.00 per calander year (payable in January) which membership includes a subscription to PAARAGraphs. Interested others may subscribe to PAARAGraphs for \$1.00. Make payment to:

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94025

R E G U L A R M E E T I N G

FRIDAY

APRIL 6, 1979

7:30 p.m.

Rooms 15-17, Menlo Park Recreation Center, Civic Center,
Alma at Mielke, Menlo Park

THE LATEST IN COMMERCIAL AIRCRAFT ELECTRONICS

by

Tom Ellison

Tom will describe the latest electronics selected for the new Boeing 767 planes ordered by United Air Lines. Slides will be used.

CIRCLE THE DATE!

Friday APRIL 6, 1979 7:30 p.m.

BOARD CORNER: The Board of Directors met in the "soon to be renovated" wreck rusting and rotting away in the SRI parking lot on March 7 at 7:30 p.m. with all Board members present.

Although run according to Hobb's Guide, the notes of the meeting are a shambles. In response to a ARRL questionaire about PAARA's training program, of the ten questions, eight were answered in the "no" column and two in the "yes" column. Sounds like we don't have much of a training program. A report was given that the Explorer Post had found a home, with the aid of Frank, WB6QFV, on Waverly Street in Palo Alto. More is likely to be found in the Explorer's Column somewhere following.

Shannon, K6TNV, made a survey of the mechanical parts of the Mobile Home and found nothing wrong. Lights, brakes, frame; it was concluded that the topsides might have some cosmetic work done and it was decided to try to get it in shape before Field Day—the last week-end in June.

The Redwood City membership drive was given a gentle nudge. A number of amateurs from that area that are not active in any Club have been given special invitation to enjoy PAARA activities. It was suggested that another invitation be included in PAARAGraphs to those who did not get special attention; the invitation is extended to all, for that matter. (Ed. note: We have a pretty good group. Come join us the first Friday of each month).

It was decided that the HF capability of PAARA, for Civil Emergency purposes, be focused on 3935kHz and 28.650MHz, SSB. No active net is anticipated, but preparedness was thought well worth while. Each Board Member is expected to prune his antenna to those frequencies and be ready with HF gear as their 2-meter equipment is out of service or if they can't get where they're needed in case of an emergency.

A discussion of upcoming flea markets ended the meeting. It was suggested that information about flea markets be included in PAARAGraphs as it came in from sponsoring clubs.

The next Board Meeting: April 11, at 7:30 p.m., in the trailer which holds about a dozen but is usually not crowded. All are invited—it can be held "under the oaks" if it ever turns out to be another PAARA meeting. You'd never believe what goes on that isn't included in the minutes.

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MEETING CORNER: Circle these dates, and write "PAARA Meeting" on your callender: April 6, May 4, June 1, July 6, August 3...enough for now, but also remember Field Day, June 23 and 24—just a week and a day after Flag Day.

PAST CORNER: Jim, WA6OTP, discussed radios that work for free in an entertaining way. Allowing that he wore headphones for three years while doing his research on crystal receivers, his examples and results were most impressive: 1600 miles on the broadcast band with sixteen stations logged from the Bay Area and foreign broadcasts on a 4 - 30 mHz model were exciting. Learning 'rules of thumb' and rediscovering old concepts, and finding materials for detectors was discussed.

With eight models to chose from, 53 attendees thoroughly enjoyed the talk and demonstration.

The meeting included a distribution of mail; a welcome to guests—Alex and A lass, no record of them was made so they'll have to come to the April 6 meeting to be properly recorded. A mention of a HF PAARAnet was met without even a murmur. A rag-chew, refreshments, a period for listening and a glorious, for some, raffle.

It was noticed by some that name-tags were not worn by a few who are known to have them.

PUBLIC RELATIONS CORNER: With no list of attendees at the March meeting, guests cannot be listed. We hope they will return April 6 so they can be duly recorded.

Fred, K6YT, has a list of about a dozen requests for name tags but is not sure whether they will be ready for the meeting or not. The best way to find out is to be there to pick them up, just in case.

Two new Explorers have emerged: Huntly Hornback and Gerald Hogsett. They made it just in time to be added to the April Roster.

Charles Cary has changed his call to KA6CZN.

Dan, WB6STW, is hard to keep up with. By the time this reaches readers he will have moved again.

SILENT KEYS

E. Finley Carter	K6GT
Phil E. Coombs	K6OEJ

+ + +

PAARALERT CORNER: ARES PAARA Frequencies:
3935 kHz Unscheduled
28.650 mHz Unscheduled
147.450 mHz Monday, 8:30 p.m. LST
Join the crowd on 2-meters.

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NOVICE CORNER: Charles, KA6CZN, reports that the change in his call letters doesn't mean a change in status as an amateur. He reports that he's working on his General Class ticket. Swede, KA6BEU, keeps improving code-wise, now has "the ultimate station" and is looking toward that fateful day. Larry, KA6DZM, was planning to upgrade sometime during March. Thumbs turning blue? Doug, KA5DQR, has kept daily contacts with Bob, W6BFH, and hopes to go through his trip with Tuesday, Thursday and Saturday contacts.

Did you novices know you can work 7050 to 7075kHz—if you are out of ITU Region 2 (not U.S. District 2, please!)

GENERAL CORNER: No new clusters of brass or cadmium plated stars this month?

ADVANCED CORNER: Looks like this must have been "keep out of the City" month.

EXTRA CORNER: All the qualified have theirs?

" "

EXPLORER CORNER: The mystery post now has a number—599, which is the best signal you can get on your gear. Currently our membership is about 10 but we hope to increase that number in the near future. If anyone between the ages of 14 and 21 is interested, our meetings are Fridays from 7:30 to around 9:30. We are having code classes at our meetings, as most of us can't tell the difference between a dot and a dash. In about a month, though, we all expect to be at least novices.

Now that you know when we meet, you might like to know where we meet. Well, St. Thomas Aquinas Catholic Church (located on the corner of Homer and Waverly in Palo Alto) has given us the use of a small building that at one time was used as a Sunday School room. Sometime around 1974, however, they decided that they no longer needed it. None of us looked forward to tackling four years worth of cobwebs, but somehow we managed to get rid of most of them. The building is located next to the church and behind the CCD Office. It's very easy to spot: it's the one with the peeling red paint on it.

After some three-odd hours of trying to make the place look decent we decided to call it quits. Six hours later we got together again, for pizza on Jim, K7UDG, one of our coordinators.

Ham radio may be our focal point, but we have lots of other neat stuff in the works, such as a camping trip planned for sometime next month and, during the last week in July, we're going to Flagstaff, Arizona for a Ham-

fest.

Anyone interested in joining can call Jim, or Liza, WA7WXA, at 325 8309 for more information.

de Sandy Large.

= = =

GLITCH CORNER: The April 1979 Roster has been printed: 10% larger and eight shades darker than the Call Book. Additions, corrections and deletions will be made as they present themselves. Now look for a scad of upgrades!

A few names couldn't be left out. If four of them pay their dues, the Roster will pay for itself. If more do, we're in clover. Keep PAARAGraphs in liquid paper.

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HEWHO CORNER: He who complains the loudest gets the job. Who's for another helping?

' '

THE RUSSIAN WOODPECKER (CORNER): If you have not heard this one, you have not been on the air in the last year or two. Like a lot of other things, you try to live with it and wish it would go away but it seldom does. Maybe if you know a bit more it might help to tolerate the continuing burden. The following is information compiled by a W3ccc

The 'woodpecker' is a long range radar and range can be estimated by noticing that the repetition corresponds to 25WPM c.w. dots. At this speed, the time from dot to dot is 96 milli-seconds and this means the radar range is roughly 47,000,000 feet or 8950 miles. This 'on-the-air' estimate was done without instruments so it is probably a bit in error. If the actual range was 15,000km, or 9320 miles, the error in the estimate would only be 4%.

Presuming a 10 megawatt source and 18Dbi of antenna gain, the ERP is 88dbw. However, if you figure twenty meters at 1000 miles, this immense signal is reduced by path loss to a mere .0006 watt.

This might make some think that a 1 watt jammer would have an advantage over the woodpecker of over 1000:1 but this is not correct. Not all of a jamming signal will be effective unless it is able to pass through the IF and Video filters of the radar. A constant carrier is not effective at all because it is rejected as a d.c. level by the AC coupled Video circuitry of the radar.

However, c.w. dots will get through, this assuming a rise time of 1 millisecond for amateur c.w., an additional 20db advantage is given back to the radar because of the mismatch in rise time, Video bandwidth and

corner frequency. Notice that the c.w. jammer, even if only 1 watt, still has a 10:1 advantage. It might even be that 100 watts, or 1KW would be even better.

There is some reason to believe that the above is true. For one thing, the woodpecker is only heard on the phone bands where voice envelopes can be rejected by the radar video circuit. Also, when someone is sending c.w. dots at 25 wpm the woodpecker usually QSYs within five minutes.

Some who have studied the situation have noted that persistent c.w. sending on woodpecker frequency has had them go QRT, one instance lasting for about three weeks, returning with a new gimmick. The woodpecker showed with a frequency hopping mode. If problems developed, the woodpecker would hop to some other frequency in the amateur band.

However, the woodpecker must have an IF band width of 20kHz in order to process the 100 micro-second pulses that they transmit and thus there are not many such hops possible within one ham band. Observations tend to reinforce this thinking, only about eight different hopping frequencies seem to be used by the woodpecker, thus only eight operators sending dots at 25 wpm, spaced 20 to 30kHz across a band would eliminate the advantage gained by the frequency-hopping technique.

Son of a Gun! This is high level technical stuff and we did note that deliberate jamming might not be exactly kosher. One bright type came back with the information that he had heard on two meters that H5HMH was on from Baja Bophuthatswana and that he was calling him but having trouble with all those dots. A likely story!!

Anyhow, all of this is interesting and especially to those who have heard the phone bands.

de West Coast DX Bulletin, 2/14/79.
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FIELD DAY CORNER: Fred, K6YT, has begun planning FD activities. The first step was to get the generator running after failing (the first time ever) at the January SET exercise. Half a weekend went that-a-way for Fred. Subsequent tests show it's back with us an reliable again.

Last word was that Carl and Shirley would welcome us back to the Boat Yard. A crew will be needed a couple or three weekends for site layout and preparation. Don't schedule anything else for June weekends. More details will be forthcoming. FD date: June 23-24.

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SET CORNER: Station preparation and equipment acquisition (if any is planned) should be targeted to October 6-7, the next Simulated Emergency Test. By then it is hoped that the bare-bones of a station at the Command Post in the Menlo Park City Hall will be ready. Bare bones? 5' x 7' of floor space, 120 volt outlets guaranteed, a table and chairs, and coax to the outside world for HF and VHF.

FLEA MARKET CORNER: Flyers for the SPARK flea market didn't arrive until after PAARA-graphs was printed last month but somehow word got out in time and the date for the March 10 social event was correct—the second time around.

PAARA members must have had 10% of the tables, each loaded with goodies, and an estimated half the Club membership was there. No one was seen leaving empty handed and the parking lot was full. Happy faces all around.

PAARA-graphs will announce, on a reciprocal basis, Flea Markets (hopefully before they occur). Word should reach FAARA by the first of the month before the activity takes place to ensure an announcement at the Club meeting and for later inclusion in FAARA-graphs.

PROMOTIONAL CORNER: Rick, WA6NCX, congratulates Terry, N6RY, on his fine articles in '73 Magazine, but wishes "Club members or other interested folk would help a struggling grad student and his wife afford Boston's cost of living by voting for the article in the Readers Service Card (post-paid at the back of the issue) poll. The winnings would allow us to buy hamburger once in a while". Read Rick's latest '73 Magazine article, March, 1979, page 32—"A Nice Transmatch"—then mail your card.

Rick goes into raptures over W11J0 who makes WA6NCX/1 (HF) possible. With a TH6DXX up 81 feet and a S-Line, even Bob, W6BFH, who stumbled over Lucy's voice one Saturday on 15, got a S-3 report from Rick after phone-patch traffic cleared W6NIR.

Lucy has the code under her belt and is pouring over the license manual to be ready for the Tech exam in April, hopefully in time to participate, as an operator, in the Greater Boston Walk for Hunger, where 4000 walkers jointly expect to equal three trips around the world—at the equator, yet. But knowing Boston it is more likely to be the other way—pole to pole-wise.

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BUILDER'S CORNER: Rick, WA6NCX (you can tell where the mail came from last month) says: "Here's a technical topic for interested FM-ers:

"This automatically switches your discriminator meter into a field strength meter when you're transmitting (instead of the thing just sitting there boringly).

On receive, not enough voltage gets generated across the meter to make the diode conduct either way, so the meter works as before as a discriminator meter. When you transmit, the diode rectifies the RF juice it picked up from the pick-up loop and makes the meter move 1 upscale.

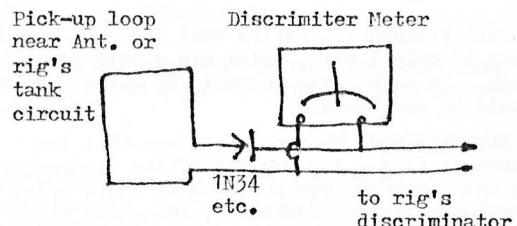
BUILDER'S CORNER REVISITED: Bill, W6DVB, has made a simple "Tape Recorder Keyer" that is a little switch: No parts, no nonsense, and it does a good job on his Hallicrafters FTM 300. Bill says it's cathode keying.

About the only thing simpler is a straight key and that's not the proper use of energy when calling CQ or a particular station for a schedule.

UNCLASSIFIED CORNER: Wanted: Heathkit SB610 or 620 Monitor Scope. See Dan, WB6STW, or call 984 0982.

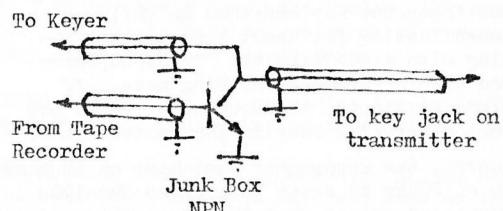
AVAILABLE: a mint IC-22A with 16/76, 22/82, 28/88, 34/94, 52/52 and 94/94 crystals for \$150, firm. See Don, W6CFZ or call 858 0225.

NEED interim QSL Cards? Over 100 different, available to Club members but only in the same format. Short runs only. Cheap if you supply the stock, not expensive if you don't. See your editor.



The diodes in the discriminator block any DC from going back into the rig when transmitting — it's just a few millivolts anyway. Works great on my NCX-144 homebrew rig!"

+ + +



Clay, K5OSQ, has a NCX-A Power Supply for a NCX-3 or NCX-5 transciever. Also an "antique" speaker that matches a SX-43 Hallicrafters receiver. Input 4 ohms or 500 ohms. Call Clay at 349 1876 or catch him on 2 meters.

W5VVD, F. Crosley, at 816 Waldo Rd., Campbell, has a TR4-C in mint condition for \$450.00 and a DC-3 power supply for \$65.00. Call him at 379 8251.

LATE LATE: Clay, K5OSQ, needs a boom 1 1/2" diameter 9 to 10' long. He also has a tunable receive adapter for a IC21 or maybe IC-22 also, for swap.

KA5DQR

MARITIME MOBILE 2

TNX FER FB

MHZ QSO ON

AT

Z.

RCVR:

UR RST

AT

XMTR:

ANT:

PWR INPUT:

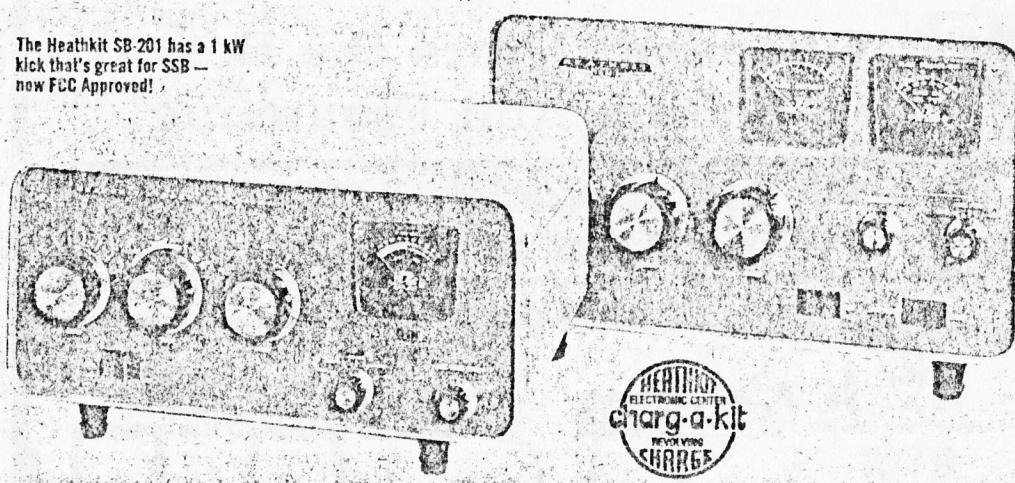
PLS QSL. CUL

Douglas A. Baum
P.O. Box 993
Galveston, TX 77553

EDITOR'S CORNER: Rick's note was typed whilst listening to Holst, Sir Arthur Bliss, and Wm. Walton but this to a different tune: Beethoven, Brahms, and Dvořák.

Put a full 2 kW power in your station
with the SB-221 — now FCC Approved!

The Heathkit SB-201 has a 1 kW
kick that's great for SSB —
now FCC Approved!



Heathkit Linears—Packed with Power and Features

NEW Heathkit SB-201 1 kW Linear Amplifier

\$469.95

- Complete 15 through 80 meter band coverage
- Fully shielded, fan-cooled amplifier compartment
- Circuit-breaker power supply protection

Delivers a full 1200 watts PEP input on phone and 1 kW in on CW. The amplifier requires only 100 watts drive, so it's ideal for use with most any of the popular transmitters or transceivers. And to insure top performance, the SB-201 is loaded with the kinds of features you need!

The SB-201's heavy-duty final amplifier tubes are fan-cooled for maximum tube life and completely shielded to insure excellent TVI protection. A pretuned cathode-input circuit provides maximum drive efficiency and easier alignment. And to prevent distortion producing overdrive, the amplifier provides an ALC output for automatic exciter control.

The SB-201 has a built-in solid-state power supply which features full circuit breaker protection. A switchable multi-function panel meter shows SWR, grid current, plate current, relative power and plate voltage. For extra operating convenience, an antenna relay automatically switches the antenna to the exciter input when the SB-201 is off.

The sturdy yet lightweight construction of the SB-201 is achieved by using a heavy-gauge one-piece aluminum chassis that is partitioned for extra strength and component isolation. The amplifier's clean open chassis layout assures easy assembly and provides maximum efficiency for year-after-year dependability.

Kit SB-201, Shpg. wt. 47 lbs. 469.95

HDP-3622, 3-ft. coax with connectors, Shpg. wt. 1 lb. 4.95

SB-201 SPECIFICATIONS: Band coverage: 80, 40, 20 & 15 meters. Maximum power input: 1200 watts P.E.P. SSB, 1000 watts CW. Driving power required: 100 watts. Duty cycle: SSB, continuous voice modulation; CW, 50% (key down time not to exceed 5 min.). Third order distortion: -30 dB or better at 1000 watts P.E.P. Output impedance: 50 to 75 ohm unbalanced; variable pi-output circuit. SWR not to exceed 2:1. Input impedance: 52 ohm unbalanced; broad-band pretuned input circuit requires no tuning. Meter functions: 0-160 ma grid current, 0-1000 ma plate current, 0-1000 relative power, 1:1 to 3:1 SWR, 1500 to 3000 volts high voltage. Front panel controls: Load; Tune; Band; Relative Power Sensitivity; Meter Switch, Grid-Plate-Rel. Power-SWR-HV; and Power Switch on/off. Tube complement: Two 5728/T-160-L (in parallel). Power requirements: 120 volts AC @ 16 amperes (max.), 240 volts AC @ 8 amperes (max.). Cabinet size: 14 1/2" W x 6 1/2" H x 13 3/4" D. Net weight: 35 lbs.

NEW Heathkit SB-221 2 kW Linear Amplifier

\$639.95

- High-efficiency pre-tuned broadband pi-input
- Zener-diode regulated power supply
- Front-panel current and voltage meters

The Heath SB-221 is the one that's destined to make Amateur Radio history because it offers more features and performance than all the rest. It features a pair of conservatively rated Eimac 3-500Z's which deliver up to a full 2000 watts PEP input on phone and can be loaded to 1 kW in on both CW and RTTY. A broadband pre-tuned pi-input delivers maximum efficiency with extremely low distortion over the entire 15-80 meter bands. Just 100 watts of exciter drive is all that is required to drive the amplifier to full output.

With an SB-221, tune-up couldn't be easier! Just select the band you wish to operate, set the CW-tune/SWB rocker switch to the CW-tune position, adjust both tune and load controls for maximum relative power out—and you're ready to go. Ready with the kind of signal that always catches the new DX, gets your traffic through, and provides reliable year-after-year communications performance.

The SB-221's power supply can be easily wired for either 120 or 240 VAC operation. Zener diode regulated operating bias reduces idling current for cooler running and extended tube life. The amplifier incorporates built-in circuit breaker protection and a large, quiet-running fan provides maximum tube cooling. Other features include ALC to prevent distortion producing overdrive; front-panel switch-selected monitoring of grid current, relative power, and high voltage. There's also a separate meter for measuring final amplifier plate current.

Kit SB-221, Shpg. wt. 66 lbs. 639.95

HDP-3622, 3-ft. coax with connectors, Shpg. wt. 1 lb. 4.95

SB-221 SPECIFICATIONS: Band coverage: 80, 40, 20 & 15 meters. Driving power: 100 W. Max. power input: SSB, 2000 W; PEP; CW, 1000 W; RTTY, 1000 W. Duty cycle: SSB, Continuous, voice modulation; CW, Continuous (maximum key-down 10 minutes); RTTY, 50% (maximum transmit time 10 minutes). Third order distortion: -30 dB or better. Input impedance: 52 ohm unbalanced. Output impedance: 50 ohm unbalance; SWR 2:1 or less. Front panel controls: Tune, Load, Band, Sensitivity Meter Switch, Power, CW/Tune — SSB. Plate meter, Multi-meter (Grid mA, Relative Power and High Voltage). Rear panel: Line cord, circuit breakers (two 10 A), Antenna Relay (phono), ALC (phono), RF Input (SO-239), Ground post, RF Output (SO-239). Tubes: Two Eimac 3-500Z. Power requirement: 120 VAC, 50/60 Hz at 20 amp. max., 240 VAC, 50/60 Hz at 10 amp. max. Cabinet size: 8 1/2" H x 14 1/2" W x 14 1/2" D.

Heathkit Electronic Center, 2001 Middlefield Rd., Redwood City, CA 94062

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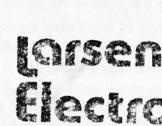
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