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Andy Korsak VE3FZK/W6
504 Lakemead Way
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vol. 25
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PAARA

GRAPHS



**palo Alto
AMATEUR
RADIO ASSN.**

MENLO PARK C.D. RADIO CLUB, K6YQT

 PAARAgaphs is the official organ of
 The Palo Alto Amateur Radio Association & the Menlo Park Civil Defense Radio Club

1982 CLUB OFFICERS

President : Gerry Tucker WA6LNV 326-4908
 Vice-Pres. : Kevin Lapp WA6FAC 364-2654
 Secretary : Gerry Wagstaffe W6NIR 325-4670
 Treasurer : George Nixon GI3OEN 854-6445
 Trustee, K60TX : Fred Canham K6YT 948-9238
 Property : Ed Fairbanks W6AIN 322-0319
 Co-Property : Fred Canham K6YT 948-9238
 ARES Officer : Steve Stuntz K6FS 322-4952
 Club Historian : Jerry Zobel W6ARA 322-0063
 Club nets : 147.45 MHz, Monday 8:30 pm L.T. & 14.287 MHz, Monday 9:00 pm L.T.

BOARD OF DIRECTORS

Chairman: Gerry Tucker WA6LNV
 Members : John KD6ZL
 Buonocore
 : Wally Porter K6URO
 : Clif Keely KA6JWA
 : Ed Fairbanks W6AIN
 : Bill KA6LZI
 McElhinney
 : Bob Wheeler K6SEM

PAARA POLICIES

Membership in PAARA is \$6.00 per calendar year (payable in January), which membership includes a subscription to PAARAgaphs. Freebee distribution to those who indicate an interest in the Club, and as an inducement to their becoming members, and is subject to change with changing interests in the Club. Make payment to: PAARA, P.O. Box 911, Menlo Park, CA 94025.

PAARAGRAPHS STAFF

Editor : George Nixon GI3OEN
 Advert. : Swede Swenson N6CHL
 Mailing : Bill KA6LZI
 McElhinney
 : Sue Lindner LQVLY

Written contributions to the P.O. Box above, or to the Editor, 1140 Sherman Avenue, Menlo Park, CA 94025. Tel. 854-6445. Deadline is two or three days after the Board of Directors meeting.

Friday, November 5, 1982

7:30pm

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

CARE AND FEEDING OF NI-CAD BATTERIES

by

Steve Andrues
 of
 Ni-Cad Systems

Only those hams still using carbon-zinc batteries can afford to miss this! Be there.

Meeting to be held at the Menlo Park Recreation Centre, Alma at Mielke, Menlo Park. Future meetings: December 3, 1982; January 7, 1982.

Circle the Date

November 5, 1982.

Stop Press:

PAARA NATIONAL 4A VICTOR!

SCORES HIGHER THAN WINNERS OF 1A, 2A, 5A, 6A, 7A, 8A & 9A!
FRED CANHAM, BOB WHEELER & CAM PIERCE ARE THE PAARA HEROES!

Report: Just before the Auction (October 16), Fred Canham received a phone call from the American Radio Relay League Field Day Committee to tell us that PAARA had won the Nationwide 4A Class in Field Day.

The results in each class were:

1A.....5,800	2A.....8,900	3A.....13,800-K5ZD
4A.....13,700-K6YT	5A.....11,000	6A.....13,200
7A.....13,500	8A.....9,600	9A.....8,100
13A....15100-K2AA		

Our old adversary from Texas, K5ZD, again got their high score by fielding a strong CW and Novice team. Probably it not amiss to say here that PAARA will need some good Novice operators for next June, Field Day 1983. If you presently hold a Novice licence and are a good, high-speed operator, PAARA would appreciate it if you did not upgrade your licence until after June 1983. It is nice, of course, to get your General or Advanced or Extra Class licence, but it is also nice to know that you made a small sacrifice to help your Club. Perhaps PAARA can get a Novice net going to encourage those holding Novice licences.

President's Corner: The Auction is over and apparently a success. It always causes me a bit of unnecessary heartburn, worrying about whether the advertising is adequate, whether there are enough raffle prizes, etc. Everyone showed up and was ready to do their job. We missed our

regular Auctioneer, Bob Wheeler, K6SEM, who unfortunately has had to cope with the recent passing of his mother and father. (Our sympathy, Bob. - Ed.)

Jerry Starkey, WA6LIJ, stepped into the breach with a great job of auctioneering. Jerry auctioned most of the lots and I finished up for him. We registered 549 persons with a few PAARA members who slaved away with signing in. We made about \$1,100, which would just about defray the cost of publishing PAARAgaphs before GI3OEN started trading some of his time for our money. (Publishing reached \$85.00 per month until a couple of months ago). My thanks to Ed Johnson, WB6CFW, for his talk last month.

The Christmas dinner has been set up for December 13 at Rickey's Swiss Chalet in Palo Alto (same as last year). Come to the next meeting with money, prepared to sign up. The beef and chicken plates will be available (prices at the meeting). Come to the November meeting and nominate the Officer of your choice. Elections will be December 3, with installation at the Christmas dinner.

de Gerry Tucker, WA6LNV.

P.S. Honourable Mention for Auction Activities:

Treasurer: George, GI3OEN
Auction Buyers: Les, W6AKR & Andy, K6EHS
Auction Sellers: Jerry, W6ARA
Flea Market: Bill, KA6LZI & Dave, KB6WP
PAARA Table: Clif, KA6JWA; Kevin, WA6FHC; et al
Impound: Fred, K6YT
Doughnuts: Perry, KD6ID & Dusty, K6MPN
Parking Lot: Post 599
Equipment Control: Shannon, K6TNY; Ken, WA6NYB; Don, W6
CFZ & Alan, WA6AZP

And many others behind the scenes.

de Gerry Tucker, WA6LNV

Club Meeting Report: The Club meeting of October 1, 1982, was held in the Menlo Park Recreation Centre with a good crowd in attendance.

The first topic was the Auction and some last minute assignment of jobs was carried out.

Swede Swenson reported the death of PAARA member, KA5DQr, Doug Baum (see the Silent Key later). The deaths were also reported of Bob Wheeler's mother and father. Bob Wheeler, K6SEM, is a popular Club member, and he is our Field Day Phone Captain as well as our Auctioneer and a Director of the Club.

At this point in the meeting, your Editor had to leave, as the XYL had scheduled a dinner party at the home QTH, so Kevin Lapp continues.....

October 1, 1982 Meeting.

This month's topic, "Amateur Microwave at 10 GHZ", was given by two speakers: John Hendricks, W6STQ, and Ed Johnson, WB6CFW, of PAARA Field Day fame, both engineers employed at GTE Lenkurt.

Ed gave an introduction and brief overview of microwave communication as applied to amateur radio.

John Hendricks, a transmission systems engineer, gave a short course in microwave propagation. He explained things such as K factors, earth curvature, reflections and other basic laws of physics and Mother Nature, which make the field of microwaves so interesting.

John then returned the speakership to Ed for the equipment aspect.

Ed, microwave development engineer, explained in detail the equipment brought for demonstration: the Gunn diode oscillator, the home-made antenna feed horn and the various

pieces of electronics.

A demonstration followed using a calibration technique at 10 GHZ using a 2 metre handy-talky and a step recovery diode for the needed harmonic generation.

After the meeting, the Club members were invited to try 10 GHZ QSO's.

de Kevin Lapp, WA6

Board Meeting Report:

10-6-82

Board meeting was called to order at 7.30pm at the Club trailer by President Tucker. Present were: Ed Fairbanks, W6AIN; Wally Porter, K6URO; Alan Larson, WA6AZP; Clif Keely, KA6JWA; Bill McElhinney, KA6LZI; John Buonocore, KD6ZL; Gerry Tucker, WA6LNV; Gerry Wagstaffe, W6NIR; and Dave Daniel, KB6WP.

Auction problems were reviewed, including reduction of Ampex Cafeteria space, contacts with prize donors, and QST's on the nets.

The Auction rules were proofread and amended. Alan Larson, WA6AZP, was appointed as a committee of one to check the activities of CCRC (W6AAJ) on jamming, and to report back to the Board.

A Nominating Committee for 1983 officers and directors was selected: Chairman, Fred Canham, K6YT; and members, John Buonocore, KD6ZL, and Irene Lile, WB6RAF.

de Bill McElhinney, KA6LZI.

Between the Club Meeting on October 1 and the Auction on

October 16, your Editor was enjoying a pleasant vacation in Zihuatanejo, Guerrero, Mexico. Zihuatanejo is a fishing/resort town on a beautiful bay in southern Mexico. Mexicana flies there with a stop (but not a change of planes) in Mexico City.

Frances and I stayed at the Hotel Irma, Playa de la Madera, Apartado Postal 4, P.O. Box 4, Zihuatanejo, Gro., Mexico. Tel. 420-25 and 421-05. The Hotel was very nice, and was reasonably priced; it had ambience; it was on top of a small cliff, and most of the guests were middle-class Mexicans or Spaniards. Our Spanish improved a lot!

Auction Report: On October 16, 1982, at the Ampex Cafeteria, on Bay Road, Redwood City, the PAARA Auction was held to provide local hams with a place to buy and sell equipment and to enhance the Club finances.

Between 7:15 am and 9:00 am, the Cafeteria tables were cleared off and moved into position; the coffee and doughnut stand was set up; numerous signs were mounted; the loudspeaker system was set up; the buyer and seller registration tables were set up; the Treasurer's table and the impound area were set up; and the PAARA flea market table was loaded with good gear for sale. The PAARA team operated like a well-oiled machine, and our President, Gerry Tucker, WA6LNV, was as cool as a cucumber as he strolled around looking for fires to put out. Fortunately, there were very few fires.

The profit so far is \$1,116.75; and unless someone comes up with another bill for expenses, this will be the final figure. The only problems that your Treasurer saw was that lot number 44 was issued twice and lot 88 consisted of two items, which were auctioned separately.

The Ampex Ham Club auctioned some vacuum tubes in lots 14 and either 17 or 18. The tubes were described as unused, but when the buyer of lot 14 examined his purchase, he

discovered that the tubes looked like duds. The Ampex Ham Club agreed to refund the buyer's money, and their officer explained that they had checked only some of the tubes before putting them up for sale. Announcements were made for buyer no. 20, Joe Robertson, WA6GTU; and buyer no. 143, Don Parsons, to check their purchases, but they both had left the Auction by that time. The Ampex representative wrote down their names and addresses and promised to write to the two buyers informing them of the situation and offering to refund their money if their tubes were also duds.

CONTESTING CAN BE REWARDING AND FUN!

by

Dave Daniel, KB6WP

Several months ago PAARA had as a guest speaker an avid, 5-star DXer by the name of Tom Schiller, N6BT. Tom's presentation so inspired me that I vowed that when the right contest came along, I would give it my all and see how the "other-half" lived.

Well, I had just committed myself to become a beta-test site for CommSoft in their final development and testing programme for their soon-to-be-released product, PhotoCaster (TM), which was developed by Ken Rothmuller, WA6NFA. A brief history of PhotoCaster is in order: PhotoCaster is a Slow Scan Television system for the Apple II computer. It includes a circuit board interface, a TV camera, and a software package incorporating advanced features contained on two floppy discs. In addition to transmitting and receiveing both black-and-white and colour pictures, PhotoCaster has provisions for adding titles and graphics, image enhancement, special effects, storing of pictures on disk, and high resolution printer output.

Howard Nurse, of CommSoft, informed me of the up-and-coming AS magazine sponsored World Wide DX SSTV Contest. Well, this was possibly the right time and contest to get my feet wet. I began to prepare for the 17th of July count-down armed with knowledge Tom had provided me with. A re-organization of the shack//computer room was in order as well a preparation of band opening stats, log sheets and operating procedures. This required taking a day off work preceeding the 5pm local time start on Friday. For the 48 hours, my family only saw me for short trips down the hall and for refrigerator raids.

The first visual contact was made at 0022 with an average rate thereafter of 1.8 per hour. Before you say anything about the rate (as compared to Field Day), remember that the number of active SSTV stations world wide number between the high hundreds and the low thousands. Sixty-four stations submitted logs with top DX honours going to Mike Brurelle, FM7CD, in Martinique with 1,622 points. DX contacts had the distinction of having a times 2 multiplier, so all of Mike's contacts were worth double. Top U.S. award went to Rolf Selchter, KELY, of Tewkesbury, Mass., with 810 points. Yours truly finished second with 410 points in the U.S., and fourth overall behind FM7CD, KELY, and Al, VE4ADG, of Winnipeg.

The contest rules allowed bonus points for sending mug shots, colour, quad frames, single frame colour. and multipliers for 10, 40 & 80 metre bands. There was a lot of activity on the calling frequency of 14.23 MHz but pulling out new stations not yet worked from those already worked was like pulling teeth. The East Coast had a distinct advantage in working DX stations; I worked 4 and heard 1 more, while Rolf made over 20 DX contacts. During the Contest, I contacted 16 different states, which has primed me for the January "Worked All States SSTV" Contest. Additionally, power output will be increased from 50 to 1,000 watts, and the possible addition of a Collins receiver will augment band opportunities.

How did the equipment test out?, you ask. Well, the Kenwood TS120, KLM 34A, Apple II, and PhotoCaster performed without a hitch. Several improvements were recommended for the Photocaster, and the buying public will see most of these incorporated in their system.

See you on the air (literally speaking) soon, and gud con-testing.

NEWS RELEASE

GTE LENKURT AMATEUR RADIO CLUB

Ed Johnson, WB6CFW, President.

Have you ever wondered about limits?

The GTE Lenkurt Amateur Radio Club is wondering how far a microwave signal can go. Twice this year Club members have made contact with each other using home built microwave radio equipment transmitting less power than a flashlight shines.

The first attempt in March '82 was to span a 37 mile path from Skyline Ridge above San Carlos, CA to Mt. Diablo, CA. The operation was an instant success with less than ten minutes required to establish communication.

Buoyed up by this success, the Club began planning for a longer distance to cross. The objective was set to communicate from Mt. Hamilton, near San Jose, CA, to Mt. St. Helena, north of Calistoga, CA, a distance of 120 miles.

By microwave this is a significant distance. Typical power and distance for commercial equipment is 1 watt and 30 miles, while here 0.016 watts and 120 miles did the job. Keep in mind that was much less reliability due to the Club's weaker signals.

A number of steps had to be taken before the actual transmission test was tried. A map survey indicated that the path was clear enough for the 10 GHz signals but that fading could be expected perhaps as often as once per minute.

Access to the mountains was next considered.

Mt. Hamilton's Lick Observatory was chosen because of drivable roads, a good parking lot set-up area, and public access. Mt. St. Helena was more difficult to arrange. Through the help of the Chief Ranger for the area, Chris Stokes, access to the fire road was set up. This was a critical step as vehicle access is strictly controlled and the road is seven miles long, two thousand feet up, hardly walkable with equipment.

Two teams were appointed, one for each end. The Mt. Hamilton team included Bob Seehorn, KD6RV, Redwood City; John Hendricks, W6STQ, San Jose; Loren Bryon, San Carlos; Gary Balanesi, Redwood City; and Carolyn Cronquist, San Carlos. The Mt. St. Helena group was smaller since only one vehicle was permitted. This team included Ed Johnson, WB6CFW; Sunnyvale; Clif Keely, KA6JWA, Redwood City; Al Almlie, KA6CMH, San Carlos; and Joe Lutz, WB8EAS/6 San Jose.

Just as important as the team members was the equipment. A set of specifications detail the major elements.

TX type: Gunn Oscillator
Mod: wideband FM

TX pwr: plus 12dbm - .016W
Deviation: 500KHZ peak

RX type: diode mixer
Bandwidth: 1.5MHZ

RX noise figure: 9db SSB
Absol. thresh.: -102dBm

Ant. type: parabolic ref.
Diameter: 2 feet

Feed: horn, wave guide
Gain: 31dBi

Power supply: battery.

Sunday August 22, 1982, was chosen for the exercise. The North-bound team departed early at 6:00 am from Sunnyvale with Ed Johnson and Joe Lutz. Clif Keely and Al Almlie were picked up at GTE Lenkurt, San Carlos at 6:30. 146 MHZ radio contact was made with Bob Seehorn at 7:30 and later at 8:30 with John Hendricks. The South-bound team began their trip about 8:30 in several vehicles. By 9:45 both teams had reached their respective summits.

The two metre (146 MHZ) liason link was established at 10:00. This was the easy one. The 10 GHZ microwave equipment was put together and aligned by compass at each end. Frequencies were calibrated for accuracy and each crew awaited signals from the distant end. Since visual contact was barely possible there was some concern that the compass headings were right. Antennas were panned one at a time across the horizon hoping to find a signal. Nothing was heard for several minutes. Another heading was tried that matched the local terrain details shown by the map.

Suddenly there was a slight flicker on the signal meters and a very weak signal was heard. More adjustment brought in a clear signal at -100 dBm. A cheer was heard at both ends and over the microwave link. Time was 10:15 am. The excitement rippled through everyone present, and the feeling was tremendous!

Now we set to work improving the antenna alignment. Signals became stronger still; reaching -88 dBm. About now the fading became apparent. The once strong signals would fade so deeply that nothing could be heard but noise.

The fading did not occur in both directions at the same time, but at opposing times. This is known as selective fading and is caused by multipath or more than one signal beam reaching each end, sometimes adding and sometimes subtracting. The frequencies used were 70 MHZ apart. Fading occurred typically every 45 seconds. John was able to predict when fading would start by observing the fog

layer rising from below him out of San Francisco Bay.

Everyone had time to try talking over the microwave link. Comments indicated that the fidelity was very good, much better than standard telephone. For those who were not hams, this experience was especially interesting.

A few visitors came by to observe the operation. At Mt. Hamilton a security guard for the observatory came for a look and by request took pictures of the team. Two hams in the area from Texas heard the coordination talk on two metres and asked for directions; later they showed up at Mt. Hamilton and talked to the Mt. St. Helena team by microwave. A state park ranger came by to check out the Northern team.

By late morning the fog layer began to clear. Now was the time to "flash the path". Signal mirrors bounced sunlight along the same path the radio waves took. Using telescopes at each end and by coordinating the flashing by radio, each team was able to observe the yellow-orange flashes. Flashing is normally used to verify path clearance before radios are installed. Here, the radios operated first and coordinated the flashing.

At 1:30 pm operation on the path was stopped. The teams then tried to make contact by bouncing their signal off a thunderhead in the Central Valley. This has been done by other hams, but for us, luck and signals ran out.

Operations were completed at 2:00 pm. With equipment packed, the teams began their way down the mountains while talking about the cool beer awaiting them at Pete's Harbour.

A fine time was had by all that day. During dinner talk drifted toward the next goal; how far can we go next time? The goal for this type of amateur microwave equipment is 1,000 km - 600 miles. There are very few places where this can be done. So what lies over the horizon for the GTE

Lenkurt Amateur Radio Club? The answer is "over the horizon". Plans are being considered for a ducting path over water and beyond the horizon. I can hear the cheer now!

SILENT KEY: Douglas Allyn Baum, KA5DQR, PAARA member and resident of Menlo Park died on September 23, 1982 in Norfolk, Va., on board the ship on which he was serving. The cause of death has not been determined. Douglas was 33, was serving as First Officer on the Lykes Brothers motor vessel "Cygnus", and had just received his Captain's papers. Douglas had been in the Merchant Marine for all of his working life.

Douglas was an officer in the Naval Reserve and a Son of the American Revolution No. 119444. He was a 1966 graduate of Menlo-Atherton High, and a 1970 graduate of Texas A & M Maritime Academy.

Douglas got his interest in amateur radio from his father, the late Robert Baum, former PAARAGraphs Editor and PAARA officer. Douglas first got a novice license, then he contacted his father every night by cw all the way to the Persian Gulf! By the time he reached the Persian Gulf, Doug's cw had gone from 5 wpm to as fast as his father's.

Surviving Douglas are his mother, Eleanor Baum, and his sister, Barbara Baum Parsons. Services were held in the Menlo Park Presbyterian Church, and also in his home town of Galveston, Texas.

FOR SALE: Heathkit equipment.

SB 401 transmitter	\$300,	SB 301 receiver	?
SB610 monitor scope	\$110,	SB 620 spectrum analy.	\$110
SB 640 clock/ phone patch	\$110		
Dentron Jr. antenna tuner	\$50		
MFJ cw filter	\$25		

Contact: Daniel, WB6STW, at 408 946-2885.

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