

PACK RATS



PACK RATS

CLUB CALL: W3CCX

MT. AIRY VHF RADIO CLUB, INC.

CHEESE BITS



MT. AIRY V.H.F. RADIO CLUB, INC., PHILADELPHIA, PA. ARNS
 (50.2, 145.2, 221.4, 432.03 & 1296.3 Mc)
 AFFILIATED CLUB: AMERICAN RADIO RELAY LEAGUE
 MEETINGS: THIRD WEDNESDAY OF EACH MONTH AT 8:00 P.M.
 WEST OAK LANE JEWISH COMMUNITY CENTER
 SEDGWICK AND THOURON STREETS, PHILADELPHIA, PA.

VOLUME XV

MAY, 1973

NUMBER 5

THE PREZ SEZ

Diversity Among The Pack Rats

ATV-WA3AXV, K3ZKO
 50 Mhz, Tropo Scatter - WA3LNH
 144 Mhz. Extended Ground Wave - W2EIF
 6&2 F.M. - W3CL
 Nets (page 2)
 Microwave Construction - K3BPP
 Antenna Measurements - W2EIF, K1SFF
 Transmitter Hunts - K3MXM
 Moonbounce Construction - WA3LNH
 Hamarama - W3ZD

National Convention - W3ZD
 Contests - General - W2EIF
 June - K1SFF
 Space Net - WA3LNH
 Cheese Bits - W3CL
 Emergency Coordinator - WA3HIT
 Oscar 6 - K3ZSG
 Picnic - W3CJU
 Technical Committee - K3IUW
 Club Projects (anyone with a soldering
 iron in his hand)

This may not be the best place for an activities directory, but it may be helpful to the new member for locating someone that is involved in his particular interests. Also, it may serve as an indication of the large number of activities that take place in the club on a matter-of-fact basis. The flurry of activity many times is so great that it interferes with plain ordinary operating. This large diversity also makes it quite easy to capture the imagination of the new and young ham.

Lets not forget ARRL Night May 16th. The speaker will be Tom McMullen, W1SL, Assistant Technical Editor of QST. Everyone try to bring a guest.
 73, K3BPP, Walt

DE LERC

If you have teen age youngsters who'll be looking for Summer employment, they can get some helpful tips from "Students Find Your Summer Job Now". Request a copy from Miss Lefler, c/o The Kiplinger Washington Letter, 1729 H St., N.W., Washington, D.C. 20006. If you want to keep up to date on Anti-Pollution you can request free copies of "The Challenge Of The Environment", "Finding Your Way Through EPA" and "Citizbes Bulletin" from the Environmental Protection Agency, Washington, D.C. 20460.

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We operate on an exchange basis with other publications and anything that is printed in CHEESE BITS may be reprinted, unless so stated, as long as the proper credit is given.

* * * * *

DEADLINE FOR ARTICLES IS THE GENERAL MEMBERSHIP MEETING.

Swap Shop Items - No Charge

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215 - DA 4-7524

AWARDS CHAIRMAN:

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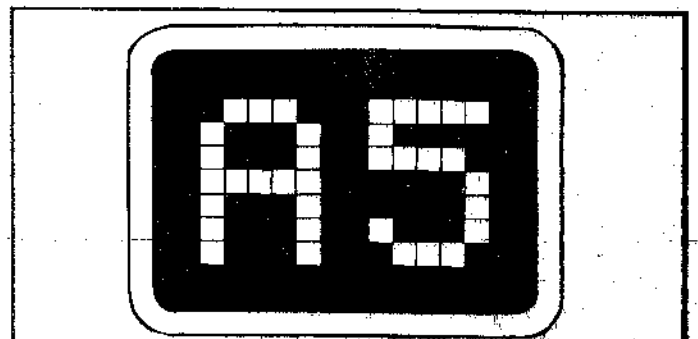
DIRECTORS' MEETINGS ARE HELD ON THE SECOND WEDNESDAY OF EACH MONTH AT DESIGNATED LOCATIONS.

MONDAY NIGHT NETS: NET CONTROL

145.2 - 7:30 P.M. W2EIF
50.2 - 8:30 P.M. W3CL/W3GEW
221.4 - 9:00 P.M. K3GAS
432.03 - 9:30 P.M. K3IUU
1296.3 - 10:00 P.M. K1SFF/3

FRIDAY NIGHT NET: NET CONTROL

439.250 ATV NET - K3ZKO/WA3AXV
19:00 Hrs.



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CALENDAR OF COMING EVENTS
Syllabus by Lee, K3MXM

MAY

- 5 Saturday Nite - LADIES NITE - Buck Hotel, Feasterville, Pa. 6:30 p.m. on. A good evening out with the XYL or YL - bountiful filet mignon dinner as only the Buck can serve with all the trimmings - dancing music liquid refreshments - favors and prizes. Our official annual nite out and well worth attending. Send you monies to K3GAS, Doc Cutler. John Tate, K3KTY, General Chairman and Master of Ceremonies.
- 9 Board of Directors Meeting - QTH - Mr. Joe Kilgore, W2EIF, Stratford, New Jersey, Directors and interested parties invited.
- 12 Western New York Hamfest and VHF conference, Monroe County Fairgrounds Route 15A, Rochester, New York
- 13 Space Net Minihamfest at Tony's (WB2MTU) QTH Sicklerville, N.J. Come out and join the fun!
- 16 General Club Meeting - West Oak Lane Jewish Community Center, Thouron And Sedgwick Streets, Phila., Pa. 8:00 P.M. Nomination of Officers.
ARRL Nite - Guest Speaker, Mr. Tom McMullen, W1SL, Assistant Technical Editor QST.
All area hams and their clubs are invited to attend. Here is your chance to meet someone from Headquarters and also to meet Mr. Harry McConaghy, W3SW, our Atlantic Division Director. Refreshments will be served.
- 19 ARMED FORCES DAY - See last month's Cheesebits for activities and schedules.
- 20 DVARC - Hamfest and Auction, VFW Post, Green Lane, Trenton, N.J. All day starting at 10:00 a.m. Tables and tailgate selling and auction in afternoon. Refreshments will be available. More details on the nets.

JUNE

- 9 - 10 June QSO Party and Contest, Hilltown, Pa. K1SFF/3, Tony, Chairman
This year every club member must make a special effort to work the club station on all possible bands. We missed being first last year by such a small margin that all contacts are needed and must be made. WE WILL BE FIRST THIS YEAR! As an added attraction, we are sharing the Hilltown Grounds on Saturday with a Horse Show and on Sunday with a Dog Show. Bring the wife and kids up and enjoy the day. (Take your pick of garden fertilizer! watch your shoes!)
- 17 - 23 National Amateur Radio Week, details on nets and in newspapers.
- 20 General Club Meeting - Elections of new Officers and also NASA nite.
- 23-24 ARRL Field Day

CONTINUED

Coming Events

JULY

18 Outdoor Club Auction, W3ZD's QTH

AUGUST

5 Winchester Hamfest

12 Club Picnic, Ft. Washington State Park, Pa. All day.

15 Club Meeting, K3IUUV, Outdoor Movie Nite, Bring your ladies for two social events.

SEPTEMBER White Elephant Sale, W3ZD's

OCTOBER Pack Rats HAMARAMA, October 7th, Jamison, Pa.

AMATEUR RADIO FACILITIES AVAILABLE AT AFCEA 1973 CONVENTION

On-the-air amateur radio facilities will be provided by the Chief of Naval Operations (CNO) amateur radio station, K4NAA, during the Armed Forces Communications and Electronics Association (AFCEA) convention in June. K4NAA is the official AFCEA amateur radio station, providing attendees with amateur facilities to contact friends during the convention on June 5, 6 and 7, 1973. The K4NAA portable station will be operational from 1800 to 1800 EDST with two available positions for CW and SSB on the 10, 15, 20, 40 and 80 meter bands. Licensed amateurs throughout the world are invited to make contact during the AFCEA convention, and a specially designed QSL card, signed by the Director, Naval Communications, Samuel L. Gravely, Jr., Rear Admiral, U.S. Navy, has been prepared and will be sent to acknowledge all contacts. The U.S. Navy and AFCEA invite all amateur radio enthusiasts to visit K4NAA on June 5, 6 and 7, 1973. Amateurs desiring to utilize the K4NAA facilities must provide their original FCC license as required by Article 97.83 of the FCC Rules and Regulations. The AFCEA 27 convention will be held at the Sheraton-Park Hotel in Washington, D.C. (From Headquarters, Navy Marine Corps MARS Radio Station, K4NAA)

OFFICIAL BULLETIN NR 423 FROM ARRL HEADQUARTERS NEWINGTON, CONN. APRIL 26, 1973 TO ALL RADIO AMATEURS BT: FCC issued on April 20 a Notice of Inquiry, Docket 19723, soliciting comments and suggestions from informed persons and organizations concerning the Radio Amateur Civil Emergency Service as to its effectiveness, its licensing system, abuses, additional or different privileges, consequences of any expansion to the remainder of amateur radio, and regulatory safeguards needed. The comments of interested parties should reach the Commission on or before July 1, 1973. At the same time, FCC denied a proposal, pending since 1967, which would have allowed RACES stations to use facsimile in the 160 and 80 meter bands. Full information on both matters will appear in the June issue of QST. AR

OFFICIAL BULLETIN NR 421 FROM ARRL HEADQUARTERS NEWINGTON, CONN. APRIL 12, 1973 TO ALL RADIO AMATEURS BT: Amateur stations in space, such as Oscar 6, operate under the regular amateur rules, except that certain requirements difficult or impossible to meet are waived by the Fed. Communications Commission. Up to now such waivers had required the vote of the 7 commissioners in formal session. In an order released March 26, however, the Commission has delegated to its Safety and Special Radio Services Bureau authority to grant waivers to amateur space stations on rules dealing with location, authorized emission, control identification, logging and operator privileges. AR

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RAT ADS



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CONTACT:

Will Power, WB2OAD 35 Sunset Avenue West Trenton, N.J. 609-882=7956

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CONTACT:

Tom Scheid, WA3AXH 1000 Pine Street Norristown, Pa. 215-537-7964

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6 meter 11 element hy-gain beam, \$60.00 originally was \$195.00 SB500 2 meter transverter. Can be used with SB110 or any other Heath SB series. \$140.00 6 meter 1KW amplifier. Supreme Mfg. \$150.00 complete with power supply.

CONTACT:

Stanley Smith, K3IPM 133 Hogeland Road Southampton, Pa. 18966 215-355-2867

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CONTACT:

Pete, WA3RCA, TU 6-1859

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NEW PRODUCTS OF INTEREST TO HAMS

BY Lyn, W3NSI

1. Drake TR-72: The new Drake TR 72 replaces the ML2 unit, and, while size and power are about the same, the new 72 is all solid state and 23 channels, 11 more than the old unit which had a final 6360 tube. A LO-HI power switch, giving a choice of 1 or 10 watts is a front panel feature. Trimmers are used on all crystals. Price \$300.00. 540 Richard St., Miamisburg, Ohio 45342.

2. Heath Kit RF Absorption Wattmeter: The HM 2103 is a 50 ohm non-inductive air cooled load good up to 30 Mhz. A meter indicates watts in two ranges, 0-200 and 0-1000. Unit is rated at 175 watts continuous duty and has a built in test circuit. Size 6" x 5 1/2" x 14". Price \$60.00.

3. Tempo FMH 2 M. FM T/R: The FMH is a handy talkie only 2 x 3 x 9 inches overall. Six channels are available with 2 watts out. Unit operates from 8 pen cells or 10 ni-cad batteries and weight is 1.7 pounds. Crystals are supplied for 146.52 receive and transmit. Price \$189.00. Henry Radio, 11240 Olympic Boulevard, Los Angeles, California.

VHF/UHF REPORT BY Jo, W2EIF

The DX season is about to start. The 6 meter band usually starts opening the 1st or 2nd week of May. Two meters has been fairly active, with an excellent aurora occurring April Fools Day, Sunday, April 1st. It lasted from 1 or 2 p.m. to past 7 p.m. Excellent contacts were to be had on 6 meters, two meters and 220 Mhz. W2EIF worked into Chicago on 2 meter SSB and heard and was heard by WAØCHK Missouri, and KØMQS in Iowa. W2EIF also worked WLYTW, Maine on 220 and W8UCI in Michigan. The 2 meter schedule of W2EIF and W8DGF continues nicely at 144.105 at 8:00 p.m. with good signals. W8DGF paid a visit to W2EIF on Saturday, April 21st while he was visiting friends in South Jersey. CU at Hilltown June 9th and 10th!

TID BITS

Many thanks to Don Nelson, WB2EGZ, on his excellent presentation at the April meeting. His talk covered an update on VHF converters using MOSFETS. His discussion covered the essential performance items on gain, noise figure, bandwidth and cross modulation.

Bert, K3IUV, visited Canada last month. His unique post-card stated that he was checking out the terrain to see why he never hears those VE2's. Bert is our 432 Mhz net control on Monday evenings.

K3HIN, Rick, reports his business back on an even keel after the fire. His dad had a Pacemaker installed recently and is doing fine. Rick is on 6 meter FM with RTTY.

Joanne Kenas, daughter of Bert (W3TNP) and Ernie (W3KKN) had a rough hospital seige recently and is now on the road to recovery. Our best wishes.

The editor had a nice visit with Herm, K3GOZ at the Abington Hospital on April 25th. Herm was in for some minor surgical procedure so we compared notes, hi. We had a chance to chat with his XYL, Betty when she arrived during visiting hours.

Danny Mitten, WA3VEV who went out to Ohio to get married is now sporting a new call, WA8WFO.

CONTINUED

TID BITS CONTINUED

It was nice to see Alan, K3AUH and his XYL Linda at our last meeting. A real sharp couple!

Congratulations to Lee, K3MXM and Peggy on the marriage of their daughter on the East Coast and a son on the West Coast the same day!!

Congratulations are in order also to George, WA3DNC on his recent marriage. Don't stay off the air too long, George!

Nice to see Rich, K3ACR at our last meeting.

K4IJC (Ex-W3WIJ) M/M Thomas Matthews, Largo Florida hosted another Pack Rat. Peggy and Lee Cohen (K3MXM) spent an enjoyable long weekend with our brother Pack-Rat and returned with an invitation to all those in the Largo Florida area to stop in and say hello to Tom and Mildred. From his own grapefruit trees he offers you all you can tote home with you.

WB2OAD, Will Power, has been busy with other activities so his hamming has been curtailed. Hope to see you and Noel at our social affairs. Best luck.

Dayton Hamvention attendees: Ron, K3ZKO, Carl, WA2MWB and Al, W3AEH drove out on Friday. Marsha, WA3TEM (our typist) went out there Friday evening on TWA. A report by Marsha next month.

Visitors at April 25th Meeting: K1JDY, William Olson, Ottsville, Pa. WB2EGZ, Don Nelson, Ashland, N.J., K3ACR, Rich Pattison, Wyncote, Pa., W3AYJ, Al Schnipper, Phila., Pa., WA3LQN, George Shaw, Gulph Mills, Pa., K3NLK, Jim Potter, Buckingham, Pa., WN3TUL, Glenn Codrick, Phila., Pa., WA3UDF, Neil Madonick, Phila., Pa., WA3UHI, Bruce Fisher, Phila., Pa., WA3AXH, Thomas A. Scheid, Norristown, Pa., WA3HOW, Bob Patton, Warminster, Pa., WA3PUL, Mike Nessen, Phila., Pa.

Call letter addition - WA3NEV/WA8WFO

New Member - WA3PUL, Michael Nessen, 905 69th Ave., Phila., Pa. 19126 LI 9-6405

Application for Membership: WA3AXH, Thomas A. Scheid, 1000 Pine St., Norristown, Pa.

K1JPY, S. William Olson, Box 197, R.D. Ottsville, Pa. 18942

Late Flash: The Pack Rats placed FIRST in the 3rd Worldwide VHF activity. 20 Pack Rat logs submitted with 118,941 points. We understand that we also placed FIRST in the Space Net Contest honoring Apollo 13 and 16.

Congratulations to George, W3HK who is the President of the local chapter of the National Association of Retired Federal Employees (NARFE). He has also been appointed coordinator for the third region Domestic Affairs Council - more on this later.

OSCAR VI (CONCLUSION)
BY BILL MURPHY, K3ZSG
10 Meter Down Link

Take a good look at your receiver - will it cover the 10 meter segment you wish to receive? Since my Drake R4B is a ham band only type, it required a new crystal before any signals could be received. By a little compromising only one crystal was added. This allowed me to cover a segment from 29.0 Mhz.

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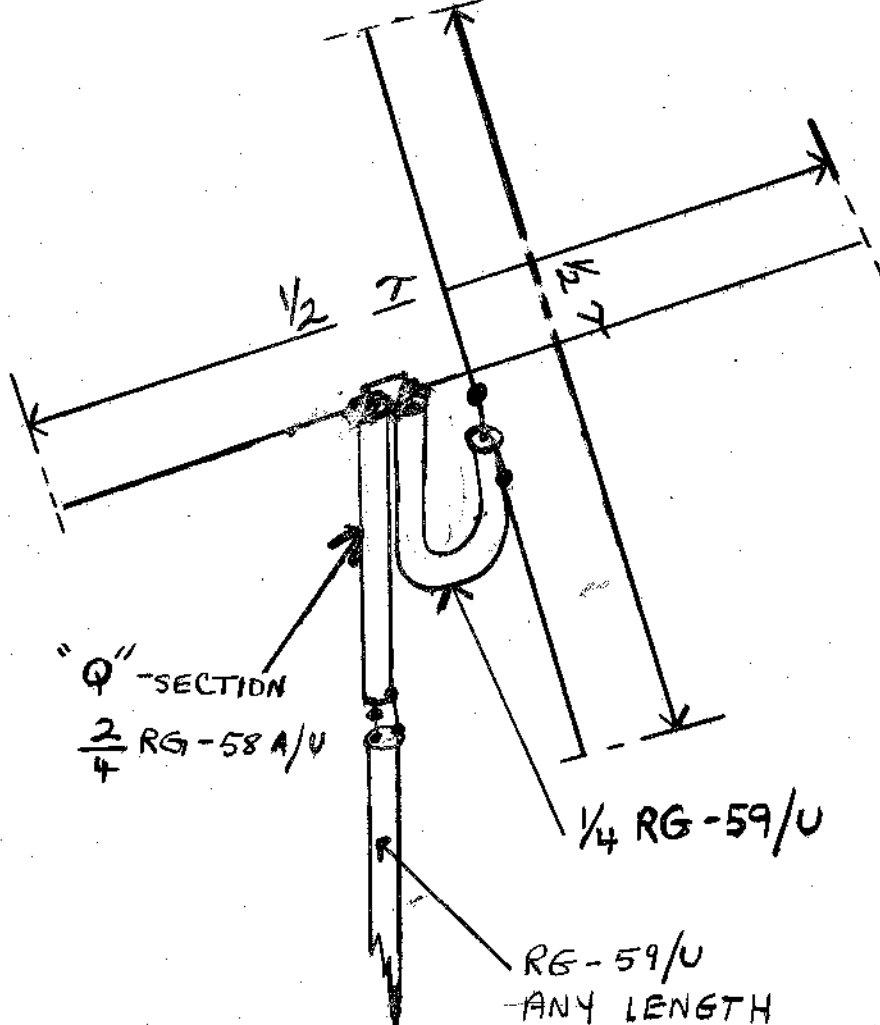
OSCAR VI CONTINUED

to 29.5 Mhz. You will find most of the activity, from 10 KC above 29.5 to 25 KC below 29.5 Mhz.

It's the old story: "If you can't hear it you can't work it". You may find your receiver to be lacking in gain at 10 meters. The addition of a preamp will greatly enhance the receive signal. There are several such units commercially available. But for those of you who wish to build one, check the March 73 issue of the Amsat Newsletter, page 7, for a good solid state preamp.

The antenna system. On this subject only after considerable trial and error, have I determined what I feel will be the best antenna for the job. It is a modified turnstile type, similar to the one described by W2EIF in a previous issue. It is most important that this antenna be installed in the clear, away from other antennas or towers etc., as this will distort its receiving pattern. The antenna consists of two 1/2 wave dipoles, crossed at right angles, and phased together. The reception pattern will be a clover leaf and afford good reception of the satellite, regardless of its direction from you. Only when the satellite is directly over head will receive signal levels be somewhat diminished. The modification to W2EIF's design was minor. Only one of the 1/2 wave dipoles was bent down at a 45° angle, towards the ground. Also, an additional 1/4 wavelength matching section was installed to properly match the feedline to the antenna.

If you try this antenna you will get excellent results. See diagram below:



TURNSTILE ANTENNA

* Length in Inches = $\frac{5540}{\text{Freq. (Mhz)}}$ = Length of Each Dipole

OSCAR VI CONTINUED

2 meter up link

A. Mode of Transmission: If you wish to make any contacts through Oscar be prepared to use either CW or SSB, but not AM or FM. I am not saying that AM and FM won't work, just there are no active stations using it and making contacts. At the present time, activity through the satellite runs approximately 35% SSB and 65% CW.

B. Frequency Range: QST will give you the exact frequency range of the passband input. I have found (145.925 to 145.975 Mhz) to be the most used portion of the pass band input. With activity centered at 145.955 Mhz.

Note:

1. You can zero-beat by transmitting on 2 meters, while listening on 10 meters for a beat note.
2. Also, due to doppler shift, your frequency will not remain constant but will shift 3 Kc in frequency as Oscar approaches.

C. Power and Antennas: Those of you with horizontal or vertically polarized beams already up may wish to use them at first, until you find time or room for another antenna just for Oscar. Some operators have tilted their antennas at 30° elevation toward the vertical as a compromise.

Your ERP must be limited to 100 W per AMSAT and indirectly the FCC. Why the FCC? Well, remember no amateur may maliciously interfere with the transmission of another amateur. And putting too strong a signal into Oscar will do just that. It will cause all signals to become choppy or drop out completely.

The following is the authors opinion on various 2 meter antennas vs. the 100 w. ERP figure and does not run in accordance with AMSAT or ARRL instructions on the subject. I suggest you use your own judgment on this information and at a later date if it proves invalid, make the necessary changes in your antenna.

100 Watts ERP: This 100 W ERP is valid if all your radiated energy is pointed directly at Oscar. If not, higher ERP figures may be allowed. For example, let's say that you have an 11 element Swan antenna horizontally polarized. The ERP from this system is much in excess of the 100 W figure. Yet at times you can not hear your own signal, even though other signals are quite strong through Oscar. The following analogy may better explain this. You have a flash light which represents your antenna and a beam of light your transmitted R.F. signal. If you shine the light in a dark room at the wall, you will illuminate it. However, only a small portion of the light energy reaches the ceiling. It is the same with beam type antennas.

Only after the satellite approaches the beam of your antenna, will you put too much ERP into it. And at this time you must have some way to cutting back your power. On SSB all that is necessary is to turn pack your speech gain. NOTE: You can judge the amount of power reaching Oscar by your return signal, providing that you have a good receiving set up. Remember always to keep your signal level below the level of the beacon. If you cannot hear the beacon, use the average level of other received signals as your guide. With this, you should be able to have many QSO's through Oscar without fear of overloading it.

Now on overhead passes as you can now guess, only a small portion of the ERP from a horizontal beam reaches the satellite. However, in all beam antenna patterns, there will be an occasional lobe. This may put too much signal toward Oscar but will last only a minute or so. By effective monitoring of the downlink, you would hear this and know to reduce your power.

CONTINUED

OSCAR VI CONTINUED

Those of you who have tried 2 meter FM may have some vertical antennas or beams that you may wish to try. They will work fine but remember you still have roughly the same flashlight type beam of light radiated as in the horizontal beam. Only the polarization of the wave has changed. With small vertical 2 meter FM type beams of say 4 elements, there will be many more vertical lobes, which will put more of the "flashlight" type light beams toward Oscar when it is overhead.

As far as what is the simplest and best antenna to use for your Oscar up link, it appears a pair of crossed dipoles may be your best bet. But first get on Oscar and try it. It still has over 6 months life expectancy before degeneration of its batteries set in. Good luck.

OPERATION DOWN CRAFT April 28, 1973

On Saturday, April 28, 1973, the combined forces of the office of emergency preparedness went into action with a simulated airplane crash in Fern Hill Park. At 10:45 a.m. a host of flares were lit and a smoke generator started to signal the crash. Then all hell broke loose. Police came in cars, on foot, on horseback and in buses. All traffic was kept moving and no tie ups occurred. Fire equipment responded from several stations. Even Commissioner Rizzo was there. He saw one of our walkie talkies with the CD chief and asked if it was CB. He got a loud and strong reply-NO it was Ham Radio!!! The Red-Cross was there with a tent for registering casualties, and dispensing hot coffee!! CAP was there and about a hundred young people who volunteered to be casualties. Ambulances arrived in droves to take the casualties to the hospital, give first aid to those that could walk and carry away bodies. During the start as the smoke and flares were at their height, one passer-by drove into a pole and we had our first real casualty. Later as the excitement got higher, one of the Red-Cross ladies that was to be a simulated casualty, became a real casualty (cardiac case)! Everyone was instructed to use blinking lights only, did they? Absolutely not, all had the lights on AND the siren, horns, whistles, etc. The CB were there in force but with no organization or assignment. We, the Hams, were to provide communications between the hospital, the scene and to have walkie talkies for use by the chief of the CD, OEP, and his deputy. Communications were also provided with the CD center in Germantown. All went very well. The casualties looked real, the firemen did a real simulated job, the police had everything under control, the one big flop was the Army Air. Their helicopters never did get there. The Go-Patrol helicopter did and in the operation was A-OK. We used 2 Meter FM and had planned to use the 16-76 repeater, but on Saturday it was down! So, K3TGM used his 27B rig in reverse, transmitting on 76 and listening on 16 so we all used him as a repeater for local use. All rigs worked well up to the last. As we were being released, we checked in with headquarters. W3HK tried to check in with no success. First thought was the batteries in the walkie talkie were running down. It turned out to be the speaker wires on the 27B!! Murphy got in there at the last moment! The City fathers I think were favorably impressed with our (HAM) part of the exercise. What did we learn? Too few Hams will volunteer for an exercise and they will all want to clobber the frequency in a real deal with no training. We need more members active and have back up gear in case the breakdown above had happened at the beginning of the drill.

73, George, SCM EPA

Cheese Bits
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 Glenside, Pa. 19038



W3KKN, Ernest Kenas
 2823 Old Welsh Rd.
 Willow Grove, Pa. 19090

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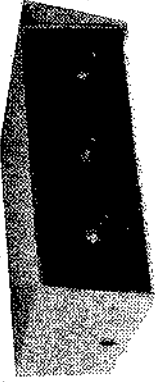
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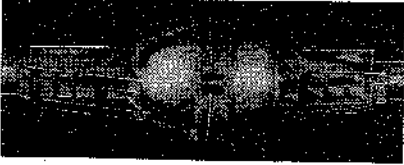
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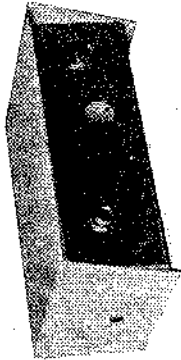
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