Worldradio

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Author Mary Duffield, WA6KFA (left), Ben Deovlet, W6FDU, (right), with their latest recruit to Amateur Radio, Sylvia Arthur.

Keys to our electronic kingdom

Mary Duffield, WA6KFA

Ladies and gentlemen of the jury: We accuse Ben Deovlet, W6FDU, of transforming the future of ham radio by nurturing the electronic education and careers of hundreds of students, ages 10 to 20. We shall prove him guilty of motivating countless couch potatoes to forsake their TV sets for a better group than gangs. This culprit is further accused of serving as a role model for ***Worldradio*** readers!

As co-founder with Ben of the Redwood Youth Foundation some 20 productive years ago, I have received the accolades of the media. As a grey-haired little old lady in tennis shoes sailing with young explorers on both oceanic and radio waves, my contributions to the RYF were more visible than Ben's. This is especially so as he was busy in Campbell, California, earning the money to donate ham equipment, keep it repaired, adapt rigs for students with impaired vision or other special needs, take students on trips to radio conventions, subscribe to radio magazines for schools, share his problem-solving skills with us and inspire us with his compassion.

Was there a widow needing someone to guide her in disposing of a station? Was there a hospitalized oldster needing an antenna up or down? Ben solved those problems. He has paid lots of dues!

Ben feels that his life has been immeasurably enhanced by Amateur Radio. W6BIP, Bip Bachman, handed him the keys to our electronic kingdom when our hero was in junior high school. It led to his degree in electronic engineering, his versatility in analog design, motion control, and power supplies — culminating in his current creativity with Global Positioning Satellites. No wonder he's eager to share his vision.

Some of the achievements garnered by the Redwood Youth Foundation include two Golden Bell Awards from the California State Board of Education, grants from the ARRL Foundation and from the Central California Radio Council, plus many scholarships and honors for the Santa Cruz "Hamsters." And since I was more visibly involved in the RYF than Ben, AEA chose me to receive the first International Ambassador award in 1986. But be assured, "Ben's Denizens," the graduates of Del Mar Middle School's ham classes know, ". . . the pens in heaven have scratched *his* name across the sky."

Here are some stories of the extraordinary students who attribute their start to the Redwood Youth Foundation. There is John Kimmel, KK4UW, on loan from the Coast Guard as the head of the International Emergency Agencies cross-communicating between the International Red Cross, the White Cross, and United Nations agencies needing multilingual coverage. John loved Morse code, and earned recognition from Congress for having copied the "may day" of a stricken cruise vessel in Alaskan waters which resulted in the saving of hundreds of lives.

Then there is Todd Meyer, KB6VOQ, winner of the prestigious Yoshiyama award of $5,000, plus a stay in Washington, D.C., to study leadership skills. Todd tutored his high school classmates, then later taught his fellow firefighters Amateur Radio.

Next: Two 14-year-olds who earned free passage aboard the tall ship *The Californian* by serving as shop's radio officers, Jackie Sanders, KB6MTV, and Eric Neubauer, KJ6IU.

We hear from Rob Bennett, KB6SKY, about twice a year via radiogram. Having an Amateur Radio license led to success in the career he always wanted. He wanted to be a disk jockey, and now Rob is supervising all of the disk jockeys in all of the U.S. armed forces! "Rebellious" is the word to describe Rob in high school — even to the point of being thrown out of his chemistry class. Enter ham radio. He became so "turned on" by Amateur Radio, and it so changed his life, that he was later to reenter that teacher's classroom as the teacher's assistant.

You will be hearing about Mike Peretti, N6TZP, one of these days. Now a college sophomore, Mike is also making a living by marketing his own computer programs.

We can certainly brag about our youthful YLs as well. I could list dozens, but here are just a few fine examples.

Erica Jangrus, KB6JJM, was ten years old and passionately dedicated to becoming an astronaut. When she heard that six of our teen communicators had been invited to JPL (Jet Propulsion Laboratory) to demonstrate the value of electronic networking to a group of 50 assembled educators, and that astronaut Tony England would be present, Erica begged to go with us.

"Ah, but only licensed Amateur Ra-

(please turn to page 6)

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Worldradio NEWSFRONT —

Some information has been supplied to *Worldradio* Newsfront courtesy of *Newsline*.

Foundation for Amateur Radio scholarships

The Foundation for Amateur Radio, Inc., a non-profit organization headquartered in Washington, D.C., plans to administer fifty-seven scholarships for the academic year 1996-1997 to assist licensed radio amateurs. The Foundation, composed of over seventy-five Amateur Radio clubs, fully funds eight of these scholarships with the income from grants and its annual hamfest. The remaining forty-nine are administered by the Foundation without cost to the various donors.

Licensed radio amateurs may compete for these awards if they plan to pursue a full-time course of study beyond high school and are enrolled in or have been accepted for enrollment at an accredited university, college or technical school. The awards range from $500 to $2,000 with preference given in some cases to the pursuit of certain study programs or to residents of specified geographical areas (Delaware, Florida, Maine, Maryland, New Jersey, Ohio, Pennsylvania, Virginia and Wisconsin). Amateur Radio clubs are encouraged to announce these opportunities at their meetings, on their nets, during training classes, and in their club newsletters.

Additional information and an application form may be requested by letter or QSL card, postmarked prior to 30 April 1996, from: FAR Scholarships, 6903 Rhode Island Avenue, College Park, MD 20740.

The Foundation for Amateur Radio, incorporated in the District of Columbia, is an exempt organization under Section 501(c)(3) of the Internal Revenue Code of 1954. It is devoted exclusively to promoting the interests of Amateur Radio and those scientific, literary, and educational pursuits that advance the purposes of the Amateur Radio service. WR

Eastern blizzard

Amateur Radio operators spent many bone-chilling hours helping their community the weekend of 7 January, when a record shattering snowstorm pounded the eastern seaboard, dumped nearly 3 feet of snow in some areas and killed at least 50 people. In Suffolk county, New York, hams worked closely with disaster officials to keep emergency services running smoothly.

Suffolk County hams are experienced in handling disaster emergencies. Despite the magnitude of the snowstorm, which prompted a declaration of a state of emergency, amateur operations ran smoothly. Hams manned disaster offices in Suffolk County around the clock at one point — part of their continuing commitment to serve Suffolk County's 1.2 million residents.

The work Suffolk County radio amateurs did is just part of a much bigger picture. Hams in many other parts of the Atlantic seaboard volunteered their time and communications services to help disaster officials cope with the storm.

WA3NAN shuttle audio delayed

The great blizzard of 1996 took its toll on a unique aspect of ham radio. Dan Schultz, N8FGV, reports via the *VHF reflector*, that the space shuttle retransmissions by WA3NAN at the Goddard Spaceflight Center in Greenbelt, Maryland, had to be postponed because of the 20-inch snowfall. This made travel in the Washington D.C. area quite difficult and kept WA3NAN off the air until the snow had been cleared away well enough to allow access to the club's shack.

Safex IIB launch

The second part of the new ham radio repeater in space, Safex IIB, is ready for launch. Most of the equipment has now been taken to Kaliningrad by Thomas Kieselbach, DL2MDE, and Markus Fischer, DG2MJW, and handed over to the Russian space authorities.

Once aboard the MIR, the equipment will be installed in the new "PRIRODA" module, which is expected to be launched this month.

The Safex station is made up of two parts. First is the 70-cm communications device for direct and repeater voice contacts. Section B services packet radio, and also contains a 13-cm module for broad bandwidth modes like ATV. Some missing parts of this module will be taken to MIR on a later supply mission.

Scarborough Reef

The ARRL Board of Directors has voted to accept Scarborough Reef as a separate DXCC country, for DXCC purposes. The start date for credit is 1 January 1995. Only QSOs made on or after that date will be eligible for DXCC credit.

The first accredited operation took place in April, 1995. According to the League, the 1994 DXpedition did not qualify as a "land based operation." Cards will be accepted by the DXCC desk starting 1 April 1996. Cards received before that date will be returned without action.

Dayton banquet speaker

The Dayton Amateur Radio Association has announced that Dr. Paul Shuch, N6TX, will be the featured banquet speaker at Hamvention '96. Dr. Shuch is the executive director of the SETI League. SETI is an acronym for Search for Extraterrestrial Intelligence and the SETI League is a nonprofit

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Worldradio (USPS 947000) is an international conversation. You are invited to participate.

Our goal is to be a valuable resource of ideas and experiences beneficial to the Amateur Radio community. We publicize and support the efforts of those who bring the flame of vitality to this avocation. You readers are participants — an alliance of active radio amateurs concerned with reality, using radio as a communications tool to develop the skill, quality and full potential of Amateur Radio.

We emphasize the positive aspects of this great activity, and desire your contributions dealing with dramatic, personal and humanitarian uses of Amateur Radio. ***Worldradio*** is an independent magazine not affiliated with any other firm, group or organization. Its pages are open to all.

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PUBLISHER'S MICROPHONE

Andy Warhol once said that everyone would be famous for fifteen minutes. Listed below are people who will be famous for far longer than that. Three thousand years from now when archeologists come across the ***Worldradio*** time capsule and they are trying to decipher the meanings of a dead language they will say, "These must have been very famous people because their names are printed darker than others."

The latest to become ***Worldradio*** Super Boosters (Lifetime Subscribers) are:

•Joyce Medlen, KE4KGB, Vass, NC
•George Kaelin, KD4UKH, Louisville, KY
•Louis Baker, KB8VYF, Grayling, MI
•Jerry Clusen, N9AYN, New London, WI
•Neil Zimmerman, NB7Q, Meridian, ID
•Walter Schuknecht, N7IZM, Scottsdale, AZ
•Katherine Karsten, KB7MCJ, Tempe, AZ
•Stephen Jones, KJ7ES, Cave Creek, AZ
•Peter Johnson, KB7QXP, Lakeside, AZ
•Patrick Mulreany, WX7M, Wellington, NV
•B. Chandler Shaw, WA6EWY, Granada Hills, CA
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•Evelyn Weir, KC6QXC, Chico, CA
•Jan Blomquist, KI6NB, Yreka, CA
•Lee Hallin, WB7SND, Eugene, OR

•

Should you be considering joining the ranks of the ultra-famous, do it NOW! The price is soon going up from the present 10 times one year's fee to about 12.5 times one year's fee. It's going from $150 to $188. So, to be fair to long-time friends, you can save $33 by doing it immediately.

Over the past 25 years, the cost of a subscription to ***Worldradio*** has gone up threefold. The postage cost to mail a copy has gone up far more than that.

•

The following is a letter from the above-mentioned Joyce Medlen, KE4KGB, (slightly condensed):

"Enclosed is a check from Santa for my Life Subscription to your fine publication. I have been wanting this subscription for some time but could never seem to save enough egg money. . . .

"I have nothing but good things to say about ***Worldradio*** and am very happy to have found you as a new Ham . . . My OM and I read the AERIALS column almost immediately after receiving the magazine . . . I sure would like to meet old Kurt sometime, just to shake his hand and tell him face to face, 'Thanks.'

"Although I have not made that great leap to the top of the Amateur heap, I also appreciate your support of the code requirement. I am of the older generation and came to Ham Radio late in life, but in today's give-away world some standards must be maintained. When I do make that last step I want it to mean something, since it has been tough to achieve."

Possibly the CW requirement serves a purpose not even related to radio communications. Last September I started a course at a junior college in the evening. The first night of the semester the parking lot was filled and it was a long walk to class. Next week the number of cars dropped. The walk was shorter. By the third week there were empty spaces all over the place. The number of cars kept diminishing. Pretty soon the walk was a very short one. The class I was taking ended up with less than half the number of students it started with. Sad.

Maybe those among us who battled the code and battled the code (and for some of us it was an real uphill fight), learned the most useful lesson of life. The lesson is that one should stick with it no matter how difficult it may be.

•

My remarks about Radio Shack caused a torrent of mail. Some responses are printed in this issue, some will be in the next. I'm still looking for one that agrees with me! However, think about this.

For how many years now have you been going into your local radio store on Saturday, drinking their coffee, twisting knobs and asking questions? The proprietor was usually quite knowledgeable and would spend time on various radio topics. Many stores ran licensing classes.

The store carried the rigs (with the lowest mark-up of any merchandise there is), the accessories, books and magazines. In many areas the ham store was a real gathering place, almost a club house — they should have charged us rent.

Only after the ham numbers grew to the point that it looked good to a mass merchandiser did another company enter the business. Next time you are in a Radio Shack store look for a ham magazine or ask the clerk for help with Ohm's Law or where the nearest ham club meets and on what night. —*Armond, N6WR*

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FEATURES	**Yaesu FT-10/A16D**	Kenwood TH-22AT
Rugged MIL-SPEC Rates	**Yes**	No
DCS (Digital Coded Squelch) Built-in	**Yes**	No
Alphanumeric Display	**Yes**	No
True FM for Better Voice Clarity	**Yes**	No
Transmit Battery Saver	**Yes**	No
CTCSS Encode & Decode Built-in	**Yes**	Optional
ARTS (Auto Range Transpond System) *(Alerts you when a similarly programmed HT is out of range)*	**Yes**	No
Optional Digital Voice Recorder	**Yes**	No
Scans for DCS Tones	**Yes**	No
Computer Programmable w/ADMS-1B	**Yes**	No

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  TX: 430-450 MHz
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- MIL-STD 810
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- 12 V DC Direct Input
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electronic kingdom

(continued from page 1)

dio operators are invited," we told her.

"What do I have to do to get one?" she asked.

"No way could you master Morse code and all that theory in 10 days," scoffed one of the boys.

Oh really? Ten days later Erica passed both sections of the Novice test,

Molly Stack, KB6QOA, demonstrates her Amateur Radio hand-held to classmates.

and accepted an extra plane ticket from JPL. We made a video of her hour-long interview with Dr. England which is still intriguing local schools.

How many of you maritime net participants know Rachel Burt, N6NMW, who often serves as net control of the Hawaii-California Net? She lives aboard her trimaran, *Stickwich* (which she helped her family build), as she attends the University of Hawaii.

Then there is Judy Garcia, one of the visually impaired hams for whom Ben made adaptive changes to their rigs. Judy is getting ready to teach economics at California State University at San Diego.

Another example of W6FDU's outreach, Maurice Ricketts, N6GOW, claims that Ben's donation of gear from an oldtimer's ham station to the Santa Cruz Veteran's Hall enabled them to hang on to their building when political bureaucracies attempted to acquire it. How? Maurice intertied communications between the hall, the vets and the downtown community during emergencies, civic celebrations, and holidays.

Are we agreed then, that while Marconi merely invented radio, Ben "amplifies" the whole splendid thing?

What's more, he credits his hamming with "electrifying" his whole life to date. There was that year in Japan . . . but let's begin with 1978, when he crewed a large ketch to the Galapagos Islands. True to form, he generously repaired all the electronic gear at the Darwin Station on Academy Bay, resulting in the director of the park service coming aboard as his personal guide for a number of weeks — a singular honor. He also designed and built a new water system for a German engineer whose Andes-born wife was terminally ill. When Ben copied his cassettes of Andean music for her, she thanked him, with tears in her eyes.

Next stop? Tahiti. Same old scene. It was Ben to the rescue of everyone's stereos, tape recorders, even the transmitters for a commercial radio station. You yachties out there know how impossibly expensive it is to get your visa renewed, don't you? Well, they kept extending his visa automatically!

Since he plays a terrific jazz piano, he was able to play at the Hotel Tahiti in the evenings. Naturally, during the daytime everyone was bringing him more and more gear to repair. Eventually he was able to help establish a chain of low-power, broadcast FM stations for the towns and municipalities that certainly would be of help during times of local communications need. Now you know why Ben's FO call sign, honors him with his very own initials (last name first, in the French tradition), FOØDB.

Other hamming highlights in Ben's life resonate with history. During the 1964 Alaskan earthquake, as a college student living atop Knob Hill in San Francisco, the U.S. Navy's ham station on Treasure Island, hearing him in contact with the quake site, asked him to handle their traffic, which they were having to have relayed.

Also during his college years, his family hosted a great number of Peruvian nationals cut off from their revolution-dislocated families back in Peru.

Dottie Ward, veteran station controller, (front), Maurice Ricketts, N6GPW, (right) and Ben send messages. ***—photos by WA6KFA***

"My hamming has blessed me with an extended family, bonding me to the total spectrum of humankind," relates Ben. "I especially delighted in my fortuitous first QSO with WA6KFA's crew of young 'Hamsters' aboard her sloop, and helping her set a stage for those creative kids to communicate and cooperate locally and globally." He keeps "resonating" with kids on all frequencies.

Three times the Santa Cruz Schools, held an open house at "Ben's Den" the ham station at Del Mar Middle School to honor him. Two of those times either urgent work or illness prevented him from attending. While the other media generally focused on me (the little old lady angle again), the students wrote a feature and were delighted when ***Worldradio*** published their work.

Santa Cruz' Radio Club members have also rallied around the Redwood Youth Foundation, providing the most exciting date of all: The Space Shuttle Connection of 1992, with *Endeavor*.

We involved 55 students from 20 local schools. Russ Mackay, NW6U, who orchestrated a dazzling demonstration of inter-generational cooperation, saw

to it that the students themselves, as true Amateur Radio operators, would really create the connection, not just follow adult instructions blindly. Ham club members simply coached as they built their own antennas, and as they timed their tracking of *Endeavor.* All the English classes in the 20 schools worked on the meaningful questions to ask the astronauts and the science classes pondered the problems. It was an event that will be long remembered.

Ben's Amateur Radio extended family include memberships in the Santa Cruz ARC, the Livermore ARC, and the Northern California DX Club. He holds life membership in the ARRL, QCWA, and is also a lifetime subscriber to ***Worldradio***.

This fine man is indeed guilty of being an inspiration and role model to our youngsters, and to the adults as well. If you would like to emulate Ben though, just pick one or two of the things he does for others. I doubt if the rest of us have the energy to come close to his many accomplishments! **WR**

NEWSFRONT

(continued from p. 3)

group that was set up to fund this type of research.

The Hamvention Banquet Committee is urging anyone interested in hearing Dr. Shuch to get their tickets early. There will be limited space this year due to other non-Hamvention activities taking place at the same time at the Dayton Convention Center.

Ohio ham hero

A member of the Dayton Amateur Radio Association has been honored as a hero for saving the lives of five people in a burning building. While out on routine patrol last fall, Charlie Olson, KD8YR, spotted flames shooting through the roof of a home in West Milton, Ohio. He drove his police cruiser into the yard, turned on the siren and lights and then banged on the door to alert the residents inside.

He then entered the burning building to waken a deaf person who was sleeping on the couch.

West Milton Fire Chief Dennis Franz says that Olson's quick and professional response to the emergency saved many lives in the fire which did $55,000 worth of damage to the building.

Jammer arrested

An Amateur Radio operator has been arrested for interfering with law enforcement radio communications in Sacramento County, and Roseville, California. Eighteen-year-old Bobby Lee Aguero, KE6VNU, was taken into custody on January 8th and charged with obstructing justice and causing harmful interference to emergency service communications.

The interference first surfaced on Saturday morning, 6 January. That's when dispatchers for the Roseville police turned up on Sacramento County sheriff's radios and Sacramento dispatchers found themselves talking to Roseville units. The problem occurred again about 3 p.m. on Sunday, 7 January.

According to Deputy Sheriff Jeff Haggard, WB6DKX, who is the communications systems manager for the sheriff's department, Roseville dispatchers later received a call from a man identifying himself as the phantom jammer. The caller warned that he was going to jam police broadcasts again at 10 p.m. that evening.

Using radio direction finding techniques, police traced the jamming signal to Aguero's apartment. Aguero agreed to let the police conduct a search. The radio was quickly found and Aguero was placed under arrest. If convicted on all charges Aguero faces the possibility of both fines and prison.

The FCC was not involved in the tracking down Aguero, but Haggard says that officers plan to write a letter to the Commission asking that his ham license be revoked.

ARRL Letter goes Internet

The *ARRL Letter* is going weekly on the Internet, but current subscribers to the printed version will only be seeing it once a month. The decision to convert to electronic delivery also means that the *Letter* will now be available free to any ham who has the ability to access the ARRL Home Page World Wide Web or several commercial sites. This includes America Online, Compuserve and GEnie.

The League notes that a survey of subscribers in early 1995 indicated an interest in electronic delivery because information delivered that way would be more timely.

Current subscribers to the printed version of the *ARRL Letter* will have their subscriptions extended so that they will receive the same number of copies as they would have under the twice monthly mailing. The League is also cutting the annual subscription rate for new mail-out subscriptions as well.

A year ago, the *Westlink Report* ham radio newsletter ceased publication after more than two decades due to declining revenues. With the *ARRL Letter* going to weekly on the Internet and once a month on paper, only the *W5YI Report* newsletter is left on a twice-monthly mail delivery schedule.

TVI book price

John Kelly, KG6XF, reports that the FCC's new Interference Handbook (See Dec ***WR***) is priced at $2.50 per copy.

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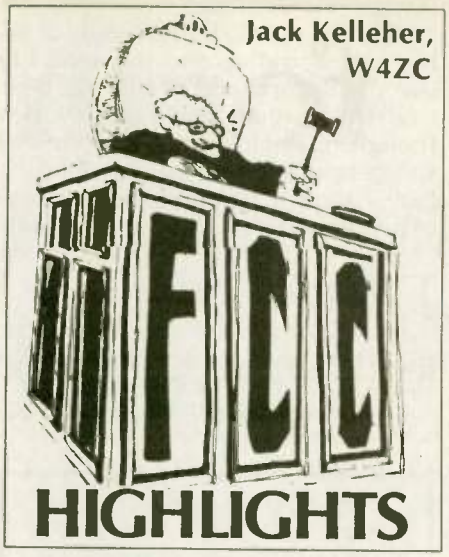

This month's column is not as lengthy as the average, due both to the normal Holiday Season hiatus, and to the fact that FCC's staff, along with many other government employees, were furloughed due to the budget stalemate.

The vanity call sign system, how and when?

Despite the overwhelming publicity on the vanity call sign system, there's always one more question to be asked — and answered. One of the most frequent encountered by this writer pertains to the address to which Form 610-V should be sent, and the order in which properly submitted applications will be considered.

Form 610-V and Form 1070-V are now available, and Form 1070-V contains answers to these questions. However, I am repeating them here to reduce to an absolute minimum the possibility of misunderstanding.

Note the words "properly submitted applications," above. Among other things, this means "DO NOT file this form until such time as the gate opens for which you are eligible, otherwise, your application will be dismissed."

Form 610-V states, in a Note in Section 3, "Do NOT send this form to the FCC in Gettysburg, PA, Washington DC or any local Field Office. See attached INSTRUCTIONS for filing information."

An integral part of Form 610-V is a sheet entitled "Instructions for Application Form 610-V." Those instructions do not tell you where to send your application, nor do they tell you anything about the order of handling the forms once they reach their proper destination. A separate Form 1070-V, "Notice of Fee Due for FCC 610V," explains how to submit the application Form 610-V and the associated fee.

The $30 fee may be paid by check, bank draft, money order or credit card. If paying by check, bank draft or money order, your remittance must be denominated in U.S. dollars, drawn on a U.S. financial institution and made payable to "FCC," no post-dated, altered or third-party checks will be accepted. No checks will be accepted if the issue date is older than six months.

DO NOT SEND CASH.

An FCC Form 159, Remittance Advice, must be used when paying by credit card.

When your Gate opens, the 610-V application package should be sent to:

Federal Communications Commission
Amateur Vanity Call Sign Requests
P. O. Box 358924
Pittsburgh, PA 15251-5924

If you wish to handcarry your application, or use an overnight courier or express service, be guided by the following, which is quoted from FCC Form 1070-V: "If you wish to hand carry or courier your feeable application to Pittsburgh, it should be enclosed in a sealed envelope with the appropriate Post Office address clearly marked on the outside. If you are filing applications for multiple post office boxes, they must be enclosed in a separate envelope for each different post office box address. Applications may be delivered to the bank at the following address:

Federal Communications Commission
c/o Mellon Bank
525 William Penn Way
27th Floor, Room 153-2713
Pittsburgh, PA 15259
ATTN: Wholesale Lockbox Shift Supervisor

There have also been questions about time of filing. Form 1070-V states further: "Although feeable applications may be hand delivered to Pittsburgh 24 hours a day, 7 days per week, the formal filing date will be either the date it was delivered, if that day was a regular FCC business day, or the next regular FCC business day, if the delivery date was a weekend or FCC holiday."

Finally, it is stated in Form 1070-V that: "If you have any questions regarding your application and/or fee, you may call the Consumer Assistance staff, Gettysburg, PA at 800/322-1117

Amateur Radio Call Signs

Amateur Radio operators often ask the FCC what call signs have been assigned lately. This list shows the last call sign in each group to be assigned for each district, as of the first of January 1996.

For more information about the call assignment in the Amateur Radio Service, see Section 97.17(f) of the FCC Rules, or write to the FCC, Consumer Assistance Branch, Gettysburg, PA 17325-7245.

Radio District	Group A Am Extra	Group B Advanced	Group C Tech./Gen.	Group D Novice
Ø	ABØAF	KGØAB		KBØUTH
1	AA1PC	KE1OS	N1WJF	KB1BVV
2	AA2ZR	KG2FF		KB2WPX
3	AA3NB	KE3VP	N3WOS	KB3BMG
4	AE4OS	KT4HY		KF4FPQ
5	AC5GA	KK5VS		KC5SCZ
6	AC6RK	KQ6CS		KF6ALC
7	AB7OA	KJ7TD		KC7OIX
8	AA8VK	KG8UQ		KC8BUT
9	AA9QV	KG9FA		KB9MGY
N. Mariana Is.	KHØU	AHØAW	KHØZP	WHØABD
Guam	WH2R	AH2DB	KH2PL	WH2ANO
Hawaii		AH6OJ		WH6CZZ
Amer. Samoa	AH8O	AH8AH	KH8CK	WH8ABE
Alaska		AL7QH		WL7CRH
Virgin Is.	WP2U	KP2CJ	NP2IS	WP2AIA
Puerto Rico				WP4NHG

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or 717/337-1212."

We'll keep you informed of further developments.

PRB-1 is still alive

The Massachusetts Ham Radio Tower Bill, (H-2782) was signed in late November and takes effect in 90 days. It reads: "No zoning ordinance or by-law shall prohibit the construction or use of an antenna structure by a federally licensed Amateur Radio operator. Zoning ordinances and by-laws may reasonably regulate the location and height of such antenna structures for the purposes of health, safety, or aesthetics, provided, however, that such ordinances and by-laws reasonably allow for sufficient height of such antenna structures, so as to effectively accommodate Amateur Radio communications by federally licensed amateur radio operators and constitute the minimum practicable regulation necessary to accomplish the legitimate purposes of the city or town enacting such ordinance or by-law."

Note: One can foresee many challenges and tests of this law; but it's a step in the right direction. —W4ZC

Antenna structures

The FCC has updated Rule 97.15 (d) in the Amateur Radio Service, and the rules for many other radio services, to accommodate new regulation of antenna structures. The new rules apply to those constructing, owning or renting space on antenna structures tall enough to be hazardous to aviation. This includes antenna structures taller than 200 feet, or that may interfere with the approach or departure space of a nearby airport runway.

The revised Part 97.15(d) reads as follows: "Further details as to whether an aeronautical study is required or if the structure must be registered, painted or lighted are contained in Part 17 of the FCC Rules, Construction, Marking and Lighting of Antenna Structures. To request approval to place an antenna structure higher than the limits specified in paragraphs (a), (b) and (c) of this section, the licensee must notify the FAA using FAA Form 7460-1 and the structure owner must register the structure using FCC Form 854. If you're in this category, better check out the details.

New services envisioned for 2300-2310 MHz.

The *ARRL Letter* dated 26 December cites an NTIA (National Telecommunications and Information Administration report on "Land Mobile Spectrum Planning Options" suggesting a new use for the band 2300-2310 MHz, now allocated to the Amateur Service on a secondary basis. The report states that the band "has potential for new, non-Federal radiolocation, fixed and mobile communication technologies . . . ."

The report also notes that constraints are necessary for the protection of NASA's Deep Space Network and Planetary Radar operations in an adjacent band. A table in the report describes a possible future use of the band as "Wide Area Land Mobile." Earlier, NTIA had listed several constraints that would apply to non-Federal use of the band. These include no airborne or space-to-earth links; commercial applications limited to less than 1 watt of power; unwanted emission levels below 2300 MHz attenuated to at least 70 dB below the unmodulated carrier; and no operation in Fort Irwin, CA.

CW and WRC-95

The bottom line concerning ITU Radio Regulation 2735 is that the Conference agreed that 2735 will remain in the Radio Regulations without change, and that the preliminary agenda for WRC-99 will include an item "Consideration of Article S25 concerning the Amateur Service and the Amateur Satellite Service." The wording is general, referring to the entire Article S25 (S25 is the new number of Article 32 in the current Radio Regulations). WR

Illegal hunting

David Gordon, KB4LCI, wants to know if you have heard any interference or illegal use of the amateur VHF bands this hunting season. If so, please send that information to KB4LCI via the Internet or by U.S. mail direct to David's Callbook™ address.

SPECIAL EVENTS

Cherry Blossom Festival

The Macon ARC will operate W4BKM on 16 March, 1500-2300 UTC, at the 14th annual Cherry Blossom Festival in Macon, Georgia. Operation will be on phone: 7.235 and 21.335; CW 7.135, 14.035 and 21.135. For certificate, send QSL and a 9 x 12 SASE to Macon ARC, P.O. Box 4862, Macon, GA 31208.

The Norwegian Lady

The Virginia Beach ARC and the NRRL av Moss, Norway, will jointly sponsor The Norwegian Lady Special Event, commemorating the 1891 rescue of the Norwegian ship SS *Dictator*, off the coast of Virginia Beach. Identical bronze statues of the ship's figurehead grace the oceanfronts of both cities, which gives the event its name. This year marks the *first* international event, involving hams from the VBARC club station WA4TGF and the Moss ARC club station LA5M.

Frequencies will inlude: CW — 3.540, 7.040, 7.110, 10.120, 14.140 (for WA4TGF) and 3.530, 7.030, 10.120, 14.040 (for LA5M); SSB — 3.878, 7.278 (listening 7.075 for DX), 14.278, 21.278 (for WA4TGF) and 3.710 (listening 3.810 for U.S.), 7.070 (LA5M), 14.278, 21.278; Two Meter FM (listening 146.550, WA4TGF) and 145.550 (LA5M).

For a certificate, send QSL and SASE to VBARC, P.O. Box 62003, Virginia Beach, VA 23462. Special endorsement for working both club stations.

Albert Einstein

The Southern Patuxent ARC will operate N3IFL from the Calvert Cliffs Nuclear Power Plant Visitors Center, overlooking the scenic Chesapeake Bay, on 16 March from 1400-2200 UTC, to commemorate the birthday of Albert Einstein, and promote the peaceful use of nuclear energy.

Operation will be in the lower end of the 10, 15, 20, and 40 Meter bands. For QSL, send #10 SASE to N3IFL, 12480 Catalina Dr., Lusby, MD 20657. WR

PRODUCT REVIEW

ARRL Electronic Repeater Directory Software

John D. Carlini, KA2FWX

The *ARRL Electronic Repeater Directory* is one of the latest software packages to be offered by the American Radio Relay League. This software will allow you to access information on over 20,000 repeaters located in the U.S., Canada, Mexico, and parts of the Caribbean, Europe and Australia. It includes all the information available in the familiar printed version plus items of interest to the beginning repeater user.

The *Electronic Repeater Directory* comes in 3½" high-density disk, nicely packaged in a simple yellow cardboard folder. It is a DOS-based program which requires 360 kB of system memory and 1.0 MB of disk space. Its small size makes it ideal for laptop users. A VGA-compatible video graphics adapter is required, and a 286 or higher processor is recommended. A mouse is optional, but I suggest using one.

Installation is simple, with two options available — manual or automatic. Since I'm leery of automatic installations, I chose the manual method and copied all the files from the disk to a newly created directory. If you choose the automatic mode, the installer will create a new directory, copy the files to the directory, and modify your AUTO EXEC.BAT file to include a path statement.

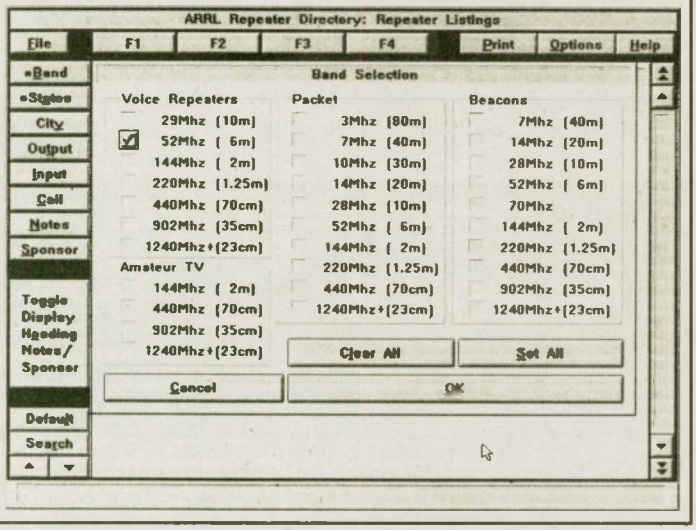

Figure 1. Example of the interface windows used for the BAND selection.

Figures 1 and 2 are examples of the interface windows used for the BAND and STATE selection. Figure 3 shows the results of the search. The buttons on the top left are used to select search criteria for each field. An asterisk on the button face is used to identify a field with a selection criteria specified. The buttons at the top of the display include the four memory locations, print options, and custom configuration options.

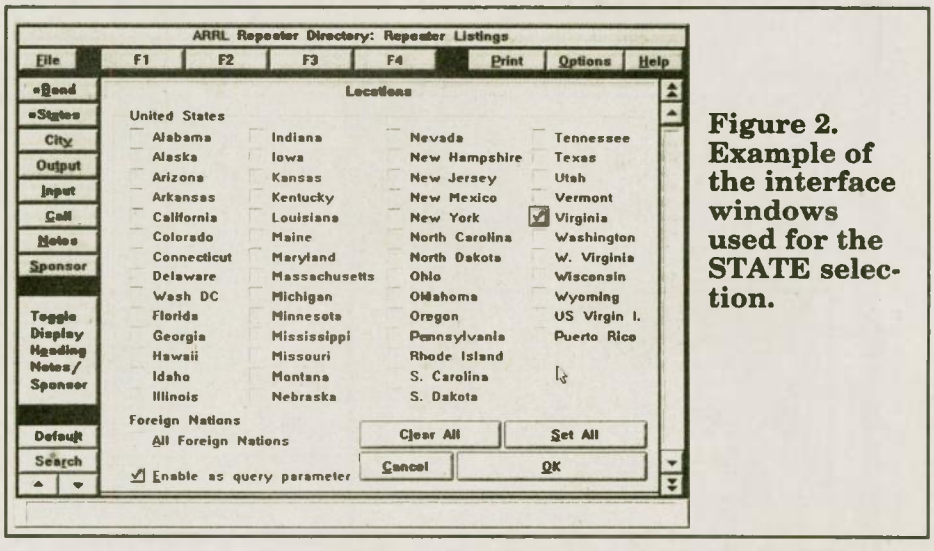

Figure 2. Example of the interface windows used for the STATE selection.

Program execution is accomplished by typing ARRLRD. Once invoked, the program displays a screen with six buttons. Five of the buttons access general information useful to repeater users, such as operating suggestions, band plans, committees, repeater terminology, and a listing of special service clubs. The sixth, and largest button, is the meat-and-potatoes of the program. It is used to gain access to the repeater database.

The repeater database can be searched by BAND, STATE, CITY, INPUT frequency, OUTPUT frequency, CALL, or combinations of these fields. Any number of bands or states and up to five cities can be specified.

There is also a capability to do specific keyword searches, and commonly used search settings can be stored in up to four memory locations. In addition, the repeater NOTES field can be searched, making it possible to look for unique repeater features such as all open repeaters that contain autopatch capability. The program will also remember your last search setting when you perform a routine exit to DOS.

Two of the search files, BAND and STATE, can be set by simply mouse-clicking on a dialog box. For example, if you want to search for all 6 Meter repeaters in Virginia, you would click the appropriate 6 Meter selection in the BAND query window, then click the Virginia box in the STATE query window. This is a very simple mouse operation any novice computer user could perform.

With any first edition software, some limitations are usually present. The *Electronic Repeater Directory* is no exception. After running a number of queries, I found that the search engine has one distinct shortfall. It involves the way each query is done.

Rather than solicit each query in a combination then execute the combination, searches are performed sequentially as each field is specified. This method is somewhat inefficient and time consuming since it involves interrogating the database more than once when selecting multiple fields.

Once you obtain a display listing from a search, you can only print the output to a printer. This is a significant limitation if you want to send your results to a standard text file for further edit. In addition, many of you hackers may be interested to know that the data files are binary, making it very difficult to derive smaller database sets or text file listings.

The program has other limitations. The display memory can only hold a maximum of 1,500 repeaters. If your query yields 2,000 repeaters, then 500 will not be shown. Also, there is no means of printing the general information accessed by the other five dialog buttons mentioned earlier.

Despite the shortfalls and limitations, I would still recommend this program for the active repeater operator. The user interface is simple and clean, and will allow you to customize screen colors to suite your taste. My favorite programs are those that can be used without reading the documentation. This program certainly meets that criterion.

The *ARRL Electronic Repeater Directory* lists for $14.95 (plus $4 shipping), a real bargain in the software world. It is available from the American Radio Relay League, 225 Main Street, Newington, CT 06111. When writing, specify order number 5188. WR

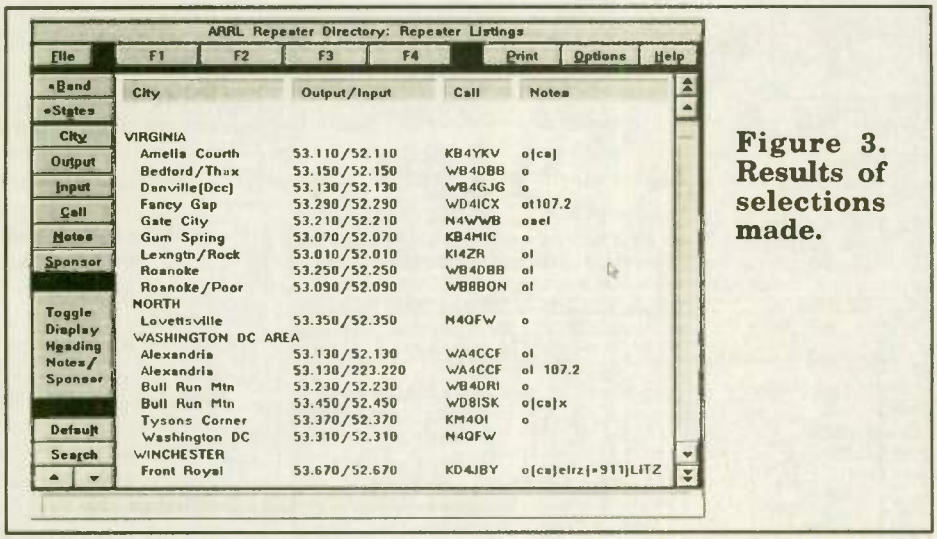

Figure 3. Results of selections made.

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MFJ-1270C super TAPR TNC clone has a world wide reputation as the most reliable packet TNC in the world! Thousands used as digipeaters, nodes, BBS and in all kinds of commerical applications working 24 hours a day -- many work for years without a single failure . . .

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- *Front panel ON/OFF switch*
- *Enhanced DCD circuit for HF*
- *Supports 19,200 baud terminals*
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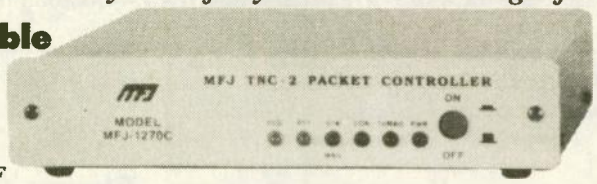

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You get full TAPR TNC-2 compatibility -- *all* software and hardware designed for the TAPR TNC-2 standard works without modification. You get NETROM, theNET, X1J and Rose Switch compatibility that turns your MFJ-1270C into a Layer Three and Four networking node.

VHF *and* HF operation.

You get high performance VHF *and* HF modems as standard equipment -- for double fun.

You get a true DCD circuit that dramatically reduces sensitivity to noise and dramatically increases completed QSOs.

FREE AC Power Supply

You get a *free* 110 VAC power suppy at no extra cost. With other brands, the AC power supply could cost you an extra $20.95.

New *enhanced* Personal Mailbox

The *enhanced* Easy Mail™ personal mailbox lets you use a dedicated call-sign for your mailbox. Your mailbox can stay on while you operate packet. It will also auto forward or reverse forward mail to and from other BBSs. A *check mail* LED blinks when you have mail. More features: remote sysop access, sysop paging, mailbox C-text, chat mode and many other features not available in other TNCs. The mailbox memory is expandable to 32K, 128K and 512K.

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You get a WeFAX mode that lets you print full fledged weather maps from your HF radio to screen or printer or save to disk using an MFJ Starter Pack.

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You can add MFJ's optional *internal* 2400 baud or 9600 baud modem just by *plugging it in* and making a few simple connections.

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You get a KISS interface that lets you run TCP/IP and MYSYS and MFJ's Host Mode that makes it easy to write efficient application programs.

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Plus more . . .

You also get 32K RAM, IC sockets for easy service, 256K ROM, speaker jack, lithium battery backup, RS-232 *and* TTL serial ports, radio cable (you have to add a connector for *your* radio), Fast-Start™ Manual plus much more. Use 12 VDC or 110 VAC. 9½x1½x7½ in.

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You get MFJ's famous *No Matter What*™ one year *unconditional* guarantee.

Enjoy Packet for a long, long time

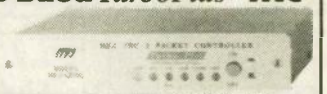
If you want a TNC that'll work 24 hours a day without failure -- *one that has more features than any other* -- get the ultra reliable MFJ-1270C today and enjoy packet for a long, long time.

2400 Baud *Turbo*™ TNC

MFJ-1270CT, $209.95. Has all the features of the MFJ-1270C plus built-in fast 2400 baud modem. Operate 300, 1200 and 2400 baud packet with the MFJ-1270CT. Radio modification is *not* necessary when operating 2400 baud packet.

MFJ 9600 Baud *TurboPlus*™ TNC

MFJ-1270CQ **$229.95**



Has all the features of the MFJ-1270C, *the most reliable TNC in the world,* plus built-in 9600 baud G3RUH compatible modem. Operate 300, 1200 and 9600 baud.

TNC ACCESSORIES

MFJ Starter Packs

An MFJ Starter Pack, $24.95, gets you on the air instantly. You get interface cable, software on disk and instructions -- just plug it all in and start enjoying packet. Order **MFJ-1284** for IBM or compatibles, **MFJ-1282** for Commodore 64/128, **MFJ-1287** for Macintosh or **MFJ-1290** for Amiga.

2400 and 9600 Baud Modems

MFJ-2400, $89.95, operates 300, 1200 and 2400 baud packet and works with any radio. **MFJ-9600B,** $109.95, G3RUH compatible 9600 baud modem. Not all radios compatible with 9600 baud. Both plug into MFJ TNCs for easy installation.

Mailbox Memory

For MFJ-1270C/1276. Plugs into RAM socket for extra *mailbox* memory. **MFJ-45A** (32K), $14.95, **MFJ-45B**(128K), $29.95, **MFJ-45C** (512K), $159.95.

Real Time Clock

MFJ-43, $29.95, ends re-setting TNC clock everytime you turn it on. Maintains correct time even when TNC is off. Plugs into RAM socket. Works with MFJ TNCs and TAPR TNC clones.

FM Deviation Meter

MFJ-52, $29.95, plug this board into your TNC configured as TheNet X-1J Node and users can check their transceiver packet FM deviation. Requires X-1J or later nodeware. See *CQ Magazine*, Nov. 1993.

Firmware Upgrade

For older MFJ TNCs. **MFJ-40C,** $19.95, gives you enhanced mailbox and supports mailbox up to 512K. *And now you also get GPS compatibility.*

Mailbox Memory Expansion Board

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Switch between your TNC or Mic by pushing a button!

Switch between your microphone and TNC by pushing a button!

MFJ-1272B/M **$39.95**

You won't have to unplug your microphone and plug in your TNC *everytime* you want to work packet or other digital modes.

Just plug these pre-wired cables into your rig's microphone connector and into your TNC and you're ready to go -- no more hard-to-find connectors and wiring up cables.

Works with HF, VHF and UHF radios with 8 pin mic connectors -- including Kenwood, ICOM, Yaesu, Alinco and others. *For radios with 8-pin RJ-45 modular telephone jack, select the new "M" models.*

Plug-in jumpers let you quickly set-up for virtually any radio. Factory set for Kenwood and Alinco. Includes easy-to-follow instructions. Has audio-in and speaker jacks. 3¼x1¼x4 inches.

MFJ-1272B/1272M, $39.95, for MFJ TNC/multimodes,TAPR TNC-2 clones.
MFJ-1272BX/1272MX, $39.95, for PK-232.
MFJ-1272BYV/1272MYV, $39.95, for KAM VHF/KPC3.
MFJ-1272BYH/1272MYH, $39.95, for KAM HF Port.

Pre-wired Radio-to-TNC cables . . . $14.95

Radios \ TNC Type	All MFJ TNCs/ PK900/PK96/ PK12/PacCom/ other TNC-2 compatibles	KAM VHF[5]/ KAM HF[5]/ KPC3[5]/ KPC9612[5]	PK-232	PK-88
Icom[1]/Yaesu/ Alinco/Radio Shack HTs	MFJ-5024	MFJ-5024YV	MFJ-5024X	MFJ-5024Z
Kenwood[2] HTs	MFJ-5026	MFJ-5026YV	MFJ-5026X	MFJ-5026Z
Yaesu 8-pin	MFJ-5080	MFJ-5080YV MFJ-5080YH	MFJ-5080X	MFJ-5080Z
Icom[3] 8-pin	MFJ-5084	MFJ-5084YV MFJ-5084YH	MFJ-5084X	MFJ-5084Z
Kenwood/Alinco 8-pin	MFJ-5086	MFJ-5086YV MFJ-5086YH	MFJ-5086X	MFJ-5086Z
Yaesu 8-pin modular	MFJ-5080M	MFJ-5080MYV	MFJ-5080MX	MFJ-5080MZ
Icom[4] 8-pin modular	MFJ-5084M	MFJ-5084MYV	MFJ-5084MX	MFJ-5084MZ
Kenwood 8-pin modular	MFJ-5086	MFJ-5086MYV	MFJ-5086MX	MFJ-5086MZ
Radio Shack 8-pin modular	MFJ-5088M	MFJ-5088MYV	MFJ-5088MX	MFJ-5088MZ

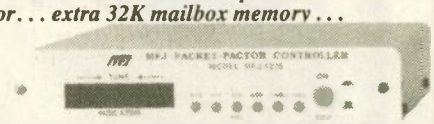
1. does not include IC-W2A
2. does not include 2500
3. does not include 25A, 255A
4. does not include IC-100H, IC-2700H
5. YV for KAM VHF port, YH for KAM HF port. Other Kantronics use YV models
6. YV for KP9612 1200 baud port
7. YH models for KPC9612 9600 baud port

PACKET *plus* PACTOR TNC

You get all the features of the MFJ-1270C HF/VHF TNC plus . . . PACTOR . . . precision HF tuning indicator . . . extra 32K mailbox memory . . .

PACTOR combines the best of Packet and AMTOR for HF. You get excellent weak signal operation, error correction, faster baud rate, data compression and full 8-bit word transmissions.

MFJ-1276 **$159.95**



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You also get an extra 32K of memory for your enhanced *Easy Mail*™ packet mailbox.

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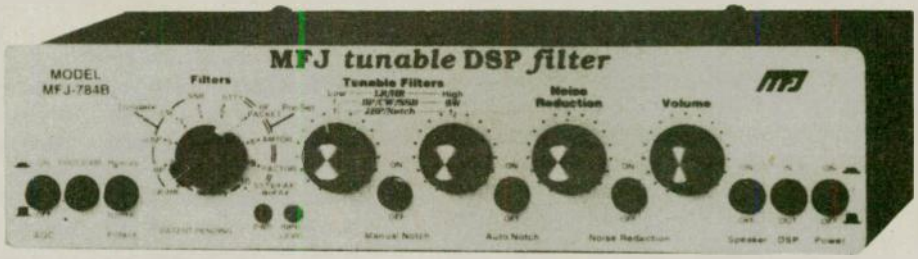
NEW

. . . Tunable "brick wall" bandpass, lowpass, highpass, notch, SSB, CW filters . . . programmable pre-set filters . . . automatic multiple notch filter eliminates heterodynes . . . adaptive noise reduction reduces noise and QRN . . . for Voice, CW, Data . . .

MFJ's ***tunable*** **super DSP filter automatically eliminates heterodynes, reduces noise and interference** ***simultaneously*** **on SSB, AM, CW, packet, AMTOR, PACTOR, RTTY, SSTV, WeFAX, FAX, weak signal VHF, EME, satellite -- nearly any mode.**

Only MFJ gives you
tunable and programmable "brick wall" DSP filters
MFJ-784B
$249.95
Patent pending



You get MFJ's tunable FIR linear phase filters that minimize ringing, prevent data errors and have "brick wall" filter response with up to 57 dB attenuation just 75 Hz away.

Only **MFJ gives you 5** ***tunable*** **DSP filters. You can** ***tune*** **each lowpass, highpass, notch, and bandpass filter including optimized SSB and CW filters. You can** ***vary*** **the bandwidth to pinpoint and eliminate interference.**

Only **MFJ gives you 5** ***factory*** **pre-set filters and 10** ***programmable*** **pre-set filters that you can customize. Instantly remove QRM with the turn of a switch!**

You get MFJ's ***automatic notch*** **filter that searches for and eliminates** ***multiple*** **heterodynes.**

You also get MFJ's advanced ***adaptive noise reduction.*** **It silences background noise and QRN so much that SSB signals sound like local FM.**

The ***automatic*** **notch and** ***adaptive*** **noise reduction can be used with** ***all*** **relevant tunable pre-set filters.**

Automatic gain control **(AGC) keeps audio level constant during signal fade.**

Automatic notch filter

MFJ's automatic notch filter searches for and eliminates multiple heterodynes in milli-seconds. It's so fast, that even *interfering* CW and RTTY signals can also be eliminated.

With up to 50 dB attenuation, you'll copy stations otherwise masked by heterodynes.

Voice signals aren't degraded because the notch is extremely narrow.

Turn on *automatic* notch and you'll never hear unwanted heterodynes of tuner-uppers.

You can *selectively* remove unwanted tones using the two *manually tunable* notch filters --an MFJ exclusive. Knock out unwanted CW stations while you're on CW.

Adaptive Noise Reduction

Turning on noise reduction silences background noise. It reduces fatigue and makes noisy signals readable.

Noise reduction works in all filter modes and on all random noise -- white noise, static, impulse, ignition noise, power line noise, hiss.

The LMS algorithm gives you up to 20 dB of noise reduction. Noise reduction is adjustable to prevent signal distortion.

Tunable highpass/lowpass filters

For Voice and Data, nothing beats MFJ's exclusive *tunable* highpass/lowpass FIR linear phase "brick wall" filters.

You can tune the lower cutoff frequency 200 to 2200 Hz and the upper cutoff frequency 1400 to 3400 Hz. This lets you create *custom* filters for Voice, Data and other modes.

Signals just 75 Hz away literally disappear -- they are reduced 57 dB!

NEW MFJ-784B Features

- Tunable *Spotting Tone*™ -- an *MFJ invention* -- accurately tunes even the narrowest CW filter
- MFJ's exclusive *Adaptive Tuning*™ -- Center frequency tuning automatically becomes finer as you narrow bandwidth -- makes extremely narrow filters easy-to-use
- Improved automatic notch with *variable* aggressiveness
- New quieter audio amplifier gives you *full* 2½ Watts output
- Speaker ON/OFF button, phones always active
- Accurate easy-to-use input level indicator
- *Filter Talk*™ function sends precise filter settings in Morse code
- Filter automatically bypasses during transmit for monitoring CW sidetone, voice or data by sensing PTT line
- Improved manual notch in the CW mode
- Manual notch and automatic notch can be used simultaneously
- Noise reduction, automatic notch and tunable manual notch can be used in Memory mode
- Adjustable line level output
- More Mark-Space frequencies and baud rates for data filters
- Improved self-test for all digital circuitry, switches and controls

Unlike other filters, speech is not distorted by unequal time delay.

When signals are weak, you can improve copy by removing noisy high and low speech frequencies that contain little information.

On crowded HF bands, you can "slice-off" overlapping SSB signals to improve copy.

You can highpass filter out hum, pulses, rasp and other irritating low frequency noise.

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Narrow band signals like CW and RTTY jump out of QRM when you switch in MFJ's *exclusive* tunable FIR bandpass filters.

You can tune the center frequency from 300 to 3400 Hz, and vary the bandwidth from 30 Hz to 2100 Hz -- from super-tight CW filters to wide razor-sharp Data filters.

As you narrow the bandwidth, interfering signals drop out, because, just 60 Hz away, they're down by over 47 dB.

You can use narrower bandwidths to fight tough QRM because these linear phase filters don't distort signals with unequal time delays.

Even with the narrowest 30 Hz bandwidth, you'll never have a problem with ringing.

One position gives you two tunable filters you can use together. For example, tune one to mark, one to space and set the bandwidth tight for an incredibly sharp RTTY filter.

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You can select from fifteen convenient *pre-set* filters. Use them for SSB, AM, CW, packet, AMTOR, PACTOR, RTTY, SSTV, WeFAX, FAX or any mode you can think of.

If you don't like our pre-set filters, you can program your own -- *an MFJ exclusive!* Save center frequency/bandwidth, lowpass/highpass cutoffs, auto/manual notch, noise reduction -- all filter settings -- in 10 *programmable* filters.

Only MFJ gives you the best of both worlds -- *tunable* filters to eliminate nearly any QRM and fast convenient *pre-set* filters customized for any mode.

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A Nickel-Cadmium and Nickel-Metal Hydride battery charger that you can build

Richard E. Frost, NF7V

If you are tired of NiCd and NiMH battery failures you should read this article. The background and technical information will give you an understanding for the latest developments in NiCd and NiMH battery pack theory, use and maintenance. The most notable benefit of the charging technique described is the increase, by four times, in service life.

In NiCd and NiMH cells the electrolyte's purpose is to serve as a conductor for hydroxide ions moving from one plate to the other. In the overcharge region the electrolyte serves as a conductor for oxygen gas. The NiCd charging reaction is endothermic (absorbs heat) until charged to about 90% of full capacity. NiCd cells cool down 1 or 2°C before a small increase in temperature occurs as full charge is approached. The endothermic reaction is seldom observed because of heating due to the formation of undesired oxygen gas bubbles at the nickel plate. This heat offsets the endothermic nature of NiCd charging reaction. A good rule of thumb is, any charging method that results in discernible temperature rise.

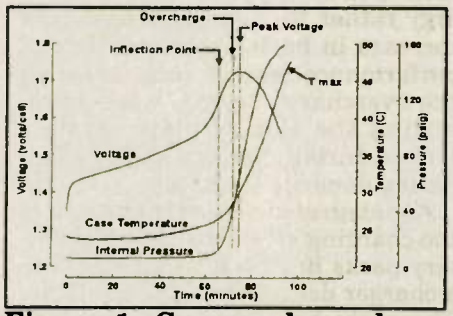

Figure 1. Curves show sharp increases in cell temperature.

The oxygen bubbles that accumulate on the nickel plate are insulators and effectively reduce the area of the plate that can accept hydroxide ions. An uneven distribution of charge on the plate results when oxygen bubbles are present, because little or no charging occurs in the areas insulated by oxygen bubbles while localized overcharging occurs in the "uninsulated" areas. Eliminating the accumulation of oxygen bubbles distributes the charge evenly over the cell plate. Reverse pulse charging facilitates the recombination of oxygen that produces a significant increase in battery life by keeping internal temperature and pressure low.

Battery manufactures have been making advanced technology Nickel-Metal Hydride (NiMH) batteries available. These cells have many of the desirable physical and chemical attributes of sealed NiCds. NiMH batteries have the same 1.2-volt electrochemical potential as NiCd batteries and can replace NiCds directly in many applications. NiMH batteries offer 35% higher energy density than NiCds. NiHM batteries have a higher self-discharge rate and are more sensitive to high and low temperature. Many NiCd users who need increased energy capacity without increasing battery pack size and weight have found switching to Ni-MH batteries to be a cost-effective alternative.

When fast charge methods such as deep negative /ΔV and cell case temperature termination are implemented, damaging cell case temperatures of 45°C to 50°C commonly occur. This method results in a significant reduction of cell service life. Using a predetermined cell case temperature to determine when the battery pack is fully charged is a frequently used technique. High ambient temperatures or low thermal transfer will cause charging to be terminated early. On the other hand, low ambient temperatures will cause overcharging. The curves in Figure 1 show the sharp increase in cell temperature and pressure that occurs as a cell enters the overcharge region.

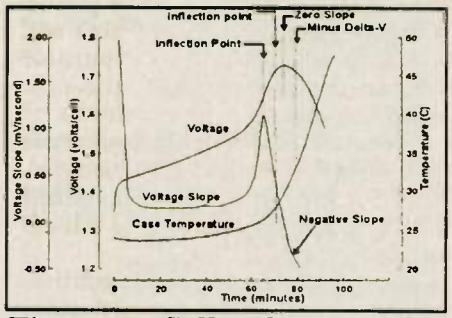

Figure 2. Cell voltage profile and cell voltage slope (dV/dt).

Overcharging decreases cell life due to the increased internal temperature and pressure. Cell terminal voltage increases during charging. This voltage continues to increase after peak charge as the cell enters the overcharge region. If rapid charge continues, the cell voltage decreases. This drop in voltage indicates that a serious, damaging overcharge has occurred. By calculating the voltage slope value and using it to determine the dynamic inflection point, rapid charge can be terminated at peak charge. The cell voltage profile and cell voltage slope (dV/dt) are shown in Figure 2. Triggering charge termination at the dynamic inflection point allows charging to full charge without the damage that accompanies overcharging.

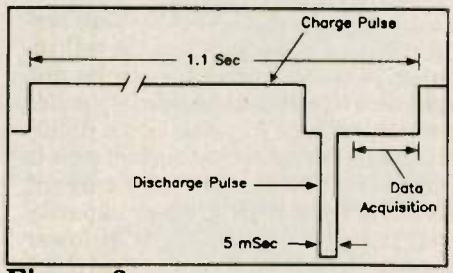

Figure 3.

In the initial phase of charging, some cells exhibit a voltage peak that may be interpreted as full charge when the voltage slope termination method is

employed. This initial voltage peak occurs due to a cell's high impedance. Cells that are unformed (never been in service) cells that have been completely discharged or those reverse polarized may exhibit this characteristic. Cells can be eased into accepting a rapid charge rate by starting with short pulses of charging current before calculating voltage slope values.

Dendrites develop in NiCd cells that are continuously charged at low rates. Dendrites are crystalline structures that grow between the plates. In severe cases these dendrites will permeate the insulating separator and can completely short the cell. Dendrites create a short circuit or leakage path that quickly discharges a cell even if the cell is not in service. Dendrite formation from constant prolonged trickle charging is a leading cause of cell failure.

Cells in systems where a repetitive, shallow loading — recharging pattern occurs will acquire a memory, technically called voltage depression. Voltage depression becomes apparent when cells are discharged below the level of discharge previously experienced. The formation of large crystals is responsible for the voltage depression that appears to be a loss of capacity. "Memory" can be erased by discharging and charging the cell. Several charge←→discharge cycles may be necessary in extreme cases.

Another problem that contributes to a significant reduction of battery service life in series cell packs is cell reversal. While single cells can be discharged without caution, battery packs made up of cells in series are a different story. When a series pack of cells is completely discharged, the current from the cells with greater capacity eventually charge the cells of lower capacity *in reverse*. The electrical characteristic of a cell charged in reverse is like a resistor. The power dissipated is converted to gas and heat. In severe cases the increase in the cell's internal pressure will cause the cell to vent. The vented gas and electrolyte loss reduce the capacity of the low capacity cells even further.

One proper method of totally discharging a series battery pack is to provide a separate discharge path for each cell. A 1.5-volt incandescent lamp across each cell is a suitable load. The lamps should remain connected until all have extinguished. This procedure will remove the charge from all cells in the battery pack. Battery packs enclosed in sealed cases, with inaccessible cells, should never be discharged to less than one volt per cell.

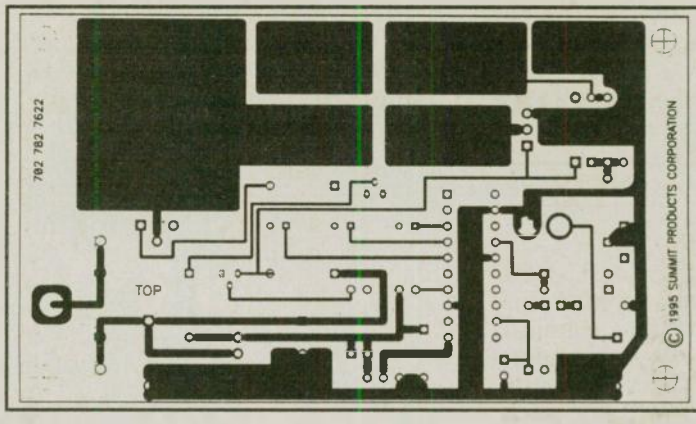

Figure 4. PCB art

Given the characteristics of NiCd and NiMH cells, an intelligent charge control system can be defined. The system controller must be capable of controlling the rate of charge and interpreting the meaning of changes in the battery voltage. A controlled discharge pulse, at regular intervals during charging, has proven benefits of dramatic proportions. Short, periodic discharge pulses during charging increase the recombination of oxygen into the cell plate preventing bubbles that would otherwise accumulate on the cell plates. Eliminating the accumulation of oxygen bubbles on the cell plates permits an even distribution of stored energy over the entire plate.

Cells that have been abused by improper charging techniques can sometimes be reconditioned by using reverse pulse charging. Two advantages of the reverse pulse charging method are rapid charge convenience and extending the number of charge←→discharge cycles from about 500 to 2000. An intelligent rapid charge method must be employed if the charging current is to be converted to stored energy rather than gas and heat. The increase in battery service life and performance results from avoiding the overcharge region, while minimizing the size of plate crystals formed during charging and by eliminating dendrite formation.

An integrated circuit that controls the charging of NiCd and NiMH battery packs has been incorporated in a charger design that you can build. Those who have the necessary skills and equipment can use the PCB art shown in Figures 4 and 5 to etch a double sided PCB for the charger. Figure 6 shows the component layout. The use of this art is restricted to your personal use, using this art or design for commercial purposes is prohibited. The material list in the side bar,

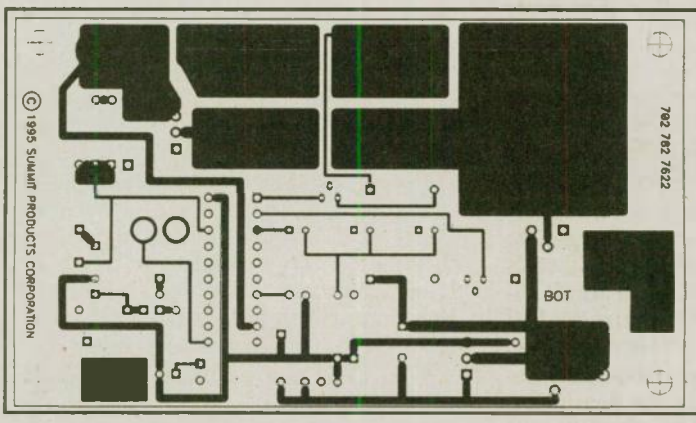

Figure 5. PCB art

Figure 8, will make shopping for the necessary parts a snap. Refer to the schematic in Figure 9 as a guide to the component locations. The total cost for these parts is under $22. The charger can be configured to charge Nickel-Cadmium and Nickel-Metal Hydride battery packs of two to twelve series cells rated at 50 milliamps to 6 amp-hours. The maximum charging current is 1.5 amps; therefore rapid charging times range from 60 minutes for 1.500 amp and smaller battery packs and up to 240 minutes for 6 amp battery packs.

The board provides six charge rates. A 30 to 40 watt soldering iron and common hand tools are required for assembly. The label shown in Figure 7 can be cut out and attached to the enclosure. The label serves as a template for locating the mounting holes for the PCB, the LEDs and the reset switch.

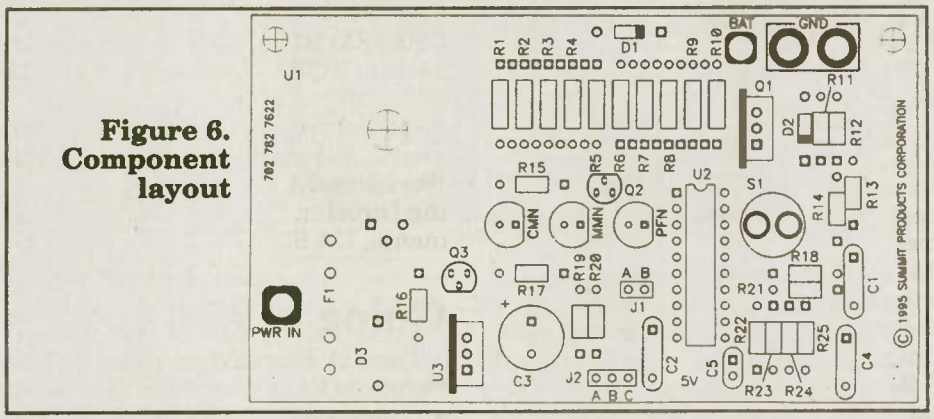

Figure 6. Component layout

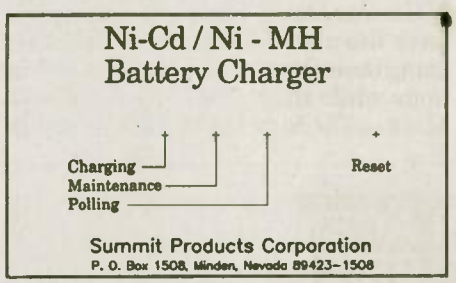

Figure 7. Label serves as a template for locating mounting holes.

Quan	Type	Value	Ref Designators
	RADIO SHACK PARTS		
1	IRF510	276-2072	Q1
2	MPS2222	276-2009	Q2, Q3
1	.22uF 50V	272-1070	C1
1	470uF 35V	272-1030	C2
1	10uF 16V	272-1436	C3
1	100pF 50V	272-123	C4
2	PTC205	276-1114	D1, D3
1	1N4744	276-564	D2
3	T-1¾ LED	276-041	D4, D5, D6
1	5 x 20 mm 3 Amp	270-1054	F1
1	LM317T	276-1778	U1
1	MC7805T	276-1770	U3
4	Quick Disconnect	64-3038	Pwr in, Bat, Gnd & Gnd
1	No Push Button	275-1547	S1
18	See Discharge Table	As required	R1 to R5, R1A to R4A, R6 to R10, R6A to R9A
4	See Charge Table	As required	R11, R12, R13, R14
2	470 (*)	271-309	R15, R20
1	4.7K (*)	271-309	R16
1	100K (*)	271-309	R17
3	2.2K (*)	271-309	R18, R24A, R25
1	10K (*)	271-309	R19
1	150 (*)	271-309	R21
1	1K (*)	271-309	R22
1	15K (*)	271-309	R23
1	Fuse clips	270-744	For F1
1	Heat sink	276-1371	For U1
A/N	LED bezel	276-079	For D4, D5, D6
A/N	Heat sink grease	276-1372	For U1
A/N	Spacers	64-3024	For PCB mounting
A/N	Quick disconnects	64-3039	For external wiring
A/N	Project box	270-253	Enclosure
(*)	Included in one 271-309 package of 1% resistors		
A/N	= as needed		
	NON RADIO SHACK PARTS		
1	ICS1702N	(#)	U2
1	Printed circuit board	(#)	
1	Label (hole template)	(#)	

(#) Part of Summit Products kit

Figure 8. Side bar

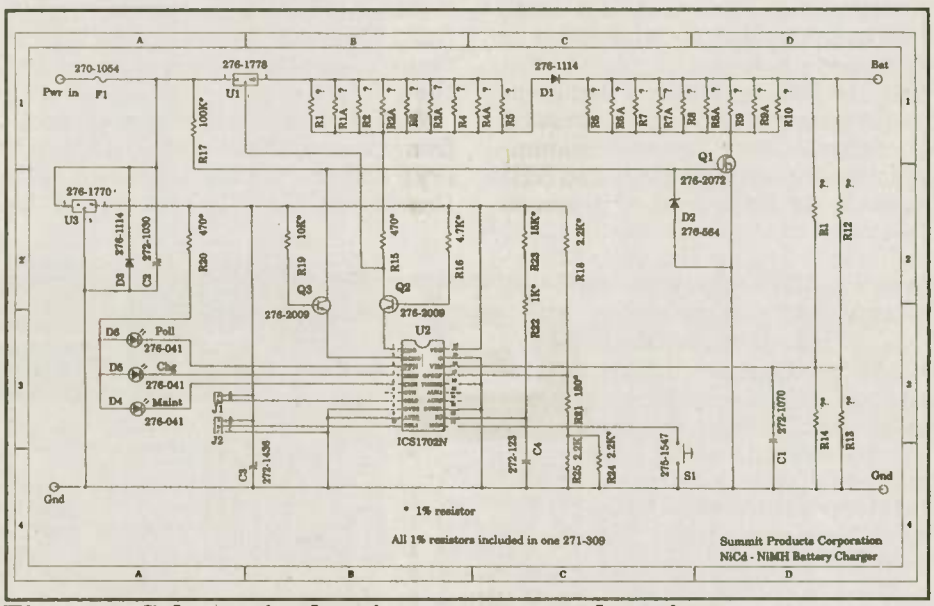

Figure 9. Schematic showing component locations.

Theory of operation

The "POLLING" LED is illuminated until a battery pack is connected to the charger. When the charger detects that a battery pack has been connected, an internal timer is reset and starts a four-stage charge sequence. The four stages are soft start, fast charge, topping charge and maintenance charge. The soft start stage begins with one 200 millisecond positive charge pulse once a second. This pulse width is increased each second until the duty cycle is approximately 0.97.

The purpose of soft start is to prevent the voltage peak exhibited by some batteries during the initial phase of charging from interfering with voltage slope calculations. The "CHARGING" LED is illuminated throughout the soft start and fast charge stages.

The second stage is fast charge. The positive charge current is interrupted about once a second. During the interruption there is a rest period of approximately four-milliseconds, one high current discharge pulse of approximately five milliseconds at 2.5 times the charge current, another four millisecond rest period and then a data acquisition period of approximately sixteen-milliseconds. Figure 3 illustrates the timing of the process. No charge or discharge current is permitted during the data acquisition period. Since no current is flowing there are no external or internal voltage drops interfering with the cell voltage measurement. The charge and discharge current magnitudes are determined by user-selected resistors.

A topping charge is applied during the third stage. The topping charge is identical to the charge cycle shown in Figure 3 with a delay between each charge ← → discharge cycle. The delay

duration produces a C/10 charge rate. A timer terminates the topping charge after two hours.

In the last stage the delay is increased by a factor of four to produce a C/40 maintenance charge. The maintenance charge keeps the battery pack primed at peak capacity with the C/40 charge. The C/40 charge will continue indefinitely if the battery is connected to the charger. The "MAINTENANCE" LED is illuminated to indicate the charge is completed and the topping charge or maintenance charge is in process.

This charger addresses four concerns that are ignored in less sophisticated NiCd and NiMH battery chargers, i.e., minimizing the memory effect (voltage depression), preventing dendrite formation, eliminating overcharging and allowing a true full charge while keeping the battery cool.

Construction materials can be ordered as a kit directly from Summit Products Corporation, P.O. Box 1508, Minden, NV 89423-1508. The kit is available in two forms; the first ($29.95 plus $7.50 S/H) includes assembly instructions, controller chip, silk screened PCB with solder mask and label/template, the second (49.95 plus $7.50 S/H) also includes all components except those required for configuration.

Wired, tested circuit boards ($69.95 plus $7.50 S/H) are available. These boards are ready for configuration to your specifications. Battery packs from one to fifteen series cells, with or without temperature sensors can be charged with this charger. A computer program that computes all of the component values required to customize for battery packs capacities up to 6 amp-hours is included. **WR**

Atlas shrugged

Worldradio has been in communication with two Amateur Radio operators who ordered (and prepaid) Atlas radios in 1994 and have yet to have those orders satisfactorily filled, despite their repeated attempts. Both men have requested in writing to have their money refunded, since no satisfactorily working radio has been delivered. Neither has received a refund.

Worldradio's attempts to try to intercede for these gentlemen to expedite their refunds have not been successful, and we have been unable to talk to anything but a machine there in the last couple of months. Despite our request for a reply, our recent faxes have elicited no response from them.

Worldradio would like to hear from anyone who has received delivery from Atlas Radio Company (10457 Roselle St., San Diego, CA 92121; 619/535-1000; Customer service hotline 1-800/5-ATLAS-8; Fax 619/535-1603) of an Atlas transceiver in good working order in the last four years. Please send your letter to ***Worldradio,*** Helen Noble, Advertising Director, P.O. Box 189490, Sacramento, CA 95818. **WR**

Going to Mars

The Jet Propulsion Laboratory in Pasadena California, will be launching a replacement for the ill-fated Mars Observer, called the Mars Observer, in the latter part of 1996. Among the many experiments carried on the spacecraft, the Mars Global Observer will carry a 1.3 watt continuous-carrier beacon transmitter on 437.100 MHz. Amateur Radio operators will have the ability to receive this beacon using their OSCAR satellite ground stations while the spacecraft heads off to Mars.—*The Ragchewer*, Lancaster, OH

ARRL vs. malicious interference

The ARRL appears to be getting ready to keep a promise to go the political route to end malicious interference on the ham bands, in response to the rising tide of unresolved malicious interference complaints filed by the Amateur Radio community. An ARRL Executive Committee ad hoc panel has recommended that the League look to Congress for any long term solution.

Writing in the 26 December issue of the *ARRL Letter*, Steve Mansfield, N1MZA, the League's Administrative and Public Affairs Manager says that as a part of the continuing effort by the ARRL to get enforcement action, the League has started to round up support from several congressmen from areas where local hams are experiencing particularly intolerable interference problems. Mansfield says that over the past three years the League has constantly sought action in two cases of repeated and persistent malicious interference. In one case, the local FCC office has been able to at least defuse the situation. But the problem continues in the other with no action on the part of the enforcement arm of the FCC in sight.

FCC back to work

The FCC reopened Thursday, 11 January, but closed Friday, 12 January, as another snowstorm hit the Washington, D.C. area. Monday, 15 January, was Martin Luther King Day and federal offices including the FCC were closed.

While it was open 11 January, the FCC accepted electronic amateur license application files for processing from VECs. The Commission says that it has tried to expedite the application backlog, but some temporary software adjustments are needed before licenses are granted.

There is no word when filing for vanity call signs might begin. The FCC has several pending petitions for reconsideration that it must tackle before it accepts applications on form 610V for vanity calls. Several of those amateurs who filed the petitions have indicated that they will take the matter to the federal court if their requests are denied. If this happens, the vanity call sign program could remain in abeyance for a considerable period of time.

Joseph Merdler, N6AHU — a tribute

For me, the most difficult part of my job is to write of a member of our community who has gone to his or her final reward. It's far harder when the person I am writing about happens to be someone with whom I have been close friends for over two decades. This is one of those cases.

On Wednesday, January 17th, former *Newsline* legal reporter Joseph Merdler, N6AHU, died of an apparent heart attack at his home in North Hollywood, California. Joe was a lawyer by profession and was part of the *Newsline* family almost since its inception in the 1976. This was when we were still known as the Westlink Radio Network.

Joe came to national prominence in the late '70s and early '80s for his work in combating malicious interference and the use of vile language on our bands through political action. He even traveled to Washington to teach the American Radio Relay League how to deal with the legislators on Capitol Hill. And in 1980, the Dayton Amateur Radio Association recognized his accomplishments by honoring him with its Special Achievement Award.

Joe was hard at work and taking his anti-malicious interference message nationwide when he suffered his first heart attack in the mid-1980s. His doctors told him that he would have to cut back and change his life style if he wanted to live. He took their advice — to some degree — but there was no way for him to walk completely away from his chosen responsibilities. He often told me that to do so would be like not living at all.

So Joe cut back on the number of hours that he worked. He lost weight and even put ham radio politics somewhat on the back burner.

But Joe's health continued to fail. Even so, he still attended the 1991 Dayton Hamvention. He loved the Hamvention and the people of Dayton, but immediately following the close of the show, Joe admitted himself to the Cleveland Clinic for evaluation. It was a move that literally saved his life.

The cardiac care specialists found that Joe had developed an aneurysm that was ready to burst. They operated and it was a partial success. His life was spared for the moment, but we all knew that he was living on borrowed time.

I guess that knowing that your time on earth is limited does change you. It did Joe. He came home from Cleveland a quieter and more loving person. Not somber. Quite the opposite. He relished every moment of every day and his dedication to his friends and family — and even to ham radio — was totally renewed.

I wish I had the space to tell you of all of Joe's accomplishments. I don't. But I do want to share the reason that Joe was so driven in his war against the purveyors of dirty words on our ham radio airwaves. It was a small incident that took place in 1978.

He was in his car with his then-young daughter and turned on his 2M radio. Immediately out of the speaker came forth a savage tirade of foul language that was without doubt legally obscene. He told me that his daughter looked at him and asked: "Dad, is this what your ham radio is all about?" From that day, until the day he died, Joe Merdler, N6AHU, devoted his ham radio life to fostering decency on the air.

I guess that it is appropriate that in the last conversation that Joe and I had, I was able to tell him about a Supreme Court decision that upheld the FCC's ban on the broadcast of indecent language. It was a decision that we both saw as opening the door to renewed enforcement of laws barring legally indecent language in all services, perhaps even on the ham bands.

And maybe that is what this epitaph is really about. The simple story of a decent man who devoted much of his adult life to making our hobby of Amateur Radio a decent place where kids of all ages can play. That by itself is well worth remembering.

A long time ago, Joe made me promise that if I ever had to write an obituary about him, that it would not be maudlin. He wanted it to be upbeat, and hopefully, I have lived up to that request.

Joe was 60 years old and had just bought his airline tickets for his annual trip to the Hamvention, but God called him to come home instead. He is survived by his wife Margot, N6QFU, by his thousands of friends around the world, and by this writer whose life he touched in an almost magical way.

—de Bill Pasternak, WA6ITF

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Kenwood's TM-733A is a versatile FM dual-bander with sophistication and power (144MHz; 50W/440MHz; 35W) for high performance mobile communications. As well as receiving simultaneously on VHF and UHF bands, it can receive two frequencies on the same band.

Six-In-One Programmable Memory

Six entire operating profiles—including everything from the frequency range to the dimmer level can be stored in the programmable memory for recall at the press of a button. It's like having six transceivers in one.

Data Connector for 1200/9600 bps Packet

Using the 6-pin mini DIN connector on the front panel, you can hook up a TNC to the TM-733A for either 1200 or 9600 bps packet communications.

1200 9600bps packet compatible

* permits required for MARS and CAP use. Specifications guaranteed for Amateur bands only.

Theft Deterrent Features

For the added safety, you can choose the quick-release detachable front panel kit (option). The transceiver unit can be concealed under a seat or in the trunk.

ISO 9002
Meets ISO Manufacturing Quality System

Theft Deterrent Faceplate

Other Features

■ 72 multi-function memory channels ■ AIP (Advanced Intercept Point ■ Built-in DTSS with page ■ Cross-band repeater ■ Wireless clone function ■ Wireless remote function ■ Auto simplex checker ■ Built-in CTCSS encoder & optional TSU-8 decoder ■ Key function display ■ Modifiable for MARS/CAP*

144MHz/440MHz & 144MHz/220MHz Operation

The TM-742A (144MHz; 50W/440MHz; 35W) and TM-642A (144MHz; 50W/220MHz; 25W) dual-band mobile transceivers can be converted into tri-banders with the addition of an optional FM band unit: 28MHz (50W), 50MHz (50W), 220MHz (25W; TM-742A only), 440MHz (35W; TM-642A only), or 1200MHz (10W). The transceiver can display and even receive three bands simultaneously.

101 Memory Channels

For each band, there are 100 memory channels plus 1 call channel. Each channel can store transmit and receive frequencies independently or odd split repeaters.

TM-742A

TM-642A

Other Features

■ Built-in DTSS selective calling with page ■ Independent SQL & VOL controls for each band ■ Built-in CTCSS encoder & optional TSU-7 decoder ■ Wireless remote control function ■ High-visibility illuminated panel keys ■ Wide-band VHF/UHF receive coverage (including Air Band) ■ Date & time display, stopwatch, alarm, on/off timer ■ Cross-band repeater function ■ Modifiable for MARS/CAP*

*Permits required for MARS and CAP use. Specifications guaranteed for Amateur bands only. Kenwood follows a policy of continuous advancement in development. For this reason specifications may be changed without notice.

Separate Control & Display Units

The display and controls can be mounted separately on either side of the steering wheel, for example — while the main unit is concealed in the trunk.

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FM MULTI BANDER

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OFF THE AIR

How to improve your hamfest

Radio clubs are always striving to improve their hamfests in order to draw more people, so I have come up with a few suggestions of my own. I admit that I have never had the opportunity to help put a hamfest together, but I have gone to enough of them to know what types of things draw people's interest. I have been a ham for 16 years.

First, I think clubs should have a prize drawing early in the day, let's say one hour after it opens, and have it be a fairly expensive item. This would prompt the early risers to get to the hamfest in time for the drawing as well as get the late sleepers out of the sack earlier. Then throughout the day they can give less expensive items and have the grand prize drawing after the small prizes are gone.

Another thing that I don't see often are hands-on demonstrations of other modes of operation such as ATV, SSTV, packet, and satellite. Many hams (myself included) have heard of some of these modes, but have never *seen* them in operation. The clubs should have as many demonstrations as possible set up for the above modes, so that interested hams can actually sit down and operate these modes. Of course, there should be a qualified control operator on hand to answer any questions and hand out information. Who knows . . . maybe it would interest them enough to get them to buy some additional equipment from the vendors and maybe it would give the vendors enough extra business that they would want to come back the next year! The clubs should advertise it big on their flyer that these demonstrations are HANDS-ON and invite all to try them out. These demonstrations may even give some hams an incentive to upgrade if their license does not currently permit them to use these other modes.

Most of the time I see forums where they talk about a new type of operational mode or have a station set up for you to look at, but only the speaker gets to actually put his hands on it and do something with it. Then when the forum is over, the equipment is quickly taken away to make room for the next forum.

How can we get more hams and prospective hams interested in other modes if we do not show it to them and let them try it for themselves?

John E. Gercken, KA9EPO
Bellflower, IL

Improved quality

I think you came down a "little hard" when you blasted Radio Shack in your Publisher's Microphone (December, 1995 ***Worldradio***). Urging your readers to boycott Radio Shack because they are a "Johnny-come-lately" is grossly unfair and untrue. I think you should be pointing out the positive aspects of Radio Shack entering the amateur market in a big way. Personally, I think it is great that nearly every city in the country now has a retail outlet where amateurs can see, operate and purchase new gear right over the counter. Here in Kentucky, there are no amateur equipment stores . . . period. Sure we can (and do) buy through the mail or go to a neighboring state where amateur equipment is available. Kentucky is not unusual, either. There are many states with few, or no amateur equipment outlets other than the "Johnny-come-lately" Radio Shack stores.

In addition, you are totally wrong when you say Radio Shack doesn't support hamfests, donate prizes, buy booth space, etc. Radio Shack has been to every Dayton Hamvention for many years with multiple booth spaces, both inside and outside, offering a variety of radio gear, scanners, gadgets and computer ware. They also have donated prizes at Dayton.

Recently, my wife Joyce, KA8MJQ, needed a new 2 Meter mobile rig. The local Shack had theirs (HTX-212) on sale for less than $300 and I bought it for her. I also own their 2 Meter HT which I bought in 1994 during a special Dayton Hamvention promotion. Both units work great and are good values for the money. How can you say they don't support the hobby? But maybe you don't consider VHF and UHF part of our hobby . . . .

I am not here to defend Radio Shack. I am not employed by them, nor have I ever been employed by them. We all know that in years past, many of their products were somewhat sub-par in quality. I remember when their RG 8 coaxial cable was about 25% shielded and lossy as could be. But things have changed. In recent years, the quality of their products has improved. You should be happy to see a new face on the amateur scene. Many names have faded away in recent years. Can you say Heathkit, National, Hammerlund, Halicrafters, Drake, Clegg, Swan . . . need I list more?

You also suggest that we should only support the existing manufacturers who advertise and promote the hobby. I do support them. I also own Kenwood and Icom rigs. But the "big three" are certainly not without their "sins." Do you remember in the 1970s when a certain major manufacturer allowed boatloads of gray-market HF rigs and amplifiers (not intended for U.S. use) to come into the country which were fully operational on the Citizens Band frequencies? These were sold by the bazillions through the nation's 11 Meter retailers and caused such a TVI mess that the FCC banned the sale of all new amplifiers which operated "out-of-the-box" on our 10 Meter band. I remember it well!

A final comment, where does one go on a Sunday afternoon when an oddball resistor, capacitor, switch, etc., is needed to complete that homebrew project or to make a repair? I think you are just not happy with the apparent fact that Radio Shack has chosen not to bless ***Worldradio*** with a large advertising contract at this time, while doing just that, in other publications. Be positive in your comments and maybe good things will come your way!

Tom Mulvaney, KR4BD
Lexington, KY

(Advertising potential does not influence our writer's comments. Agree or disagree, we welcome your comments here. —N6WR)

Bells and whistles

Ninety-nine percent of the time I agree with your comments, but this time you blew it! It is about time someone gave the Kenyaecon groups a little competition.

Amateur Radio product prices are getting out of reach of most amateurs especially new hams, young and old. Recently I received a video advertis-

ing the "newest, state-of-the-art" (didn't they say the same thing six months ago when they came out with a rig before their latest??) super model with hundreds of memories and a room full of bells and whistles? What for? First off, how many people need 100 memories? Secondly, it is a well known fact that you can have a million dollar rig, but if conditions are zilch, and your antenna is a wet noodle, no matter what your rig has it is not gonna help you any.

It is about time we did get some competition, and through that lower the prices. The average rig is $1,000 plus the extras. Get a super rig, which by the way, will be outdated before you pay off the credit card with a newer model, and you're looking at $3,000++. Gone are the days, (I've been a ham since 1965) when a company had an "A" model, then it went to "A-1," but for a few dollars you could get an upgrade kit and elevate it from an A to an A-1; tried to service your rig lately?

It's possible if you have a few thousand dollars of test equipment and expertise in solid state electronics. You never see the big boys include in their advertisements that if it breaks, better mortgage the wife and kids, or just buy a new one, aha! Buy a new one, plain and simple.

If Kenyaecon really is for Amateur Radio, why don't they get together and put together a rig that is affordable, upgradeable and simple? Forget the options, make them standard. One of their rigs advertises for $5,000, speech module is another $75. For the price of the rig this should be standard.

The bottom line is someone has to pay the advertising dollars. I am sure a fold out ads in *QST, 73, CQ* and other magazines run big bucks every month. If they are serious about how great their rig is why not offer maintenance agreements?

In closing I say bravo for Radio Shack. I hope they pursue further development and market a sensible rig at an affordable price. I sincerely hope more companies begin marketing Amateur Radio products, and keep in mind that most hams are not Rockefellers.

Fred "Al" Wasielewski, WA2VJL
San Benito, TX

A good year for SAREX

By Roy Neal K6DUE

Space history was made in 1995, for this was the year when the United States and the Russian space programs stopped racing one another and began working together toward a common goal. It was an equally historic year for SAREX, the Shuttle Amateur Radio Experiment. When astronauts in a space shuttle flew up to the Russian MIR Space Station, rendezvoused and docked and exchanged visits with the cosmonauts, they took ham radio along to share the experience.

The first SAREX mission of the year was in March, and it was the longest shuttle mission in history. Six of the seven crew members were licensed amateurs and they stayed in orbit for 18 days, talking to students in a record breaking 26 schools.

In June, STS-71 was the first Shuttle-MIR docking with SAREX aboard. Charlie Precourt, KB5YSQ, even piloted the *Atlantis* during the rendezvous and docking. He and Ellen Baker, KB5SIX, used both SAREX and MIR hardware for their 2 Meter contacts using a 10 watt wide band radio designed for use by NASA to communicate with MIR.

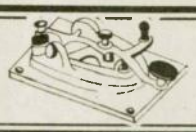
A few days after 71 landed, STS-70 took off from Cape Canaveral. It provided contacts with 8 schools, talking to 291 students. It also made four hundred voice and almost 800 packet contacts with the general ham community.

Finally, in November, STS-74 went up, with an all ham crew headed by commander Ken Cameron, KB5AWP, flying his third SAREX mission. They also rendezvoused and docked with the Russians while sharing the incredible experience via Amateur Radio. They made more than 100 general voice contacts a day and talking to 5 schools with an estimated twenty-three hundred students participating!

There are at least 5 SAREX missions scheduled in 1996, beginning in March. These include 2 docking missions during which American astronauts will be left aboard the MIR. Shannon Lucid, who is waiting for her license, and Jerry Linenger, KC5HBR, both plan to contact U.S. schools while they are aboard the space station.

More than coincidentally, all of this action with the Russians is leading to an International Space Station in orbit, with first hardware going up in 1997 and a finished configuration by 2002. The SAREX Working Group is at work with NASA, designing and developing what they hope will be a permanent manned ham radio station in orbit complete with voice, packet, video and all sorts of experiments. 1995 had four SAREX missions, making a total of 19 in all since the first one in 1983. 1995 was a very good year for SAREX.

SILENT KEYS



Joe Jatis, W9CYT repeater pioneer

Joe Jatis, W9CYT, has become a Silent Key. Joe, one of the first 220 MHz pioneers in the Chicago metropolitan area, remembered a time of operating on that band before FM and repeaters were even invented.

Among his accomplishments, Joe had been the frequency coordinator for 220 for over a decade; Joe was one of the founding fathers of the first 220-only repeater in the Chicago area. He also enjoyed homebrewing, particularly VHF/UHF antennas, and old radio equipment modifications. He was also one of very few 220 DXers in the Chicagoland area, having worked several states on nothing more than indoor (attic-mounted) antennas.

Joe is survived by his wife Emily, children, and grandchildren. *—via Bill Pasternak, WA6ITF*

James Moss, W5GRJ

James "Jimmy" Moss, W5GRJ, became a Silent Key on 11 January 1995. This should not go unnoticed in the ham world. His first call was in 1929, and in 1936 he received the call of W5GRJ. Jimmy was a prominent ham and had many friends on 40 Meters. His "home" was 7.033.

When I started hamming in 1993, Jimmy became my Elmer. He would work with me every afternoon for at least an hour. During our practice sessions, he told me many things about his life and his family, which I would like to share.

Jimmy started out working for the old Postal Telegraph and was proficient in both codes. He married Mary from Rosedale, Mississippi, in 1940. After entering the Air Corps in 1942, he taught code and radio theory to cadets.

He worked for a newspaper in St. Charles, Louisiana. I was fortunate to meet Jimmy and Mary about a year ago at their beautiful home in Natchitoches, Louisiana, on the banks of the Cane River.

Jimmy retired from the Tennessee Gas Pipeline Company where he maintained 2-way radios. He became a helicopter pilot at age 60. He was also a member of CFO.

He is survived by his wife Mary, three daughters, a son, and several grandchildren and one great-grandchild.

Many remember Jimmy as a warm, humorous, lovable man, as well as having a great fist. GB, Jimmy, 73 es 88. *—submitted by Macalee "Lea" Hime, AB5TY.*

John Browning, W6SP

John W. Browning, W6SP, succumbed to kidney cancer 3 January 1996. He had fought a heroic battle with his illness for three years since being diagnosed. According to his wife, Mrynie Browning, he died peacefully at the Torrance Memorial Medical Center, California, with his family at his side.

W6SP was elected Chairman of the Board of AMSAT in 1982 and led the organization in the period when the first Phase 3 satellites were being developed. He had also been prominent in many California DX associations and was an avid HFer from Palo Alto and later Los Angeles.

John had been a consultant to aerospace since his retirement from the Air Force in 1982, working for firms such as COMSAT and Sundstrand under his own company, Altaspace. He was also active in AFCEA, the Armed Forces Communications Electronics Association, a trade group, where he was Regional Vice President and was a member of SCAPR, the Southern California Association of Professional Representatives.

Burial will be in Arlington National Cemetery. The family wishes that in lieu of flowers, donations be sent in John's memory to the Torrance Memorial Medical Center.

John was thoroughly a gentleman whose grace and manner were wholly admired by all who knew him. He was gifted with a swift intellect combined with steel-girded discipline tempered, no doubt, by his mountaineer, West Virginia heritage. He had the same "Right Stuff" that fellow West Virginian, General Chuck Yeager, wrote about.

John is survived by his wife, Myrnie of Rancho Palos Verdes, California, a daughter Marilyn of West Virginia and a brother residing in Los Angeles. *—submitted by Vern Riportella, WA2LQQ*

Michael A. Wyzga, K4OBD

Mike Wyzga, K4OBD, affectionately known as the "Old Bulldog" passed away early Saturday morning, 30 December 1995, after a long illness. He was an avid ham operator and a QCWA supporter and participant.

Mike was 78 and a retired Army officer. He entered the Army in the '30s as an enlistee and served in the Philippines under the command of General Douglas MacArthur. He left the Philippines about 3 years prior to WWII. Because of his dedication and hard work, he was recommended for Officer Candidate School.

Following his completion of OCS training, WWII had already begun and he was assigned to the 5th Armored Division commanded by General George S. Patton. He served under him in France and Germany. While the 5th was en route to the "Bulge" to assist General McAuliff, in Aechen, Mike was seriously wounded in battle and lost an eye. Consequently, he retired from the U.S. Army in 1946 at age 28 with the rank of Lt. Colonel.

Although he lost most of his close friends in this fateful battle in Aachen, he always said he was spared for some special reason, thus accounting for his eternal optimism and grand sense of humor. He saw more beauty, hope, and kindness in this world with his remaining eye than most of us see with both eyes. He was a good father and husband, very artistic, a superb carpenter, very meticulous, spoke many languages, and an avid ham operator. He saw to it that much of his remaining ham equipment was donated to good causes. He leaves behind his lovely wife of 53 years, Estelle, and two wonderful children.

He will always be remembered as that special "Old Bulldog" by his family, friends, and members of Atlanta Chapter 49, QCWA. *—submitted by Judson Whatley, W4NZJ* WR

DAYTON hamvention® '96

✣ May 17, 18, 19, 1996 ✣

General Chairman, Ken Allen, KB8KE

Asst. General Chairman, Dick Miller, N8CBU

✷ Giant 3 day Flea Market ✷ Exhibits ✷ Activities for the Non-Ham

When and Where •• •• NEW DATE THIS YEAR •• ••
May 17, 18 and 19, 1996; Dayton, Ohio at Hara Arena

Communications

FAXMail: (information sent to you via FAX): Set your Fax to manual send/receive, then call (513) 276-6934

BBS via America Online: Keyword "Ham", then "Conference", then "conventions", then "Hamvention"

PHONE: (513) 276-6930. For fast response, please obtain the committee Voice Mail box numbers via FAXMail or BBS.

FAX (incoming): (513) 274-8369

MAIL: Hamvention, Box 964, Dayton, Ohio 45401-0964

E-MAIL: Hamvention@aol.com or n8emo@ix.netcom.com

WWW: http://users.aol.com/hamradclub/dayton.htm

Special Services

Lodging information and special award nomination forms were in our 1995 Program. A limited number of Handicap parking permits are available. License Exam by appointment only. For Form 610, call 1-800-418-3676
Call, FAX, Mail, or BBS for more information.

Bus service

Bus service will be provided between Hamvention, Air Force Museum, Salem Mall and Forest Park Mall parking areas. Many hotels/motels will have bus service for a nominal charge.

Returned Checks

A $25 service charge will be assessed on all returned checks.

Deadlines

In order to have time to return tickets to you, we must have advanced registration orders postmarked not later than May 3 (USA) or April 26 (Canada). Tickets will not be mailed before January 15th,1996. Ticket requests that are received **AFTER** the deadline will be processed and **HELD** for pick-up at the Hamvention Office in the Silver Arena. Tickets can be picked up beginning Thursday, May 16 at 8:00 a.m.

Flea Market

Flea Market Tickets (valid all 3 days) will be sold IN ADVANCE ONLY. No spaces sold at gate. A maximum of 3 spaces per person (non-transferable). Electricity is available in a portion of the last Flea Market row for $50 additional. Rental tables and chairs are not available in the Flea Market. Vendors ***MUST*** order an admission ticket for each person when ordering Flea Market spaces. Please send a separate check for Flea Market space(s) and admission ticket(s). Spaces will be allocated by the Hamvention committee from orders mailed by February 5. Please use 1st class mail *only*.

Notification of Flea Market space assignment will be mailed on or about **March 25, 1996**. Please indicate in the box below if you would like to attend regardless of Flea Market space assignment.

HAMVENTION Is sponsored by the Dayton Amateur Radio Association Inc.

Advance Registration

Enclose check or money order for amount indicated in U.S. dollars and type or print your name and address clearly.

Make checks payable to:
Dayton HAMVENTION Mail to -
Dayton Hamvention Box 1446, Dayton, OH 45401-1446

Flea Market tickets *Please check one and enclose **two** checks.*
❑ Send admission tickets **only** if flea market space(s) assigned.
❑ Send admission tickets **regardless** of flea market space assignment.

	How Many		
Admission (valid all 3 days)	_____	@ $12.00*	$_____
Grand Banquet	_____	@ $23.00**	$_____
Alternate Activities			
Saturday Luncheon	_____	@ $9.00	$_____
Sunday Luncheon	_____	@ $9.00	$_____
		Total	$_____
Flea Market ‡	_____	$45/1 space	
(Max.3 spaces)	_____	$100/2 adjacent	
	_____	$200/3 adjacent	$_____
Electricity	add _____	$50.00	$_____
Covered tent	_____	$290.00 ea.	$_____
		Total	$_____

Name _____ Call _____

Address _____

City _____ State _____ Zip+4 _____ – _____

Daytime Phone # ( )_____ Evening Phone # ( ) _____

* $15.00 at door
**$25.00 at door, if available
‡ Admission ticket must be ordered with flea market spaces

STATION APPEARANCE

Slaughter B. Reed, W4DXB

Send Worldradio a picture of your shack and the staff will choose a winner to receive a free one-year subscription to Worldradio!

Stations will be judged by neatness (wires tucked away, etc.) and accessibility of equipment. Monetary value of equipment is not a consideration.

The rig is, from left to right, an 'organizer' to hold four band modules used with the Ten-Tec Scout. Next is an MFJ-901-B tuner, and finally the Ten-Tec Scout 555 transceiver itself.

The Scout has an output of 50 watts and utilizes a built-in SWR meter.

The antenna system is an 80-Meter inverted Vee, about 34' at the apex, which is fed with 450 ohm ladder line down to a *remote* balun, with eight feet of coax through the wall to the tuner.

As to the homespun box which I refer to as the 'organizer,' it is constructed of ¼" plywood except for the base, which is 3/8" plywood. Its function is to hold the 4 band modules which the Ten-Tec uses.

They fit loosely, so that the bands may be changed quickly. When not in use, the modules are kept in the 'organizer' and protected from dust. I am very proud of the Scout — it is a fine rig, and I would recommend it to anyone.

I have been licensed as W4DXB for over 60 years, working mostly CW. I'm an active member of the QCWA-CW net (and ragchewing, too) and get on SSB about once a year. WR

Amateur "Hi"

Ever had a funny or strange experience with Amateur Radio, either on or off the air? If so, type it up (or print neatly) and send it to us for consideration in our monthly AMATEUR "HI" contest. You could win a free year's subscription to Worldradio!

Did I hear what I *thought I* heard?

Jaxper Hogeweide, WØMUF

Back in 1959 when radios glowed in the dark and phone was AM, I had a homebrew transmitter and a Gonset converter in the car. The modulation transformer was war surplus and had a speaker winding, in addition to the modulation winding. A simple switching arrangement made the connections to change over from transmitting to driving a weather-proof speaker hidden behind the grill. Speaker power was about 10 watts, but was quite effective. The transmitter itself ran 15 to 18 watts.

My wife was licensed and quite active on 40 Meters in the daytime, although she had never met most of the hams she talked with on the air.

A job change caused us to move from Fullerton, California, to Palo Alto. As we were driving up the coast she checked into her usual nets. One of the hams said he lived just off the highway and described his house and location and he invited us to stop by. When we were about 25 miles from his town, his signal dropped out. From the other stations on the air we found out he was going to take a little nap. When we were 4 or 5 miles away we knew groundwave would put a good signal into his receiver, but we couldn't raise him.

We spotted his house easily and drove into the yard. When he didn't respond to our radio call we switched over to the external speaker and gave him the same call. We expected him to come to the door, but when he didn't appear in 3 or 4 minutes we went up and rang the bell. When he finally appeared at the door he was completely confused. He was staring blankly off into space and scratching his head. We introduced ourselves and he slowly recovered enough to tell what had happened.

He said, "I had been on the air quite a while and decided to lie down and take a nap. I was sleeping when I heard my call just as clear and plain as anything. I jumped up and grabbed the mike to answer the call and after hitting the push-to-talk button found out the transmitter wasn't on. Then I looked at the receiver and it wasn't turned on either! I just can't figure it out." WR

"Movie star" rigs

Kenwood Amateur Radio gear has been in starring "roles" in some recent blockbuster motion pictures. Should you see the movie "Heat," starring Robert De Niro and Al Pacino, you will see that the hand-helds are TH-22ATs.

Also look for their radios in the following motion pictures: "Cliff Hanger," "Twister," "Die Hard," "Die Harder," "Batman," "Batman Returns," and "Outbreak." —*Kenwood Report*

DX WORLD

John F.W. Minke III, N6JM
P.O. Box 310 Carmichael, CA 95609-0310

W-100-N

Congratulations to the following DXer for completing the necessary requirements for *Worldradio's Worked 100 Nations Award:*

504. Etsuro Sudo, JH1IED
28 Dec 1995

As all contacts were made via SSB on 10 Meters the certificate was endorsed as such.

Zambia (9J)

Ely, IN3VZE, operated from Zambia as 9J2CE up to about the end of November. This was an SSB affair with contacts reported mostly on 15 Meters.

Brian, 9J2BO, operates mostly CW and is on almost daily, 10 through 80 Meters according to *Inside DX*. Look for Brian on 80 Meters from 0300 between 3.503 and 3.510 MHz; on 40 Meters around 0430 UTC between 7.003 and 7.014 MHz; 30 Meters near 10.101 MHz around the same time; 17 Meters from 1330 UTC between 18.072 and 18.081 MHz, and 15 Meters around 21.025 MHz from 1400 UTC. Brian has also been reported operating SSB on 15 Meters.

A few other calls from Zambia were reported during November and December:

9J2CW	14.032 MHz	1900 UTC
9J2FR	28.494 MHz	1615 UTC
9J2GA	21.337 MHz	1700 UTC
9J2HN	14.227 MHz	2115 UTC
9J2SZ	21.005 MHz	1545 UTC

Scarborough Reef (BS7)

The ARRL Membership Services Committee (MSC), having reviewed documentation from the DX Advisory Committee (DXAC) and the Awards Committee, has voted 5 to 2 to recommend the addition of Scarborough Reef to the ARRL DXCC Countries List.

The DXAC and the Awards Committee had come to opposite conclusions regarding the eligibility of Scarborough Reef for separate DXCC status. Under new procedures adopted by the ARRL Board in July, 1995 when these committees do not agree the question is referred to the MSC for review and recommendation to the full ARRL Board of Directors. The recommendation that Scarborough Reef be added to the DXCC Countries List will be considered by the ARRL Board of Directors at its January meeting.

In past reports on the DXAC action on this matter some of the members voted negative because that is the way the division membership wanted it. I believe the DXAC members should have considered criteria and not opinion of the membership!

Pratas Island (BV9P)

The ARRL DX Advisory Committee (DXAC) has voted 12 to 4, and the Awards Committee, has voted unanimously to add Pratas Island, BV9P, for contacts made 1 January 1994 and after. This action is based on DXCC Rules Section II, Point 2(a), Separation by Water. Pratas Island is located in the South China Sea and is administered by Taiwan.

QSL cards will be accepted by the DXCC Desk starting 1 April 1996. Cards received prior to that date will be returned without action. Because of irregularities in some of the QSL cards, it will be necessary for anyone who has a picture card from the January or March, 1994, operation to obtain a replacement card from the QSL manager (KU9C). The picture cards will not be accepted for DXCC credit.

Gambia (C5)

C53HG is very active from Gambia,

mostly CW. Try 40 Meters near 7.008 MHz after 2330 UTC; 30 Meters between 10.101 and 10.115 MHz from 2300 UTC; 17 Meters near 18.074 MHz around 1700 UTC; 15 Meters between 21.022 and 21.030 MHz after 1700 UTC, and 12 Meters on 24.895 MHz also around 1700 UTC.

Two other calls were reported, with C52CD on 75 Meters around 0400 UTC on 3.790 MHz and C56WW on 14.015 MHz at 2215 UTC.

Crozet Island (FT)

425 DX News reports that Jean-Jacques, F5SZK, and Samuel, F5IJT, will be active from Crozet Island through February 1997, signing with FT5WF and FT5WE, respectively. All modes are planned, CW, SSB, RTTY, Packet and SSTV.

Their operating frequencies are as follows: CW 3.505, 7.005, 10.105, 14.005, 18.075, 21.005, 24.895, and 28.005 MHz; SSB 3.792, 7.045, 14.145, 14.245, 18.145, 21.245, 24.945, and 28.445 MHz. Crozet Island ranks number 23 on *The DX Bulletin* "Most Wanted Countries," so this should make many a deserving DXer very happy.

Bangladesh (S2)

DX News Sheet reports that Andy, S21YE, will be active for a year on SSB. He has a daily schedule with WB8QFB on 14.226 MHz at 0030 UTC.

San Marino (T7)

A few calls from San Marino were found during the last two months of 1995. If you need a contact on 40 Meters try these calls that were reported:

T77BL	7.005 MHz	2230 UTC
T77C	7.008 MHz	0030 UTC
T77DL	7.003 MHz	0630 UTC
T77L	7.010 MHz	2115 UTC
T77LL	7.005 MHz	2045 UTC

The last three were reported only once. The call T77DL could have been T77BL copied incorrectly.

Twenty Meter activity was represented by just two calls: T77BL on 14.025 MHz at 1600 UTC, and T77C on 14.022 MHz at 1500 UTC.

And on 15 Meters T77BL was reported on 21.228 MHz at 1500 UTC and T77CD on 21.237 MHz at 1500 UTC.

The most active call reported during this period was T77C, who was very active during the *CQ* Worldwide DX Contest in November. He also shows on 30 Meters between 10.101 and 10.107 MHz after 1645 UTC.

Macquarie Island (VKØ)

According to *The DX Bulletin* Warren Hull, VKØWH, is now on Macquarie Island and has worked several DXers on 40 Meters CW on 7.009 MHz from about 0930 to 1100 UTC.

He has a regular schedule with VK4ATS on 14.130 MHz at 1000 UTC. Of course, this frequency is out of bounds for U.S. stations on SSB. Since his initial contacts he has reprogrammed the transmitter, which is fixed without a VFO, for SSB operation on 14.260 MHz. At the time of this writing only one report was filed, that being on December 16th around 1000 UTC.

Please be patient with Brian while operating CW as he hasn't operated that mode in about 15 years.

Reports also state that Warren prefers to exchange complete information rather than the snappy RST report and on to the next station. If that is the way Warren prefers to operate, so be it. Remember, he wants some enjoyment out of a QSO too.

Initially Brian was to handle his own QSL chores when he returns to Australia next November. However, now Warren will be sending his logs via fax to Jim Smith, VK9NS, his QSL manager.

Macquarie Island Slim has also entered the picture. If you had a contact with VKØWH operating at 30 wpm that was him. Warren's CW is rusty!

Andaman Islands (VU7)

425 DX News reports that Jim Smith, VK9NS, may possibly return for another operation from the Andaman Islands in February 1996.

El Salvador (YS)

Very active from this Central American republic is YS1XS, who operates both SSB and CW. Try 75 Meters around 0345 and 1200 UTC between 3.791 and 3.795 MHz. Forty Meter CW types might want to check 7.009 to 7.016 MHz between 0400 and 0600 UTC. Other spots reported for YS1XS include: 14.003 MHz at 2200 UTC, 21.015 MHz at 1515 UTC, 24.945 MHz at 1700 UTC, and 28.028 MHz at 1545 UTC. Other 40 Meter reports include YS1DV near 7.006 MHz at 2345 UTC, and YS1ZV on 7.006 MHz at 0015 UTC.

Thirty Meter activity was represented by YS1GR on 10.103 MHz at 1400 UTC and YS1ZV near 10.105 MHz around 2345 UTC.

YS1RRD has been reported on 3.795 MHz at 2215 UTC with YS1ECB on 21.202 MHz at 1400 UTC. YS1VV was active on 40 Meters during the recent *CQ* Worldwide DX Contest.

Albania (ZA)

Not that long ago Albania was one of the most wanted countries needed by DXers. Not so anymore according to what has been reported per band:

ZA1AJ	3.503 MHz	2230 UTC
ZA1AJ	3.799 MHz	0515 UTC
ZA1MH	3.799 MHz	0445 UTC
ZA5B	3.799 MHz	0515 UTC
ZA1AB	7.006 MHz	0100 UTC
ZA1AJ	7.005 MHz	0145 UTC
ZA1A	14.005 MHz	2300 UTC
ZA1AJ	14.009 MHz	1530 UTC
ZA1B	14.227 MHz	1630 UTC
ZA1MH	14.021 MHz	1500 UTC
ZA1Z	14.220 MHz	1630 UTC
ZA1TAG	18.068 MHz	1330 UTC
ZA1Z	21.022 MHz	1445 UTC

A few calls have been reported on RTTY, including ZA1AJ on 14.086 MHz around 1630 UTC and ZA1MH on 14.089 MHz at 0645 UTC.

Kermadec Islands (ZL8)

A Kermadec Islands DXpedition, for two weeks with 8 operators, is planned for May, 1996. *425 DX News* reports that the group already has permission, but have a problem with raising the necessary funds, a total of around $30,000.

Marion Island (ZS8)

An operator with an HF license is expected to arrive on Marion Island in March, 1996. However, his main purpose in going is work related, so operating times may be limited.

IOTA

Down in the Antarctic there have been several island bases that have been on recently, as recorded in *425 DX News*. Roman has been operating as EM1KA and EM1U at the Ukranian Antarctic Base Vernadasly located in the Argentine Islands (AN-006). Another is DS1BMJ at Antarctic Base Patriot Hills located on Ellsworth Island. And LU1ZB is active from Argentinian Antarctic Base Navy Melchior on Anvers Island (AN-012).

The selection of IOTA islands this month is down somewhat. This is not unusual as the winter does not bring out the DXpeditions to these offshore islands in addition to the poor propagation.

AN-006	Argentine Isl.	EM1KA
AS-094	Hainan Isl.	BG7YA
EU-130	Grado Isl.	IV3BHD
NA-026	Long Isl.	WB2KSK
NA-036	Vancouver Isl.	VE7IU
NA-067	Hatteras Isl.	K3VMX
NA-069	Pine Isl.	W4/GUØALD
NA-075	Saltspring Isl.	VE7BLT
NA-083	Chincoteague Isl.	KA3UNQ/P
NA-110	Isle of Palms	AA4V
SA-008	Terra del Fuego	XQ8ABF
SA-047	Mel Isl.	PQ5L

Jim, KA3UNQ, orginally scheduled to operate from Prudence Island (NA-031) on December 16th settled for Chincoteague Island (NA-083) the next day. It seems that the freezing rain in Rhode Island made it rather difficult, so he opted for a southern climate in Virginia. Island hunting has become very popular.

Bernhard, DL2GAC, is trying to get to Sikaiana Island to sign as H44MS. This will be a new one for IOTA and the operation, hopefully the end of February, depends on transportation arrangements. BG7YA is a resident operator on Hainan Island (AS-094).

Several spinoffs of the IOTA program have resulted in other programs that expand on the IOTA idea. However, they do not conflict with the program, as many of the islands may not count for IOTA or they would be a duplication of an IOTA island group already accepted by the IOTA committee. See below for such an expansion award.

According to *Ohio/Penn DX Bulletin* Tex, 9M2TO, is currently active from Penang Island (AS-015) and is interested in working stateside stations on 17, 30, 40 and 80 Meters.

Italian Islands Award

The Italian Islands Award (IIA) is available for working the many Italian islands. DXers outside of Europe need only work 15 different islands in 3 groups. A list of islands shows that there are many groups, of which Sardinia and Sicily count as two. If you have those two confirmed, plus an island offshore of the mainland, you already have the 3 groups.

The cost of this award is 10 IRC or $5. Send your application to I2MQP Award Manager c/o ARI, via Scarlatti 31, I-20124 Milano, ITALY. Nothing was said about providing the cards, so it is assumed that you follow the normal certification rule. Have your application certified by two licensed radio amateurs that they have inspected the necessary QSL cards.

A list of the Italian islands includes in excess of a dozen pages. However, copies can be found on the Internet.

Not many North Americans have this award as yet. To date they include: K5BDX, W3KH and WØSFU. Check those Italian QSL cards!

DXCC Applications

The DXCC Desk reports that the number of unprocessed applications at the end of November was 108 (13,934 QSL cards). During the month 221 applications (21,841 QSL cards) were received for endorsements and new awards.

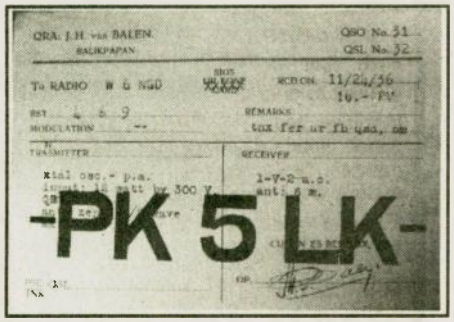
Applications being sent out at the end of the month were received less than a week earlier. A few received prior to that time were waiting for paper records to be converted, or were being audited, and so had not yet been completed.

Antique QSL Department

These oldies were provided by Lew Wilhelm, W7TB, of Sedona, Arizona. The first card is for a contact Lew made with PK5LK back in November 1936.

The station was operated by J.H. van Balen, of Balikpapan, for this 40 Meter CW contact with Lew, then signing with W6NGD. Back in 1993, I ran a card for PK5AA in Dutch Borneo. This area is now part of Indonesia.

The second card is a home-made affair for FK8AA. Lew says that this operator used post cards for preparing his cards, as you can see from the reverse side. Lew also worked this one back in 1936.



Again, Lew was operating as W6NGD in Arizona, which at that time was part of the 6th U.S. call area.

International DX Convention

The big Visalia affair is just around the corner. Harvey Shore, K6EXO, President of the Southern California DX Club, and host of this year's convention, announces that the 1996 International DX Convention again will be held at the Visalia Holiday Inn on April 19, 20 and 21.

Pre-registration (prior to 30 March) is $50 which covers all the sessions, banquet and breakfast. After that date the price goes up to $55. Make your checks payable to: International DX Convention, and send to Don Bostrom, N6IC, 4447 Atoll Avenue, Sherman Oaks, CA 91423. Meal-only tickets are also available. Contact Don at home 818/784-2590 or at work 310/334-8717 for information. DXers under the age of 21 may receive a free convention-only ticket (no meals); just show your I.D. card.

Additional information regarding the convention may be obtained from Rick Samoian, WB6OKK, (chairman) at 714/993-0713.

Accomodations may be made by calling the following:

Holiday Inn	209/651-5000
Lamplighter Hotel	209/732-4511
Raddison Hotel	209/636-1111

As it has in past years, the Holiday Inn has sold out (which it usually does almost a year in advance). In addition to the other two listed, there are additional accommodations available locally.

Miscellaneous

Dusty Whitaker, AE4NE, wants to know the cost of my DX World Map. Sorry, Dusty, you must have us confused with some other publication. We do not offer a DX World Map.

•

During February 1995, a group of German DXers went through the agony

Brigit handing out a YL contact to some deserving DXer.

of obtaining a license in Brazzaville, Congo. They were finally successful and were issued the calls TN2M and TN4U. The call TN4U was issued to Brigit, DL7VTZ, who is now DL7IQ.

Brigit says that they made a total of 13,177 contacts with 5,468 made on 20 Meters. Other band break-downs included 1 on 160; 263 on 80; 1,825 on 40; 973 on 30; 1,396 on 17; 2,642 on 15; 324 on 12; 155 on 10 and 120 via satellite. The operation took place from the Hotel Le Meridien in Brazzaville, 4 through 9 February 1995. There was an interesting writeup on this operation in the NCDXF Newsletter.

Brigit and Holger just added a new harmonic, Saskia Moana, on 26 December 1995.

New Orleans DX Convention

The International DX Convention in New Orleans has been set for 30-31August at the Royal Sonesta Hotel. The setting is in the old French Quarter of the city and there is always something interesting to do when not busy with the convention. Additional information is available from Wondy, K5KR, by calling 504/837-1485.

QSL Bureaus

Robin Parker-Resnick, KJ7BI, asked if I could inform ***Worldradio*** readers how the QSL Bureau works, when to use one, how to use one, how to find the correct one, etc. Robin reports that she has never been exposed to this crucial information, since previously her interests had solely been in ragchewing. The QSL bureau system, operated in the U.S. by the American Radio Relay League (ARRL) is for the distribution of DX QSL cards and not domestic QSL cards. If you wish to exchange QSL cards for contacts made between stateside stations the ARRL QSL bureau system is of no value. You may send and receive QSL cards through the QSL bureau system for all contacts with stations other than the contiguous 48 states.

The Outgoing QSL Bureau is at the ARRL headquarters at Newington and ARRL membership is required. If you are not an ARRL member you cannot use this service. All that is required is that you sort the cards by the primary prefix of each country, such as Canadian prefixes CZ, VY or XN, included with the normal prefix of VE. Include a check for $2 for each pound of cards or fraction.

There are some restrictions as to which cards can be accepted for forwarding. Outgoing QSLs are accepted only for those countries which have their own QSL bureaus to distribute the cards to their amateurs. The bureau is located at 225 Main Street, Newington, CT 06111. There are also private QSL services available.

The Incoming QSL Bureau with branches in the individual call areas is available to all, ARRL members and non-members alike. Individual bureaus have their own rules of operation, but basicly they are all alike and are operated on a volunteer basis. To receive cards from the bureau, you must have an envelope with postage on file. The 6th district bureau in California will provide the address label, stamps, and envelope, for a fee. This works great for us. However, if you wish to provide your own, you should send a supply of 5" x 7" envelopes with a single unit of postage, your name and address, and your call in large letters in the upper left-hand side. Also, provide some additional loose postage for excess weight. That way you can save on the envelopes for the additional cards. However, if you receive very few cards through the bureau, I wouldn't worry about providing the loose stamps. The addresses of the individual incoming QSL bureaus are listed in the front of the *Callbook*™ and other publications. However, if you have difficulty in locating your particular bureau send me an SASE and I will find your bureau for you.

The Canadian QSL bureaus are also

DX Prediction — March 1996

Maximum usable frequency from West Coast, Central U.S. and East Coast *(courtesy of Engineering Systems Incorporated, Box 939, Vienna, VA 22183)*.

The numbers listed in each section are the average maximum usable frequencies (MUF) in MHz for contacting five major areas of the world centered on Africa-Kenya/Nairobi, Asia-Japan/Tokyo, Oceania-Australia/Melbourne, Europe-Germany/Frankfurt, and South America-Brazil/Rio de Janeiro. Chance of contact as determined by path loss is indicated as bold *MUF for good, plain MUF for fair, and in parentheses for poor. UTC in hours.

WEST COAST

UTC	AFRI	ASIA	OCEA	EURO	SO AM
10	*(10)*	11	*17	*(8)*	*15
12	*(10)*	11	*15	*(8)*	*(12)*
14	*(18)*	*12	12	*(15)*	22
16	*(21)*	*(11)*	*16	17	27
18	23	*(10)*	*(14)*	*(15)*	29
20	23	18	*(18)*	*(10)*	29
22	19	22	24	*(9)*	29
24	*(17)*	*24	28	*(9)*	*28
2	15	22	29	8	*23
4	*13	16	25	8	*19
6	*(12)*	14	23	10	*17
8	*(11)*	*12	*19	*(9)*	*15

CENTRAL USA

UTC	AFRI	ASIA	OCEA	EURO	SO AM
8	*(13)*	9	*16	*(8)*	*15
10	*(12)*	8	14	*(8)*	*14
12	*(22)*	11	12	*(15)*	18
14	27	*(12)*	*19	18	24
16	29	*(11)*	*(16)*	17	*27
18	28	*(10)*	*(14)*	15	*28
20	23	*(18)*	*(18)*	*(10)*	*29
22	19	19	25	*(9)*	*29
24	*16	*(17)*	28	9	*28
2	*15	*(13)*	24	8	*23
4	*14	*(10)*	22	8	*19
6	*(14)*	*(9)*	18	*9	*17

EAST COAST

UTC	AFRI	ASIA	OCEA	EURO	SO AM
7	*(13)*	*(8)*	*(16)*	*8	*15
9	*(13)*	8	*14	*(11)*	*14
11	25	11	12	17	17
13	28	*(9)*	*20	*19	*24
15	29	*(9)*	*(17)*	*19	*27
17	*30	*(8)*	*(15)*	17	*28
19	*25	*(10)*	*(13)*	15	*29
21	21	*(17)*	*(22)*	*(10)*	*29
23	*18	*(17)*	27	9	*28
1	*15	*(12)*	*(23)*	9	*23
3	*14	*(10)*	21	8	*19
5	*14	*(9)*	*(18)*	8	*17

operated by volunteers. Like the ARRL bureaus these bureaus are for incoming QSL cards only. Their policy is the same, where you must have funds and envelopes on file. I assume the RAC operates an outgoing QSL bureau for their membership.

QSL Information

Art Hale, V73CO, is looking for a route for a station signing with 9C. This might have been a pirate or the result of someone's poor fist.

In the December column I incorrectly listed KH6HH as the QSL route for V73X. It should have read V7X, which is limited to the *CQ* Worldwide DX SSB contests for 1993 and 1994 only. The term "green stamp" is often used by the DX community as a source of assistance to the DX station for a direct return QSL card. No, it does not mean an S&H green stamp (I don't think they are still in business anymore), but rather a plain ordinary American dollar bill. With the price of an IRC at the post office now at $1.05 it seems cheaper to send a dollar bill. Canadian DXers have to fork over $3.50 for an IRC at Candian Post.

Caution should be observed with the sending of the green stamps. They should be near mint condition. Ragged, worn out green stamps are often refused at foreign banks. Gary Shapiro, NI6T, editor of *The DXer*, the official organ of the Northern California DX Club, reminds DXers of such a case. Mats Persson, SM7PKK, received many "bad dollars" for the Conway Reef DXpedition. The Swedish banks would not accept them. Therefore, if you send a green stamp, please use one in good shape.

George Pataki, WB2AQC, advises that he is not the QSL manager for CN8MC. George operated from the club station in Morocco and said that he would handle QSL cards for his operation only.

There was an error in a QSL routing for TI4VSG. Varel says his QSL manager is WA5TUD — not WA5LUD.

QSL addresses

AA2RV —P.O. Box 77, Shashe, BOTSWANA

HBØNL/HB9NL —Frank Acklin, Sonnenrainstr 27, CH-6233 Bueron, LU, SWITZERLAND

PR8FT —Fernando J. Aranha, P.O. Box 349, 65001-970, Saõ Luis, MA, BRAZIL

PY2HA —Luis Claudio Campos, Ave Adriano Dias Dos Santos 172, 11470-220 Guaruja, SP, BRAZIL

TM5TLT —TM5TLT, TeleThon de la Goele, Mairie, F-77230 Dammartin, FRANCE

VI1ØØGM —G.P.O. Box 600, ACT 2601, AUSTRALIA

VI5SUB —Port Adelaide Radio Club, P.O. Box 352, Port Adelaide, SA 5011,

QSL Routes

These QSL routes come from several sources and cannot be guaranteed. Please report any errors.

1AØKM	—IK0FVC	CQ2S	—CT1FMX	IQ4A	(See Note 1)	TI4VSG	—WA5TUD
3B8/F5PXQ	—F5KDZ	CZØGD	—VO2GD	IR3GM	—I3PVB	TM9TEL	—Bureau
3DAØCA	—W4DA	CZ9SO	—VO1SO	IR4J	—I4JEE	TU4DA	—F5LPL
3DAØNX	—ZS6AX	CZ9TK	—VO1TK	IY1TTM	—IK4XQM	UH8EA	—W5BWA
4D63SAN	—DU1SN	CZ9TX	—VO1TX	IY3GMM	—IN3NMP	UU2JZ	—LZ1ZJ
4L4KK	—SV2AEL	CZ9XC	—VO1XC	IY4ARI	—IK4DCT	V26DX	—KK3S
4U5ØUN	—W8CZN	D2/YO3YX	—YO3YU	IY4FGM	—I4IKW	V31/KM4IT	—KM4IT
5H1HW	—I5JHW	D68AS	—JA3JM	IY4OTA	—IK4QJH	VKØWH	—VK9NS
5NØT	—F2YT	DU1KK	—WN7S	IZ7IGM	—I7PXV	VK2CWT/VK9X	—JA2NVY
5N4OTB	—F2YT		(See Note 2)	J28ML	—F5LBM	VK2FMZ/VK9X	—7J2YAA
5V7MD	—AB7BB	DX9C	—DU9RG	J48ISL	—SV2AEL	VK3MO	—WA9BXB
	(See Note 3)	EA3AOK/P	—EA5OL	JD1/JQ1SUO	—JQ1SUO	VK4FML	—7K3UZY
5X4F	—KB4EKY	EA7URU	—EA7FR	JT1FAP	—JA7FWR	VK8NSB/P	—VK8HA
5Z4SS	—JA1SQI	ED7IDC	—EA7FR	JWØE	—US5MV	VK9NH/VK4	—7K3UZY
7P8EZ	—I4JEE	ED7IMD	—EA7FR	KC6FS	—JH6RTO	VK9XA	—JA2NVY
7Q7A	—JH1ORL	ED7SPI	—EA7FR	KC6HN	—JF1VXB	VK9XJ	—JA2NQG
9A1A	—9A3RA	ED7SSC	—EA7FR	KC6IY	—JF6BCC	VK9XRS	—ND3A
9A4D	—9A1HCD	ED7SSF	—EA7FR	KC6JZ	—JA7FWR	VP2MDE	—K5GN
9A5D	—9A1BHI	ED7UCA	—EA7FR	KC6SM	—JA6EGL	VP2V/WB8TZY	—WB8TZY
9A5Y	—PA1CCY	EG5UCA	—EA5URA	KC6VO	—JM6VOV	VP2V/WB8ZTY	—WB8ZTY
9A6V	—9A1BST	EM1KA	—9H3UP	KC6WG	—WHØAAV	VP8CQS	—DL1EHH
9A7A	—9A1HDE	EM1U	—9H3UP	KH4/NH6D	—NH6D	VU2BMS	—DL2GAC
9J2AE	—F6FNU	EY2Q	—EY8CQ	KH8AL/HKØ	—JH1NBN	W4PGX/KH9	—KB4VHW
9J2CE	—IN3VZE	EZ5AA	—W5BWA	KK6WW/KHØ	—JA6EGL	WG3I/C6A	—G3AUA
9J2CW	—JF2XTZ	F1BWJ/P	—F6EGV	LU6Z	—LU6EF	WH2M	—JA7FWR
9J2FR	—I2ZZU	FH/JA3JM	—JA3JM	LZØA	—LZ1KDP	WH6ASW/KH2	—G3EZZ
9J2HN	—JH6BKL	FM5DN	—KU9C		—N2NQI	WH6X/6Y5	—WH6X
9J2RD	—IK2SGQ	FR/JA3JM	—JA3JM	OD5MM	—HB9CYH	XQØ/JA7AYE	—JA7AYE
9J2SZ	—SP8DIP	FR5ZU/G	—FR5ZU	OD5PN	—LX1NO	XT2JF	—N5DRV
9K2UA	—Bureau	FT5WE	—F5GTW	OHØKAG	—OH1KAG	XU2UN	—SP1MVE
9M2TO	—JAØDMV	FT5WF	—F5IZK	OHØKKW	—OH3KKW	XU3UN	—SP5ABL
9X4WW	—ON5NT	FT5XK	—F6KQD	OHØLQK	—OH3LQK	XZ1A	—JA1BK
9X5TFA	—LA3T	G3NYY/C6A	—G3NYY	OHØMEP	—OH3MEP	XZ1X	—JA1BK
A71AN/	—DL9FCQ	G3XAQ/6Y5	—G3XAQ	OHØMMF	—OH3MMF	YA9XL	—F5TCN
DL9FCQ	(See Note 4)	G4VXE/C6A	—G4VXE	OHØMYD	—OH3MYD	YS1ZV	—KB5IPQ
AB6TM/KHØ	—JA2DNA	GB2BP	—Bureau	OHØNLP	—OH3NLP	YWØRCV	—YV5AMH
AHØT	—JA6BSM	H44MS	—DL2GAC	OX3PZ	—OZ3PZ	ZF2ON	—KN4F
	(See Note 2)	HBØ/PA3EBT/P	—PA3EBT	PA3EVJ	—VE3MR	ZK1ATV	—LA1TV
AY1I	—IØWDX	HB9LEY	—JA1LZR	PJ9JT	—W1AX	ZK1DI	—DK1RV
AZ9W	—LU5UL	HC8N	—AA5BT	PQ5L	—PP5LL	ZK1GEM	—AAØFT
BG7YA	—BY5HZ	HKØ/DF4UW	—DK4UW	PYØFZ	—PY7ZZ	ZK1LIA	—LA1LIA
C53HG	—W3HCW	HSØ/DL2FDK	—DL2FDK	RHØE	—W5BWA	ZK1NJX	—LA9JX
C56WW	—GØUCT	IG9A	—IT9GSF	S21YE	—GØEHX	ZK1TB	—W7TB
CG2JFM	—VE2QK	IK2OAH/IA5	—IK2OAH	S21ZZ	—JA2NQG	ZP5XYE	—JA7ZF
CP1VT	—JA1SJC			S79JD	—F6AJA	ZS6CAX	—ZS6AX
				S79MAD	—GW4WVO	ZS6YA	—KK3S
				T94EU	—N2MAU	ZS94F	—KK3S
				TA2FE	—KK3S	ZS95RWR	—KK3S
				TG9IDK	—K4TT	ZS9F	—KK3S
				TI2IDX	—WA9BXB	ZW5VB	—PP5SZ

Notes:

1. For CW contacts please send your QSL cards via I4LCK; SSB contacts will be managed by IK4QJH.
2. This manager requests cards be sent via the bureau.
3. This manager requests cards be sent direct only. No bureau cards!
4. This route applies for A71AN/DL9FCQ only. Do not send cards for A71AN.

AUSTRALIA

VK9LX/ —Eddie Schneider, W6/
VK9LZ/ GØAZT, P.O. Box 5149,
VK9NM Richmond, CA 94805-5194
YB9KP —P.O. Box 7, Mataram 83001, INDONESIA
YWØRCV —c/o R.Leandro, M207 P.O. Box 020010, Miami, FL 33102

Many thanks to the following contributors: DL7IQ, TI4VSG, WB2AQC, WA6WZO, KJ7BI, HB9NL, V73CO, KH6HH, W7TB, Western Washington DX Club (WAØRJY), Northern California DX Club (NI6T), Salt City DX Association (KB2G), Northern Arizona DX Association (W7YS), American Radio Relay League (K5FUV), *425 DX News* (I1JQJ), *The Ohio/Penn DX Bulletin* (KB8NW), *CQ Ham Radio, Radio and Communications* (VK9NS), *Long Skip* (VA3JS), *The Low Band Monitor* (KØCS), *DX News Sheet* (G4BUE), QRZ DX (N4AA), *Inside DX* (N2AU), and *The DX Bulletin* (VP2ML). DXing for 1995 was nothing to write home about. Hopefully, 1996 will be a better year for the DXing. Retirement is just around the corner and I will have more time for the better things in life. As Cass used to say, "DX Is!" 73 de John N6JM. WR

WRTC-96

The Radiosport Team Championship (WRTC) event which will be held in the San Francisco area 10-16 July, 1996, continues to develop. Many of the teams now are complete and here are how the competitors are lining up. If two calls are listed below, the team is complete.

	team leader	partner
USA:	KF3P	
	K6LL	N2IC
	K3LR	WA8YVR
	WQ5W	
	W2GD	WØUA
	K4BAI	KM9P
	K1KI	
	WX3N	K5ZD
	N6TV	K7SS
DX:		
DL	DK3GI	
	RRDXC	Second team TBA
EA	EA4KR	EA1AK
	EA7TK	EA9KB
F	Awaiting confirmation	
G	G3OZF	GIØNWG
HA	HAØDU	
I	IT9BLB	IT9VDQ
	IK2GSN	IN3QBR
JA	JE1JKL	
	JH4RHF	JA8RWU
	JH4NMT	JE3MAS
	JH7PKU	JO1BMV
LU	sending a team	
LY	LY2IJ	LY1DS
OH	sending a team	
OK	OK1CF	OK2PAY
ON	ON6TT	ON4WW
PY	PY5CC	PYØFF
S5	S59A	S56A
SM	SM3DMP	SM3CER
SP	SP6AZT	SP9FKQ
	SP9IJU	SP9HWN
UA	UA3DPX	RZ9UA
	RV1AW	RW1AC
UR	UT4UZ	UT1IA
VE	VE3EJ	VE3IY
	VE7NTT	VE7CC
VK	VK5GN	VK2AYD
YU	YU1RL	YT1AD

Judges: K4VX (Chief Judge), G3SXW, I2UIY, JA7RHJ, JE1CKA, K3ZO, K4XU, K5RC, K6NA, N2AA, N6AA, N6ZZ, OH2BH, OH2MM, OK2FD, ON4UN, PY5EG, S5ØA, UA9BA, WØUN, and W7RM.

For additional information about WRTC-96, contact Rusty Epps, W6OAT at 651 Handley Trail, Redwood City CA, USA or e-mail at epps@net.com. WR

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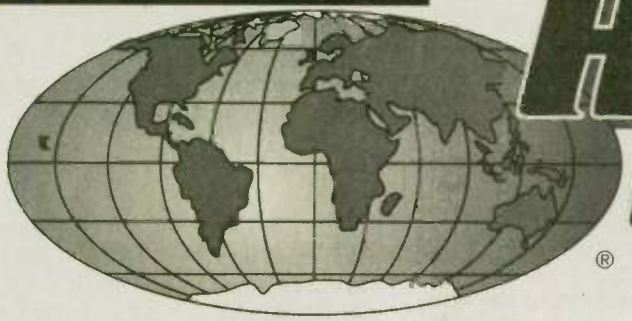

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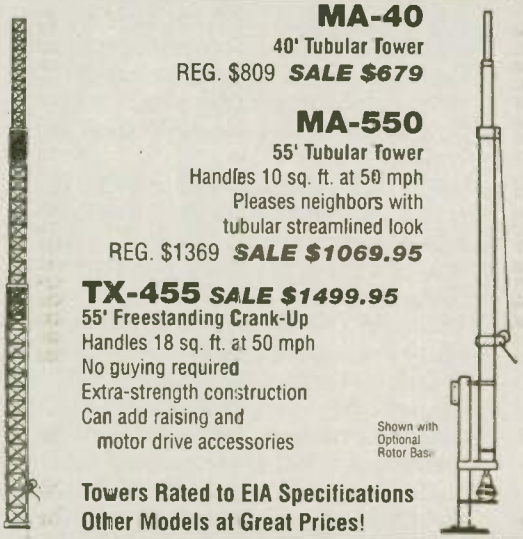

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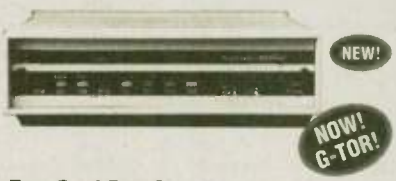

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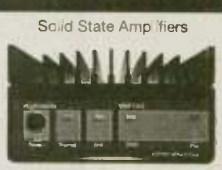

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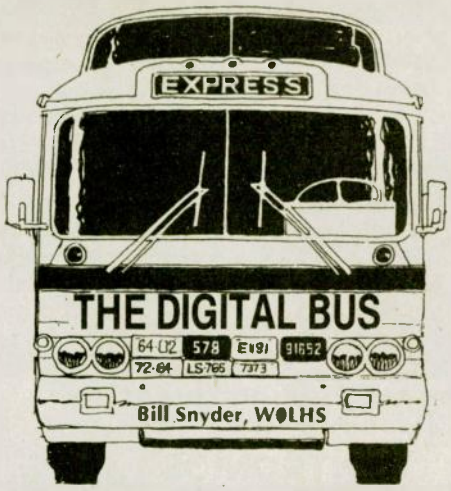

Another war story

The other day the electric power went off just as I was typing in part of this column, and so I lost everything I had completed. That always bothers me when I have to do something over simply because I didn't save it often enough to have it "in the can," so to speak. When it happened, I recalled a power failure back in World War II that gave me a little thrill; it happened one day when I was copying press from the United States for use on the Armed Forces radio and a news bulletin we teletyped to subordinate army units for posting on company bulletin boards.

We were on the Philippine island of Luzon, and I was the company commander of the signal company that was responsible for copying the press for troop information. I had a couple of really excellent sergeants in charge of the radio detail, but I liked to copy press now and then; it was relaxing and fun to type out the CW press from two radio stations in the states. One source was KFS/KNA6, the Mackay Radio ship-to-shore station near San Francisco. They sent at 22 words a minute for two hours.

The other was KUN, the U.S. State Department station going at 35 wpm with every punctuation mark in the book tossed in. I assumed that every organization copying the KUN press was using what was known as "slip," that's where the dots and dashes were being printed out on a continuous roll of paper by an ink pen bouncing up and down with the CW signal. The "slip" was later pulled through a slot mounted on top of the typewriter, so the typist could read the dots and dashes and transcribe the news.

We were copying KUN manually, no "slip" in the process. I was taking a turn at the "mill" (jargon for a telegraphic keyboard typewriter) when our PE-95 power generator suddenly quit working. One of the radio operators started the spare generator and the Super Pro receiver came back on and again I began pounding out the news from the U.S.

After I was replaced by another operator I began to fill in the news that I had missed during the lull. I had missed a bit of the daily war communique as issued by Sixth Army, and so I thought I would see if I could make sense out of the story. We had to have the daily war message in our newspaper, and so I did a little editing. I knew that General Swift, the Commanding General of I Corps, the unit our signal outfit supported, would want that in the news. So I went to work and patched up the communique.

A day later I was in my office tent when the phone rang. It was for me. The man on the other end sounded officious, "Captain Snyder," he began, "I understand that you are in charge of putting out the news from the United States on the I Corps teletype circuit. Is that true?"

"Yes, sir," I answered, wondering who was on the other end of the line.

"This is Captain So-and-so," he continued, "I'm General Krueger's Aide de Camp and I have a question for you." General Krueger was the Commanding General of Sixth Army, our superior unit.

The late Ray Donald, N6VQX, talking on "W9LHS portable six" at a roadside parking place on the top of Mount Wilson in California. The year was 1936, 60 years ago. The black box in the right foreground is the 5 Meter portable rig.

"What is it?," I asked, shivering a little in my GI army shoes.

"The general would like to know where you got his middle initial when you put his name in the war communique? You had it Walter C. Kreuger." "I assume it came over the radio link with the states," I said cautiously.

"Well, Captain, the General wants you to know that the General does not, repeat not, have a middle name, nor does he have an initial; it's just plain General Walter Kreuger."

"Yes...yes, sir," I stuttered, "we'll make note of that fact."

"Just remember that, and make sure your men do, too."

"Yes, sir," I said, and at that point, I am sure World War II resumed after that conversation finished.

More old-time stuff

One of my buddies during my two

years in California before WWII was Ray Donald, N6VQX. I introduced Ray to ham radio in 1936. At that time Ray worked for a furnace company in Beverly Hills, and I worked for Techni-color. We met at a magazine counter in a small neighborhood drug store run by pharmacist Morris Horowitz on the corner of Wilton Place and Fountain Avenue in Hollywood. I can't recall exactly how we found out our common interests, but I do believe it was through the outdoor magazines we were browsing through. Ray liked deep-sea fishing and I liked trout fishing, and we both liked to chase girls.

Anyway, we became friends and I introduced Ray to ham radio with my 5 Meter transceiver that sported two vacuum tubes, a 30 and a 32. I imagine, for I had no way of measuring it, that the little battery-operated job put about a half watt into the antenna, a vertical which hooked right onto a binding post sticking out of the metal can in which it was built. It was quite a bit later that the FCC changed the layout of the ham radio spectrum and shifted the 5 Meter band to 6 Meters.

Ray and I would take the little rig, which was powered with two 1.5-volt dry cells, and a 135 volts of "B" batteries and head for either the Hollywood hills or, on occasion, to mountains like Mt. Wilson where the observatory is located. It was always surprising to see how far that little flea-powered rig would reach out. We tried a number of times to work other hams on Mount Palomar a bunch of miles to the south, but we were never successful. At any rate it was fun trying.

My friend Ray had a DeSoto "Airflow" automobile; it was quite a streamlined car. Once the water pump failed as we were driving up Mount Wilson for a Sunday DX expedition on 5M, so when we finished our experiments, we coasted down the mountain road twisting and turning at breakneck speeds till we got to Pasadena and a filling station.

I've written about our 5 Meter adventures before in this column, and I've written about Ray Donald more than once, but now I have the sad duty to report Ray's passing into the silent key pages at the age of 80 years. His working years included World War II with an infantry regiment where he became a Captain. He worked for an insurance company, owned a brickyard in Las Vegas, a marine gasoline station on Balboa island, California, and finally retired as an executive with Signal Oil Company in Oklahoma and California. All of those years Ray and I kept in contact.

I tried to help get Ray a ham ticket back in the '30s, but he had trouble with Morse Code. He would say, "Bill, I'd give everything I own to buy a pill with that doggone code in it." And Ray meant it. Well, in his later years he did master the code and wound up with N6VQX as a call sign. He eventually lost his eyesight due to diabetes.

Ray retired to a little lumber town in the Sierras when he first got on the ham bands. The power line serving him in Feather Falls, California was hit by lightning and it blew out about everything electrical that he owned. In the last few years the Donalds moved to Oceano near San Luis Obispo and Ray was quite active on the ham bands.

I have been told by people in the local nets to which he belonged that Ray was very popular. We have lost a very dear friend in Ray Donald.

Two weeks before Ray's passing, another friend of mine, John Konen, WØHKM, went to sleep in the nursing home and never woke up again. John was a first-class CW operator, although he was a slow talker when it came to conversation. He was one operator with whom you didn't want to play "smoke" when it came to trying to hand-send fast enough to have him ask you to QRS (slow down).

Marlowe Parries, WØML, and I made a few visits with John in the nursing home before his death and we always wound up swapping war stories; all three of us were veterans of the Pacific war and we had a common base for rag chewing.

John served in the Navy during WWII and the Korean conflict. He served on naval cruisers and, finally, on the battleship *Missouri*. He had a lot of good war stories to tell. John had served in the Navy with film actor Jason Robards, and I never see Robards on television that I don't think of some of the adventures the radio guys in John's Navy put in their memory banks.

After he was released from active duty in the Navy after the Korean conflict, John joined the Army National Guard and later retired from the reserve services. And so we say good-by to two of our ham buddies, Ray Donald and John Konen. We'll miss them!

EAVESDROPPINGS

WHERE DOES THE WHITE GO WHEN THE WHITE STUFF THAT FALLS FROM THE SKY ALL WINTER MELTS? . . . WHERE DOES ZERO GO WHEN ZERO GOES BELOW? . . . DOES ANYONE KNOW HOW TO PHILAY A PHLOUNDER WITHOUT CUTTING HIS PHINGERS OFF? . . . .

You can write me: Bill Snyder, 1514 12th St. S, Fargo, ND 58103-4134 or send a packet to WØLHS @ WØLHS.# SEND.ND.USA.NOAM. 73 and DIT DIT. **WR**

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7.5 kHz split-split-split repeaters

When I first saw the posting on the "I-Pike," my spine shivered. I suspect that other longtime FMers who saw it responded in the same way. It was a message by a very newly licensed ham in the Northeast. He was complaining that he had no channel pair on which to put up a new wide-area coverage 2 Meter repeater, so he had decided to set up shop only 7.5 kHz away from his nearest RF neighbors.

I won't say who the person is — primarily because I have yet to ascertain if his posting was genuine. I will tell you that he claims to live in the general vicinity of one of the nation's largest metropolitan areas — a city and a region that has been "spreading the news" since the mid 1970s that there are no two meter repeater channels available for at least 200 miles in most directions.

The ham in question freely admitted that he knew little about the technical side of the hobby. He stated that he was a lawyer with a busy practice and had no interest in learning more than he had needed to obtain his no-code Tech. Rather, he contended, his license gave him the "right" to put up a repeater and if the coordinator did not assign him a channel immediately he was going to put his new repeater on the air "self-coordinated" on a center receive frequency of 146.9475 MHz and transmitting on 146.3475. That's 7.5 kHz away and upside-down (inverted) from the normal 15 kHz repeater output channels of 146.940 and 146.955 MHz.

Why 7.5 kHz inverted? It seems that he had gotten hold of a bunch of 1970s era issues of *73 Magazine*. He never answered my e-mail asking why a non-techie type would want to read a bunch of old ham magazines, but in one, he noted an article by yours truly explaining why Southern California had adopted a 2 Meter bandplan that inverted repeater inputs and outputs every 15 kHz. The plan being quoted was coauthored back in 1972, or 1973 by Burt Weiner, K6OQK, and Robert Thornburg, WA6JPI.

This was an era when most ham radio FM transceivers were still crystal controlled to a limited number of channel pairs. These were radios that had relative poor selectivity and horrid dynamic range. In an area where repeaters sat atop 5,000' mountains, most ham transceivers simply could not deal with 5 kHz wide deviation signals spaced 15 kHz apart.

The idea that Weiner and Thornburg came up with was simple and effective. If every other repeater channel pair is inverted, then the repeater user receivers will always see a 30 kHz wide bandwidth with only relatively weak user signals 15 kHz either side. It was felt that the higher quality receivers at the mountaintop repeater sites — most converted from General Electric and Motorola commercial land mobile FM radios — could shoulder the burden of separating the signals of their respective users from other repeater transmitters only 15 kHz away.

Here in SoCal, and for hams in several other regions it worked fine. So did non-inverted 15 kHz channels in areas where repeaters were only up on 1,500' buildings and radio towers. (We will cover the 20 kHz movement at some later date.) But the reason that inverted 15 kHz worked was because there existed commercial quality repeater receivers with a high enough dynamic range to hear their desired users while operational in high RF environment repeater sites.

The concept was based on the technology of 1972, and in the world of narrow-band FM little has changed. While modern solid-state devices permit the manufacture of a 50-watt 2 Meter mobile radio that covers 144-148 MHz and yet fits in the palm of your hand, that radio still wants to "hear" a minimum 10 kHz wide channel — 5 kHz of deviation either side of center, frequency. More important, most user's radios are purposely designed to receive frequencies in a range well outside of a given repeater subband — or amateur service band.

In fact, most 2 Meter transceivers have receivers that can tune from the commercial air band that's located just above the FM broadcast band — up through the 2 Meter ham band and some as high as 190 MHz! Needless to say that the receiver front-end on these radios are "barn door wide." They have practically no immunity to intermodulation distortion, and are only a tad better than their predecessors of two decades ago, at separating stations that are closely spaced.

Nor are mountaintop receivers of today that much better than those of the '70s. They do run a lot cooler because tubes have been replaced by solid-state devices, but the trend in land mobile communication for the past two decades has been to minimize co-channel and adjacent channel interference through the use of tone-coded squelch.

While modern repeater receivers are also a bit more selective and a lot more sensitive, they too are not significantly different than in years gone bye. And they too want to "hear" a clean 10-kHz wide receive slot.

Without going into the mathematics involved, let's just say that today's modern narrowband FM equipment really is not capable of operating on 7.5 kHz centers. In fact, there are many who live in areas with non-inverted 15 kHz inter-repeater separation who will tell you that even with the latest handheld or mobile radio, operation is marginal due to adjacent channel interference. If it's bad with 15 kHz between repeaters, it will be intolerable with 7.5 kHz — even if that 7.5 kHz is inverted. Even repeater receivers will not tolerate this one. You need only remember than a perfect FM signal is really 10 kHz wide to figure out why.

7.5-kHz "split-split-split" repeaters are impossible with the technology currently available to the ham radio community. Maybe they will be feasible at some future date, but right now, such a repeater can only be classified a "wanton malicious interference to established area activities," regardless

Every seat at the December TMRCC meeting was filled, but there were not that many seats. ***—photo by WA6ITF***

of what the self-proclaimed lawyers of ham radio might think.

TMRCC: A survivor's story

Here is a follow-up to last month's article on the 2 Meter coordination crisis in Southern California. We start with a simple question. Will the new two Meter repeater coordinating committee of Southern California be the replacement for the almost two-decade-old Two Meter Area Spectrum Management Association, or is it simply another mouse that roared?

The TMRCC appears to be one of two surviving mini-councils of the dozen that surfaced in late 1995 to challenge the self-designated coordinating authority of the Two Meter Area Spectrum Management Association of Southern California. If you judge only by the small turnout at the first open TMRCC general meeting, you would say that TASMA has little to worry about. But numbers can be very deceiving.

Only 32 people showed up at the Los Angeles County Sheriff's communications center for the December 9th meeting. The big difference was that almost every one was a repeater owner-operator and the biggest complaint being aired against TASMA is that it has fallen into the hands of repeater users. System owners claim that users hold no allegiance to any repeater. That they are transitory individuals who cannot possibly understand the problems of repeater ownership and day-to-day operation.

To date there has been no official comment from TASMA concerning the challenge from TMRCC or any other group. There was a kind of unofficial comment that came the evening prior to the TMRCC gathering. That's when TASMA voted to stop the practice of accepting proxy votes.

The proxies had become almost the backbone of the TASMA electoral process. By contrast, the bylaws of the new TMRCC forbid proxies and limit voting to repeater system owners only. Repeater users can join TMRCC, but only as non-voting Associates.

Is TMRCC going to replace TASMA? At this point, no one knows for sure. It really depends on whether or not repeater owner-operators really care. The only time a coordinator usually hears from those it coordinates is when the sanctity of a system is threatened. Most repeater owners are the silent minority of ham radio.

The Guest Spotlight

Repeater Range

By Ken Edelstein, KE2EP

Did you ever wonder just who can hear you when you use one of our repeaters? What is the repeater's coverage area? Read on, the answers will surprise you! Well, for those of you who like the technical nitty-gritty here are some facts to consider. Our repeater system is coordinated, and the nearest repeater that shares our frequency is over 70 miles away.

In this example, we will consider the halfway point to the next repeater as being "our" area. That means we have an area of coverage which is a circle. The circle has a 35-mile radius and, of course, a 70-mile diameter. If you dig out one of those old high school trigonometry textbooks (you did keep them, didn't you?), you will find the following formulas:

The circumference of a circle is pi * diameter.

The area of a circle is pi * r^2.

Recalling that pi is 3.1416:

It is easy to see that the repeater's area is a circle 3.1416 * 70 miles or 219.912 linear miles circumference. However, the area of coverage, may come as a shock to you. It is 3.1416 * (35*35) or 3,848.46 square miles of coverage.

These are very conservative figures. Our signals definitely go a lot farther than the 35-mile radius used in the example. (Via Packet)

Happy birthday to us

This issue marks the second anniversary of the ***Worldradio*** "FM/RPT Column." When we started, there were a lot of industry pundits who said that there was no room for a column devoted to what one well-known writer said would be "... like writing about telephone conversations." I guess it's now safe to say that he and a lot of others were wrong. Almost every other ham radio publication is scrambling to start an FM oriented column of its own and one publisher has even gone so far as to launch a new magazine devoted to those of us who primarily make our home using the "Fun Mode" in the world above 50 MHz.

It now seems like there are a lot of you definitely "on the phone." Thank you all for making this column the success that it seems to have become. This is not my victory. It's yours. **WR**

County Hunter

Ace Jansen, N3AHA
42857 Hollywood Park Place • Ashburn, VA 22011
e-mail or internet: sjansen@aol.com

3,076 on 10

Say what? Well, that's what you'll say when you read this story about Arnold Josephson, K6SIW, who actually contacted all 3,076 USA counties on 10 Meters. Yes, that 28 MHz band . . . the one that's quite dead! His achievement is even more remarkable because his contacts were with members of 10-10 International only . . . not just any station on 10 Meters. Maybe you've heard about his accomplishment already. Arnold received coverage here in ***Worldradio*** in the October 1993, 10-10 International News column. If you're a 10-10 member, you may have read about Arnold in the Fall 1993 issue of *10-10 International News*, published by the 10-10 club. And if you're a County Hunter, you may have read about Arnold in the November 23, 1993 issue of the *Weekly Hunter* (for sample, send SASE to B&B Shop, 13212 M 37th Avenue, Phoenix, AZ, 85029-1134). But nowhere did Arnold get enough press to tell his "whole enchilada" of a story. That's what they pay me the big bucks for. Since we're on the subject of big bucks . . . .

Arnold's whole enchilada story

Arnold spent a large overtime check on a truckload of ham equipment. He bought a Kenwood TS-140S, Cushcraft R-4, antenna tuner, earphones, speaker, power supply, and odds and ends. When he got the bill, he almost choked; damage assessment, approximately $2,550! He operated his radio barefoot into the R-4 vertical at 48 feet and started operating on 10 Meters in 1988 when Technician Class hams were first allowed to operate on the band. Back then, it was tough to find a frequency; conditions were very good. Still, Arnold managed to put in 10 hours a day on 10 Meters (10 on 10!), working 4 hours a day and hitting the radio around noon. He joined 10-10 International in June 1988.

One of Arnold's tips for contacting all counties is this, "Don't be afraid to ask mobiles where they are going next and when they will get there!" Every mobile that told him where and when were waiting for him to call when they arrived in the needed county. He met a lot of very helpful people. Several chapter nets helped find members in counties Arnold needed; others drove to get there.

A friend in Canada gave him every county from Canada to Arizona and detoured to fill in needed state capitals (another Arnold pursuit). All-in-all, Arnold says it took him eighteen months to get all counties in order and fill in the ones he didn't have. Eighteen months is pretty fast on any band, but especially fast on 10 Meters, and again, only with 10-10 members. Operating 10 hours a day has its advantages.

Arnold's tireless efforts did pay off. He joined several 10-10 chapters and collected 10-10 numbers for every 10-10 award known to man. To date, not only has he contacted all 3,076 counties (and received 10-10 WAUSCA award #1, dated July 1993), he also received 10-10 award #1 for worked all U.S. state capitals (WASC), and 10-10 award #1 for working 200 OM/XYL 10-10 pairs (he now has 285!).

He's also contacted 8,500 different 10-10 members for the Bar Award and 500 VP members (members who have contacted 500 different 10-10 members). By the way, Arnold's 10-10 number is 48519 and VP number is 2044.

And then there's DX; Arnold has contacted 190 DXCC countries on 10 Meters. At one point, Arnold decided to contact all U.S. ZIP codes, but fortunately for him, he gave that idea up quickly. He also managed to contact all Australian counties (WAVKCA) . . . Good on ya!

As some might imagine, paperwork for contacting 3,076 counties can be a nightmare. Even though there are special logbooks and computer programs to make the effort less daunting, Arnold designed his own sheets to simplify the task. Arnold's sheets had all the counties listed by state with room for all the 10-10 information he needed to track. One fortunate paperwork bonus for the 10-10 county award is the lack of a requirement to collect QSL cards.

Arnold had no desire to collect 3,076 QSL cards for his county pursuit; he had 6,000-7,000 cards already. As a result, Arnold could not apply to *CQ Magazine* for their USA-CA award (where QSL cards are required).

Arnold is now broadening his Amateur Radio horizons and is the official observer coordinator (OOC) for the ARRL's San Joaquin Valley (SJV) section and has attended the annual Pacificon (Pacific Division convention) in Concord, CA for the past 3 years. He also started a volunteer exam (VE) group in Bakersfield, CA. Of course, that didn't happen until he upgraded his license to Extra Class (he was a happy Technician for 40 years).

Believe it or not, over the years, Arnold has had other interests besides Amateur Radio. He was a black belt

judo/karate instructor, a big game fisherman (which is how he hurt his back, pulling in a thousand-pound-plus fish that didn't get away), a hunter using a compound bow and arrows, and a private pilot (flew a Cessna 310J and Twin Beechcraft with modified front). He used to put pontoons on his 310 and fly up to a lake in British Columbia for fishing and hunting in the virgin wilderness! One has to assume that he probably did not use a fish net . . . he must have karate chopped the fish once it was within distance.

As varied as Arnold's hobbies were, so too were his occupations over the years. He was a New York cop, a drafting supervisor, document control supervisor (in a blueprint room), senior design engineer, and liaison engineer. He also was certified as a ophthalmic medical assistant and worked for two years in a California Men's Colony (prison) in San Luis Obispo.

Today, Arnold, 66, is fully retired (he retired 2 years ago). He recently moved from Simi Valley to an apartment in Bakersfield. Although he has less room in the shack, he still operates his station; and even has a better antenna higher in the sky (a Cushcraft R-7 at 55 feet).

Arnold's TIPS

For those considering contacting all counties on 10 Meters (or any band, for that matter), Arnold has the following suggestions:

1) Patience. Have a lot of patience. Especially as you come to have fewer counties to contact.

2) Join a group. In Arnold's case, he joined 10-10 and some of the local 10-10 chapters. Another suggestion is the MobileAmateur RadioAwards Club (for info packet, send SASE to MARAC, Inc., Don Magers, KE5WL, 406 Cherry Park Drive, Sherman, TX, 75090-6709).

3) Keep *good* records. Whether you use your own tracking system or someone else's paper or computer software solution, good records will save you in the end.

4) Listen a lot. The more you listen, the more opportunities you will have of finding the station you need to contact.

5) Don't be afraid to ask mobile operators for help. Always look at a map. Maybe a fixed station has the capability of driving to a close county you need.

My thanks to Arnold Josephson for "the whole enchilada" story. I hope it whets the appetite of others interested in hunting U.S. counties on 10 Meters.

40 Meter CW Net

TIP: Don't listen on 7.035 MHz for the CW County Hunters Net. Here's the reason . . . they don't operate there! Thanks to alert reader, Harry, NFØX, I now know where the county hunters operate on 40 Meter CW . . . they hang out on 7.0395 MHz. Harry tells me the County Hunters changed the 40 Meter CW frequency about 3-4 years ago, but many still think it's 7.035 MHz. Oops, er, uh, I knew that!

County Hunter name origin

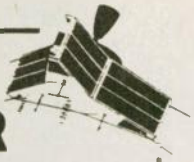
This month we raise our glass to the Sons of Norway. Facts from Nathan Kane's book, *The American Counties*: HAAKON County, South Dakota is named for King Haakon VII (1872-1957), Norway's late and much loved king of 52 years.

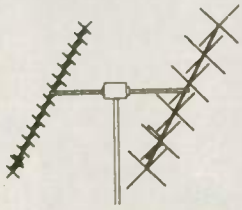
The SD county was established in 1914. Here's to the Sons of Norway! Hail Vikings! Uf da!

The end

Next time in May, an article on the 1994 and 1995 SSB Net Control of the year, Jim Grandinetti, KZ2P. Until then, see you on the County Hunter Nets, 14.336 and 14.0566, and don't forget 7.0395 MHz on 40 Meter CW. Happy Hunting. 73, Ace, N3 aha! WR

AMATEUR SATELLITES





TERRY DOUDS WB8CKI

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Hi there! Well, it's been an eventful winter season on the birds, with lots of exciting opportunities for new states for the WAS chasers, and some brand new countries on both Oscars 10 and 13. Many were busy preparing for the winter thaw and the opportunity to get to work on new antennas for the spring and summer seasons.

With the attitude readjust of Oscar 13 at the end of March, it may be the last real chance we have to operate on it with some semblance of accuracy. For those who are new to satellite operating, you may not realize that Oscar 13 will be suffering a premature death during 1996. It is surmised that it struck the transport shell as it was released originally, and that this caused a 'wobbling' to the orbit that will cause the eventual destruction of the satellite. James Miller, G3RUH, has already documented that the atmospheric drag associated with reentry of the bird has begun. It remains only to see whether James hits the mark on his chosen date of reentry, versus that of Tom Clark, W3IWI, who has a different perspective on the situation. One has picked October, and one December of 1996. It will be interesting to see which will come closest to the actual date. This much is certain — be sure to keep accurate Keplerian elements in your tracking software as up to date as possible, as its position is certainly due to change a great deal more often than it has in the past.

I noted in my last column that there has been a delay in the launch of the new Phase 3D satellite, which was scheduled originally to go up on a new Ariane 5 rocket in April. There were problems with the booster design, which caused some delay, until probably September. Final contracts were completed on October 7, 1995. The launch costs were firmed up at $1 million U.S., and it confirmed that we are to go up on the number two launch of the Ariane 5 (Flight 502). However, if for some reason ESA determines launch via Ariane 502 is not possible, they will exercise their "best efforts" to orbit Phase 3D on an Ariane 4 booster no later than mid-1997.

Hopefully all will go well, and the satellite will go into orbit just prior to Oscar 13's demise.

In addition to Phase 3D, there are to be quite a few launches of new satellites in the short-term future, including some new Mode A birds, and a new replacement for our only analog Mode J satellite, FO-20. The new replacement is to be known as JAS-2, and it will offer some new capabilities that have been lost from FO-20.

FO-20 was launched on February 7, 1990, and had two types of transponders available; analog and digital. It could do packet as well as SSB/CW, but not at the same time. The transponders were switched, with the bird staying primarily digital except for GMT Wednesdays, when the analog transponders were turned on. In 1994, the digital section of the bird could no longer be enabled by command stations, so the bird reverted to 24-hour analog service. I mentioned earlier that it is a Mode J satellite; this is one that has uplinks in the 2-Meter band, and downlinks on 70 cm. Currently you can uplink to the bird from 145.9 to 146 MHz, and the downlink is from 435.8 to 435.9, and the transponder is INVERTING! This means that if you transmit LSB, USB comes back, and that there is a correlation between the low end of the uplink passband and the high end of the downlink passband. For those who have only been using Mode A satellites, all of which are NON-INVERTING, this may seem a bit strange — it is standard operating procedure for Oscars 10 and 13. Let's take a couple of examples, so that you can understand the situation. If you want to hear yourself at 435.825 MHz USB on the downlink, you would uplink at 145.975 MHz LSB. Conversely, if you wanted to hear yourself at 435.875 MHz USB on the downlink, you would uplink at 145.925 MHz LSB. It is a bit strange until you get used to it.

FO-20 is a Low Earth Orbit satellite, which means (as we have discussed before) that it will fly over your QTH approximately 4 to 6 times per day. It will go by quickly, with an average pass lasting about 15 minutes. It is quite a bit different than working in Mode A, as you will find that the Doppler shift is much more intense at higher frequencies. It does have a very

nice receiver on board though, so high-power operation is not necessary in most cases. Many people use omnidirectional antennas to hit this bird, although crossed yagis can be used, ideally with automated tracking — you can do it by hand, but it moves pretty quickly!

JAS-2 is a planned replacement for FO-20, for even though it is in current operation and is quite popular, solar power degradation has been documented, which is affecting the satellite's signal. It is expected to stop operating sometime in the near future. JAS-2 will be an almost exact clone of FO-20, with newer hardware to take care of technological advances over the past 6 years. It will have a duplicate of the current analog transponder, but its packet section will be different. It will allow both 1200 and 9600 bps packet, although not simultaneously.

Ground control stations will issue a schedule once orbit is established concerning the various times of operation of the various modes of the satellite. There are possibilities of operating both the analog and digital transponders simultaneously during times of no eclipses, so this will be an exciting event if it comes true. Packet uplinks will be on 145.85/.87/.89/.91 MHz, and the single-packet downlink will be at 435.91 MHz. 9600 bps packet will ONLY uplink on 145.91 MHz. There will also be a "digitalker" mode, where a 25-second digitized voice announcement will come down on the downlink, similar to the voice announcements that we have heard from DOVE. When it is used, it will be on the same downlink frequency as that of the packet downlink.

JAS-2 is scheduled to be placed into a polar orbit sometime during August or September of this year, with a perigee of 800 km and an apogee of 1500 km. It promises to be an exciting new addition to the amateur satellite community.

Just a few reminders before the column wraps for this month: Be aware that the ARRL now has instituted charges for initial VUCC certificates, similar to the fees for DXCC. These are effective January 1, 1996, so if you decide to send in your cards, make sure to also send in the correct fees. Also, for those inclined to listen to Oscar 13, be watching the various packet and telephone BBSes for information concerning any remaining ZRO tests after the reorientation at month's end. The ZRO tests are conducted by Andy, WA5ZIB, and are designed to test the receiving capabilities of your station. He begins transmitting CW at the level of the beacon, and then drops by 3 dB at a time through 10 levels of transmitting power. It is very interesting and does not take long to do — approximately 20 minutes during the December tests.

Remember — just because we are close to the launch window for Phase 3D, the costs are still there. Many have donated to the cause, and many had their monies doubled by either the ARRL or the Hoover Foundation during 1995. At the time of this writing there are no more matching funds on the horizon, but more funding is needed to get the bird off the ground. You can send anything you might wish to contribute to AMSAT, P.O. Box 27, Washington, DC 20044.

As always, if you have any questions, drop me a line or send me e-mail at the addresses listed on the head of this column. I'm quicker at getting to my e-mail, but I will reply! If you should make it to Dayton in May, I'll be at the AMSAT booth, so look me up. Speaking of May, that's when the column will return . . . see you on the birds! WR

Search And Rescue Communications

Jerry Wellman, WB7ULH
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When you get right down to brass tacks, it is the basics that are most important to public service success. Sure, we may be dazzled by satellite communications, multi-frequency radios, cell phones, and other technology, but we cannot escape the fact that people are our most important resource. When we operate the radio, we have a difficult time effectively using more than one frequency at a time. When decisions are to be made it is a person who makes them. When a person is tired, he or she sleeps. When hungry, we eat, and when cold, we seek warmth.

If you read most any critique or after-action report of an emergency incident you will most likely see some reference to communications. When more than one agency or jurisdiction is involved, you may see a lot of discussion about communications. Just as people are critical to communications, communications are critical to emergency response.

On an Internet SAR discussion group, a number of comments are made weekly concerning the ability (or inability) to coordinate between groups and agencies via radio. In my own experience, this issue has been most challenging over many years.

In the 1970s the limiting factor was technology. If you had an old single-channel radio, you were limited pretty much to that channel. Replacing the channel element was expensive and time consuming and the radio would not cover more than a 2 or 3 MHz range. I remember the excitement at having a FOUR-frequency radio and that one of the frequencies was a coordination channel.

Today frequency agility and technology advances have had an impact on public safety communications. Every jurisdiction can have its own repeater.

One person goes home, another arrives. They wave and say hello. Sound familiar?

Every group can have a private frequency. Trunked systems, encrypted systems, digital systems, and a whole bunch more are available to public and volunteer groups.

I would be the last to decry technology, for I too enjoy the advances — but it creates interesting situations not unlike the need for a unified command structure (incident command system) where many agencies need to work together. Many SAR groups (public and volunteer) are licensed to use a common frequency such as 155.160 MHz. This frequency is often called the "National SAR" channel although it is simply one of several frequencies available for license from the FCC under the "special emergency" category.

While a common frequency is wonderful to coordinate activity between groups, technology is causing some wrinkles. For example, what about the agency that is UHF licensed? Or what about the trunked system on 800 MHz? Then there are the military users (such as helicopter resources) that use a government 40 MHz frequency. Having a common frequency would require installation of extra radios or ensuring equipment is quickly available to take to the scene of an emergency.

When you consider all of the tone signaling, sub-audible tone muting, encryption, etc., it becomes a complex puzzle of how to communicate! Here's where you, the Amateur Radio communications volunteer, can play a big role. Right now your group has the ability to operate on a huge spectrum of frequencies, link vast areas together for common access, and potentially enough people to link many agencies. I firmly believe Amateur Radio is a "human treasure chest" of opportunity that will become more valuable as agencies continue to build complex systems incapable of connecting to neighbor systems.

I am also including in this scenario the inability of private business to connect, during emergencies, to agency and volunteer emergency workers. Consider the scenario of a large mining operation and a chemical spill. It is critical that business and government agencies communicate, yet many often have radio equipment impractical to facilitate interconnection.

What makes sense is a close relationship between your radio group, large businesses, and government agencies. In any large-scale event (or an event involving many political jurisdictions), prior coordination and training will create success. You cannot simply wait until it happens and assume you'll get the call. It is worth looking at potential emergency situations and then working to create a niche where your group can provide the critical radio links!

Shift changes

One person goes home, another arrives. They wave and say hello. Sound familiar? It happens all the time during public service events. As the radio operator heads for the door, he or she says "all is quiet, nothing important happened." Except that net control moved to a different repeater. Oops, forgot to pass that along, oh well, they'll work it out.

I don't think so! An overlooked part of communications is the shift change briefing. You prepare for this event the moment you come on duty at your post. During your shift, you make note of

"provider" issues — those things that are integral to doing what it is you are doing, be it communications, planning, operations, or command.

From a communications perspective, it is good to note any frequency problems and list any frequencies in use (such as the resource net, tactical nets, packet nets, interconnect nets, etc.). You might want to pass along names and call signs of who is working at other sites. If you are working with an agency contact, pass along the person's name and, if possible, introduce your replacement to the agency person.

If you have keys to a group vehicle or operations trailer, make a note on your list to pass the keys to your replacement. If you have an access code or pass card, that too must be passed along. If net control has issued special instructions or advisories (such as runway 16 is closed), these too must be conveyed to the next shift.

You might consider a brainstorming session at your next meeting to develop awareness of the "shift briefing." Success in any operations depends on sharing information. We are in the communications "business" yet we often overlook the importance of communicating between ourselves!

Radio specialists

Recent responses have given me cause to ponder the need for trained radio specialists such as net control, packet, shadow, coordinator, or troubleshooter. Consider the net control job — keep track of stations, keep track of information, move stations to various nets, and ensure your equipment is working. You must also control the net and maintain proper net discipline. That's a pretty full slate of ability!

What about packet? Are the parameters correct? What software is in use? Is the hardware set up correctly? What happens if we have problems? This too is a highly specialized area of endeavor.

I am firmly in favor of developing areas of expertise and making others in your group aware of the trained specialists. I would also encourage development of some troubleshooters who have expertise and ability to go to a site and help diagnose technical issues such as antenna failure, radio failure, power supply issues, computer and packet hardware setup, and so on. What are your ideas and suggestions?

I can think of several potential areas of specialty and would like to hear any comments concerning what these people should focus on as training. My specialty list includes: coordinator, planner, logistics, net control, packet, packet troubleshooter, technician, VHF operator, HF operator, shadow, public relations, and base support. What are your ideas for other specialty areas and what kind of training and experience should be required for a particular certification?

In coming months

High frequency is often ignored for local area planning as we usually consider this spectrum as long-haul only. I've become a supporter, however, of something called Near Vertical Incidence Skywave, or NVIS. The technique is to place your HF dipole antenna less than a quarter of a wavelength above ground and create a high takeoff angle.

With an NVIS antenna, you communicate with HF in a less-than-300-mile radius making HF a good candidate for emergency communications where repeaters do not cover (such as mountains and canyons). There are many techniques and ideas for base as well as for mobile operation.

In the next month's column, I'll give you some ideas concerning NVIS and some places to go for further reading. So dust off your thinking caps and think tactical HF radio!

Until next time, best wishes from Salt Lake City! E-mail is always welcome (radar@desnews.com). WR

Thank you — *Worldradio* readers!

Michael Pilotti, N3IRZ

I'd like to extend a heartfelt thank-you to the many ***Worldradio*** readers who have sent donations to the Mid-Atlantic Amateur Radio Club to support our project to help Nick Bortnik, UXØZZ, come to the U.S. for much needed medical assistance. So far, ***Worldradio*** readers have contributed several hundred dollars towards Nick's airfare. ***Worldradio*** and its readers have clearly demonstated the true spirit of our hobby . . . helping others in need or danger.

Nick's health situation remains critical but we are very close to obtaining his visa. There have been many obstacles to work through and around and Congressman John D. Fox (R-Montgomery) has been instrumental in helping us get through the bureaucratic red tape. Things are finally looking up and we hope to have Nick here soon. We will keep you and your readers posted. WR

The Youth Forum

Sammy Garrett, AAØCR
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By now, most of us college-bound radio amateurs probably have a good idea of where we're headed next year. However, footing the bill for that post-secondary education may still be a concern. If this is the case for you, the following may be of great help. This information is an update of the January column featuring various sources of Amateur Radio scholarship assistance. Refer to the January issue of "The Youth Forum" for further details.

The *Foundation for Amateur Radio* (FAR) will once again administer several grants and scholarships totaling several thousand dollars to qualified radio amateurs wishing to continue their education. In addition to awarding some of its own scholarships, FAR administers several scholarships funded by various Amateur Radio organizations, such as QCWA and similar groups. Applications for the 1996 FAR scholarship program are now available. The deadline for receipt of materials is June 1, 1996. Further information and application materials are available form the following address: Foundation for Amateur Radio, Scholarship Committee, 6903 Rhode Island Ave., College Park, Maryland 20740. As always, including a self-addressed stamped envelope (SASE) will assist this organization in processing your request.

The *Quarter Century Wireless Association* (QCWA) is an organization of amateurs licensed for at least 25 years. QCWA will continue to support the education of deserving amateurs in 1996. The program's awards are maintained by interest yielded during the previous year and from contributions to the scholarship fund. Several cash scholarships of $700 will be awarded this year. There are no age, license class, or geographic restrictions placed on applicants. However, applicants must be enrolled in, or have been accepted to, an accredited college or university. Applicants must plan to pursue a full-time course of study in preparation for at least an associate degree. Students seeking post-graduate degrees may also apply. All applicants must be recommended by a QCWA member. The QCWA Memorial Scholarship Program is administered by the Foundation for Amateur Radio. Applications should be requested directly from FAR at the address above. According to the Summer, 1995 edition of the *QCWA Journal*, specific questions regarding to the QCWA Memorial Scholarship Program may be directed to: Leland Smith, W5KL, President Emeritus, 10 Hawthorne Drive, Harrison, Arkansas 72601.

A reunion of past recipients is tentatively scheduled in conjunction . . . to be held at the Huntsville Hamfest in August.

The *Ed Ludkin, K2UK, Memorial Scholarship* is sponsored by the Chaverim of Delaware Valley, Inc. This group is a nonprofit Amateur Radio organization. This $1,000 award is made on the basis of scholarship and financial need. Applicants must be licensed radio amateurs who are of the Jewish faith. There is no age restriction placed on applicants. Students applying for this scholarship must also pursue a post secondary education. (Technical and graduate programs are acceptable. Applications for this scholarship program are now available from the following address: Chaverim of Delaware Valley, Inc., Sylvia Soble, W3SLF, 9357 Hoff Street, Philadelphia, Pennsylvania 19115 4706. Applications for this award must be received by June 15, 1996.

The *Radio Club of America* was founded in New York in 1909 and is believed to be the world's first radio communications society. Through its Grants In Aid (GIA) Committee, this organization provided over $10,000 in financial assistance to deserving students and institutions in 1995. Through the Foundation for Amateur Radio, four $500 awards will be made this year. According to Ken Miller, K6IR, chairman of the Radio Club of America's GIA Committee, the remainder of awards are made to institutions (colleges, universities, or foundations) who "have in place programs to respond to students' needs for financial

assistance to pursue their college education." According to Mr. Miller, it is the responsibility of these institutions to select recipients for the club's grants. Last year, Radio Club of America Grants in Aid were made to the University of Cincinnati, Southern Methodist, Capitol College, Polytech University, Armstrong Foundation, Stevens, Virginia Polytech, Georgia Tech, Ranken Tech, Embry-Riddle University and the Foundation for Amateur Radio. K6IR says the current list of grantees will remain consistent, although some additional grants have been made in recent years. Students wishing to be considered for Radio Club of America Grants in Aid must pursue an undergraduate degree (associate degree programs are acceptable) in electronic engineering or technology, and must hold at least a General Class Amateur Radio license. Only U.S. citizens may apply for this grant program. It suggested that students wishing to be considered for a grant contact the Foundation for Amateur Radio at the address listed above.

As reported in a previous edition of The "Youth Forum," the *Dayton Amateur Radio Association*, sponsors of the Dayton Hamvention, will award several $2,000 scholarships this year. This scholarship program is initially open to any FCC licensed amateur graduating from high school in 1996. There are no geographic restrictions or required courses of study to be considered for these awards. Students do not necessarily have to be enrolled in a four year degree program. However, applicants planning to complete associate degrees or technical training must attend accredited institutions. Awards are made on the basis of financial need, scholastic achievement, contributions to Ama-teur Radio, and community involvement.

The application process for these awards is extensive. Detailed documentation must be completed by the applicant, the applicant's high school principal or guidance counselor, and by a licensed radio amateur who is acquainted with the applicant. In addition, applications must include a copy of the student's Amateur Radio license, a transcript of high school grades, a copy of an acceptance letter from the school the student will be attending, a typed composition not exceeding 75 words, a copy of the parents' 1995 Federal Income Tax files, and a copy of the student's 1995 Federal Income Tax form, if filed. All applications must be post-marked no later than 15 May 1996.

Winners will be notified by telephone around 15 June 1996. Application forms are available from the following address: DARA Scholarship Committee, 45 Cinnamon Court, Springboro, Ohio, 45066-1000. As always, enclosing a self-addressed stamped envelope is common courtesy.

Young Ham of the Year award nominations

The nomination period for the *Newsline* Young Ham of the Year Award is now open. This prestigious program, formerly known as the *Westlink Report* Young Ham of the Year Award, is awarded annually to a licensed US amateur age 18 or younger. This award is made on the basis of outstanding contributions to the amateur service, and/or to one's community or nation.

The *Newsline* Young Ham of the Year Award is a national program administered by the Amateur Radio *Newsline*. Corporate sponsorship is provided by Yaesu USA and *CQ* Communications. 1996 marks the tenth anniversary celebration of the program.

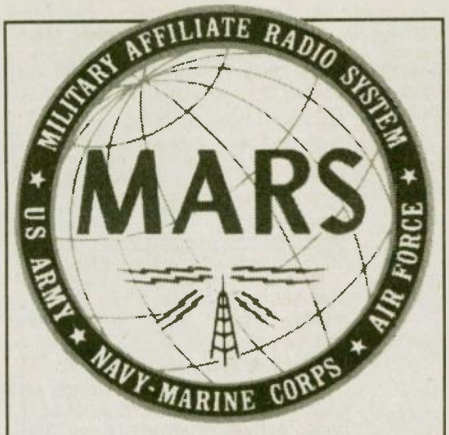
A reunion of past recipients is tentatively scheduled in conjunction with the 1996 award ceremony, to be held at the Huntsville Hamfest in August. Nomination forms and further information are available from the following address: *Newsline* Young Ham of the Year Award, 28197 Robin Avenue, Saugus, California, 91350. Information is also available in the "ham radio" files on America on Line and the Genie online services. The nomination deadline for the 1996 *Newsline* Young Ham of the Year award is 30 June 1996.

On a personal note

I'd like to take this opportunity to take care of some loose ends. First, I have received some correspondence lately. Thank you to everyone who has sent story suggestions and similar information. I'll make every effort to include as much of the material as possible at an appropriate time. As always, quality photos, story ideas, press releases, etc., are most welcome at my home address, which can be found above.

Secondly, my sources tell me that some readers have recently been wondering if I am indeed "a real kid." When I first heard this I wasn't sure whether to be flattered or insulted. I decided I'd better just answer the question and not ponder the possible implications. At any rate, rest assured. I am a living, breathing 18 year old high school senior. Just in case you're still wondering, the January edition of The "Youth Forum" contains a photograph of me.

I'll also be a the Dayton Hamvention to dispel any further myths. So to those of you wondering whether or not I am really a young person: Thanks, I think. WR



Lorraine S. Matthew, N4ZCF
MARS call AAA9PR

If 1996, so far, has been an accurate indicator, this year is destined to be one of the busiest years in Army MARS history. Increased emergency operations, increased morale traffic and phone patch handling, increased interoperability with sister service MARS organizations, and increased operations with Amateur Radio organizations in the civilian sector have all marked the imprint for the 1996 year that remains.

March opens with an Army MARS Emergency Exercise in support of the quarterly FEMA Emergency Communications Network exercise. Emphasis is placed on the sending of emergency communications throughout all the modes in use by Army MARS and the coordination of the modes and of the messages being transmitted. Among the emergency communications, of course, are the Essential Elements of Information (EEI) — Early Emergency Information — messages that have become a primary mission of Army MARS.

Every Army MARS member is expected to be able to send such messages describing anything happening that is unusual. Whether or not the individual sees national import in the event is immaterial. This is for the primary recipient (DOMS — Director of Military Support) of the messages to decide. I can remember reporting about an EEI being sent about the closure of a rather insignificant little bridge and how very important that information proved to be.

The FEMA interface with the Army MARS exercise allows FEMA to know with some precision just what geographic areas they can access for communications support. In a widespread emergency, this can be most important.

One interesting development that has come to the forefront of individual state Army MARS operations is an increase in formal interoperability with ARES and RACES organizations. A report from New York State, reports the formal participation of New York Army MARS in the annual SET (Simulated Emergency Test) run by ARES each fall season of the year. While a high percentage of MARS members are also ARES or RACES members, very few exercises (if any) have been run formally between the two groups as individual participating entities. It has been my pleasure to have been assisted in my Army MARS participation by ARES net members in Northern Florida. I, too, wear both hats and was operating on both types of nets at the same time. This proved to be most beneficial for contributions to both groups. Unlike the New York operation, however, this was a strictly informal approach.

The report, sent to me by the New York State Assistant MARS Director, stated, "Never before had New York State Army MARS joined in a Simulated Emergency Test (SET) held by an Amateur Emergency group until 21 Oct 95, when NY Army MARS opened VHF and HF emergency nets in support of an exercise conducted by the NYC-LI (New York City-Long Island) section of ARES. Using the amateur call signs, MARS operators were posted in three ARES VHF nets as MARS liaisons and message traffic was received for delivery to the Red Cross and State Emergency Management. This traffic was re-filed into MARS format and relayed via Army MARS Emergency Nets to Army MARS operators who delivered it.

In tune with the Coastal Storm Scenario, New York City and Long Island Army MARS operators generated simulated health and welfare messages that were relayed via VHF, HF, and packet. NY Army MARS delivered the goods in this ground-breaking team effort with ARES."

To quote Mario Maltese, WF2T, ARES Section Coordinator: "In an emergency, there are never enough lines of communication. You guys performed your mission superbly and impressed us with the professionalism of your operations. An important link we needed was filled."

Utah State MARS Director, Mike Lawyer, AAA8UT, conducted a Utah Statewide RACES VHF net training session about the interaction between Army MARS and RACES and other civilian agencies in that state. The VHF net was carried statewide through the use of crossband repeaters which are located throughout the state. The net is also carried on HF in the odd numbered months.

Mr. Lawyer's report will be held for a future column. Highlights of his training session included a statement of the use of morale traffic to give the MARS Emergency Networks *daily* exercise in order to keep the efficiency and effectiveness of the network in optimum condition. Customers for Utah Army MARS include STARC (State Area Command of the Utah National Guard), DOMS, and through DOMS, FEMA, SHARES and the Red Cross. He pointed out that Utah Army MARS is "tasked with being operational within one hour after the start of an incident."

Mr. Lawyer further pointed out that Army MARS does not compete with ARES or RACES or any other civilian agency. Army MARS (as has been written in this column previously) has a completely separate mission — a vertical Federal mission. ARES/RACES has the horizontal mission of community to county to state. The two systems meet at one point — the center point — for exchange of information and mutual assistance as needed. This relationship is true nationwide. As more and more emergencies demand the attention of Amateur Radio operators everywhere, a reminder that Army MARS operators were amateur operators first seems in order. Perhaps, we will see more and more cooperation which will be of benefit to both groups and to the communities and states which we all serve.

Interoperability does not only refer to the three sister service MARS organizations. It refers to MARS/ARES-RACES relationships as well.

When all of us march together, we will all be — proud, professional and ready. WR

Visit Your Local RADIO CLUB

For information on how to get your club listed in "Visit Your Local Radio Club," plus receive many other benefits, write to: Club Liaison, Worldradio 2120 28th St. Sacramento, CA 95818.

ALASKA

South Central Radio Club. 8023 E. 11th Ct., Anchorage, AK. Meets 2nd Fri./monthly, 7 p.m., UAA Business Ed. Bldg., Rm. 220. KL7CC, (907) 338-0662 for info. Club rptr: KL7CC/R 146.97(-) PL 103.5 Hz. 2/97

ARIZONA

Arizona Repeater Association. P.O. Box 35758, Phoenix, AZ 85069-5758. Operates 20 VHF & UHF rptrs. in AZ. Meets 4th Thurs./monthly, 7:30 p.m., 1515 E. Osborne, Phoenix. Info: (602) 631-4879. 9/96

Cochise Amateur Radio Assn., (CARA). Meets 1st Mon./monthly, 7:30 p.m. at club facility on Moson Rd., Sierra Vista, AZ. WA7KYT/R 146.76(-) rptr. 5/96

Old Pueblo Radio Club, (OPRC). P.O. Box 42601, Tucson, AZ 85733. Meets 2nd Wed./monthly, 7:15 p.m., Northwest Neighborhood Center, 2160 N. 6th Ave. (South of Grant). 2/97

Tucson Repeater Assoc., P.O. Box 40371, Tucson, AZ 85717-0371. Meets 2nd Sat./monthly, 7:15 p.m., Dept. of Emergency Mgmt., 130 W. Congress. Net Thurs. 7:30 p.m. 146.82(-), 146.88(-), 147.08(+), 448.550(-) & 145.15 Packet. 3/96

CALIFORNIA

Amador County Amateur Radio Club. P.O. Box 1094, Pine Grove, CA 95665. Meets 1st Thurs./monthly, 7:30 p.m., Jackson Sr. Cntr., 229 New York Ranch Rd., Jackson, CA. Info: call 146.835(-). 5/96

Amateur Radio Club of Anderson, (ARCA). Meets 2nd Thurs./monthly, 7:30 p.m. Amer. Legion Post #748, 1709 Bruce Dr., Anderson, CA. Net every Tue., 7:30 p.m. on 146.64. 4/96

Contra Costa Communications Club, Inc., WD6EZC/R. P.O. Box 20661, El Sobrante, CA 94803-0661. Meets 2nd Sun./monthly (except May & Dec.), 7 a.m., Baker's Square Restaurant in Richmond, CA. Info: Ed Caine, KA6OFR, (707) 996-0962. 1/97

Downey Amateur Radio Club Inc., W6TOI. Meets 1st Thurs./monthly, 7:30 p.m., So. Middle Sch. cafetorium, 12500 S. Birchdale, Downey, CA. (Summer exception: contact Doug, N6WZI, (310) 929-1441). VHF net W6GNS rptr. 146.175(+) Thurs., 7:30 p.m. 5/96

East Bay Amateur Radio Club, Inc. Meets 2nd Fri./monthly, 7:30 p.m., Albany Sr. Cntr., 846 Masonic Ave., Albany, CA. Info: S. Primbsch, (510) 741-8227. 145.110 MHz. 6/96

Fresno Amateur Radio Club. Meets 2nd Fri./monthly, 7:30 p.m., Ernie Pyle School, 4140 N. Augusta, Fresno, CA. 146.94(-) 223.94(-). 11/96

Fullerton Radio Club, Inc., W6ULI. P.O. Box 545, Fullerton, CA 92632. Meets: 3rd Wed./monthly, 7:30 p.m., Sr. Citizens Ctr., 340 W. Commonwealth, Fullerton. Net ea. Tue., 8 p.m. 147.975(-). Info: Bob Hastings, K6PHE (714) 990-9203. 6/96

Golden Empire Amateur Radio Society, (VEC). P.O. Box 508, Chico, CA 95927. Club call W6RHC, rptr. 146.85(-). Meets: 3rd Fri./monthly, 8 p.m. at 1528 Esplanade, Rm. 110B, Chico. 9/96

Golden Triangle ARC, (GTARC). Meets 4th Mon./monthly, 7:30 p.m., Sharp Health Care Activities Rm., 25500 Med. Ctr. Dr., Murrieta, CA 92562. 6/96

Livermore Amateur Radio Klub, (LARK). Meets 3rd Sat./monthly, 9:30 a.m., City Council Chamber, 3575 Pacific Ave., Livermore, CA. Net Mon. 1900 on 147.12(+). For info: LARK Secretary, P.O. Box 3190, Livermore, CA 94551-3190. (510) 846-6513. 12/96

Marin Amateur Radio Club (MARC). W6SG. Box 151231, San Rafael, CA 94915-1231. Meets 1st Fri./8 p.m.; MARC Clubhouse Bldg. 549, HAFB, Novato, CA. (415) 883-9789 (Summer exceptions; contact Pete N6IYU, 924-1578). Sun. AM Club at Red Cross, San Rafael. 8/96

Motorcycling Amateur Radio Club. Meets 2nd Sat./monthly, 8 a.m., Lake View Cafe, 2099 E. Orangethorpe, Placentia, CA, at 91 Fwy/Lakeview. Info: Ray Davis, KD6FHN, (714) 551-2010 or (714) 551-1036. 2/97

Mount Diablo Amateur Radio Club. P.O. Box 23222, Pleasant Hill, CA 94523. Meets 3rd Fri./monthly, 8 p.m., Our Savior's Lutheran Church, 1035 Carol Ln., Lafayette, CA. Net Thurs. 7:30 p.m. on 147.06(+) 100Hz PL. Info: (510) 932-6125. 6/96

North Shores ARC. Meets 1st Tues./ monthly, 7:30 p.m., So. Clairemont Rec. Cntr., 3605 Clairemont Dr., San Diego, CA. Info: (619) 224-1294. 9/96

Orange County Amateur Radio Club. Meets 3rd Fri./monthly, 7:30 p.m., Orange County Red Cross, 601 N. Golden Circle, Santa Ana, CA. 146.550. Contact Bob Buss, KD6BWH, (714) 534-2995. 1/97

Palos Verdes ARC. Meets 3rd Wed./ monthly, 7:30 p.m., Community Rm., "Shops at Palos Verdes," 550 Deep Valley Dr., Rolling Hills Estates, CA. Info. Herb Clarkson, KM6DD, (310) 377-6342. Rptr. 145.38(-) PL 100. 11/96

River City A.R.C.S. Meets 1st Tues./ monthly, 7 p.m., SMUD Bldg., Don Julio at Elkhorn, Sacramento, CA. License classes offered. For info contact Lyle, AA6DJ, (916) 483-3293. 9/96

Sacramento Amateur Radio Club. Meets 2nd Wed./monthly, 7 p.m. Sac. Blood Ctr., 32nd St. & Stockton Blvd., Sacramento, CA. Info net at noon on rptr. W6AKR 146.91(-). Steve Cates, KC6TEV, (916) 391-7341 or Les Ballinger, WA6EQQ, (916) 393-4775. 10/96

Sacramento "Old Timers" Amateur Radio Society and Sacramento Valley Chapter #159 QCWA (Quarter Century Wireless Assn.). Meets 2nd Wed./monthly, 8 a.m., Lyon's Restaurant, 1000 Howe Ave. For info contact Paul Wolf, W6RLP (916) 331-1830. 10/96

San Gabriel Valley Radio Club, Inc. P.O. Box 88, Monrovia, CA 91017-0088. Meets 1st Tue./monthly, 7:00 p.m., Arcadia County Park, 405 So. Santa Anita Ave., Arcadia, CA. 147.765(-) PL 131.8. Info: (818) 285-9281. 12/96

Santa Clara County Amateur Radio Assoc., (SCCARA) W6UW & W6UU. P.O. Box 6, San Jose, CA 95103-0006. (408) 249-6909. Meets 2nd Mon./monthly, 7:30 p.m., United Way, 1922 The Alameda, San Jose. Net all other Mon., 7:30 p.m. W6UU/R 146.385(+), 442.425(+) PL 107.2. 3/96

Shasta Cascade Amateur Radio Society, (SCARS). 2124 Airstrip Rd., Redding, CA 96003. Meets: 3rd Wed./monthly, 7 p.m. at the C.D.F. Conf. Rm. Grape St., near Parkview Ave., Redding, CA. Net 146.64, Wed., 8 p.m. 7/96

Sierra Foothills ARC. P.O. 3262, Auburn, CA 95604. Meets 2nd Fri./monthly, 7:30 p.m., Firehouse, 226 Sacramento St. Auburn. 10m, Wed. 7:30 p.m., 28.415, 2/ 220m, Thurs. 7:30 p.m., 145.430(-) (PL 94.8) & 223.86(-). 3/96

Simi Settlers Amateur Radio Club (SSARC). P.O. Box 3035, Simi Valley, CA 93093. Meets 2nd Thurs./monthly (except Dec.), 7:30 p.m., Seventh Day Adventist Church Hospitality Rm., 1636 Sinaloa St., Simi Valley. Contact Ron, KD6VLM, (805)584-6737, 147.930(-) (PL 127.3). 11/96

Siskiyou County Amateur Radio Assoc. Meets 1st Sat./monthly, 10 a.m., rotates between Bob's Ranch House in Etna, CA and The Tree House in Mt. Shasta. For info: Al, WA6IHK, (916) 467-3255. 10/96

So. Sierra ARS. Meets 2nd Thurs./monthly, 7 p.m., Veteran's Mem. Hall, 125 East F St., Tehachapi, CA. Contact: C. Parsons, KD6KMN, (805) 822-5995. 147.06/224.42. 12/96

South Bay ARC. P.O. Box 536, Torrance, CA 90508. Meets 3rd Thurs./monthly, 7:30 p.m., Torrance Memorial Hosp., 3330 Lomita Blvd., Torrance, CA. Talk-in on WB6MYD rpt. 244.38(-). Info: (310) 328-0817. 7/96

Southern California Six Meter Club. P.O. Box 10441, Fullerton, CA 92635. USB Net Tue., 8 p.m., 50.150. FM Rpt. Net Thurs., 8 p.m., 52.86/52.36 tx. FM Smplx, call freq. 50.300. Net Sun., 10 a.m. 50.40. 3/96

Tri-County Amateur Radio Assoc. P.O. Box 142, Pomona, CA 91769. Meets: 2nd Mon./monthly, 7:30 p.m., Covenant United Methodist Church, corner of Towne Ave. & San Bernardino Rd. in Pomona, CA. 11/96

Trinity Country ARC. P.O. Box 2283, Weaverville, CA 96093. Meets 2nd Wed./ monthly, CD Hall in Weaverville, 7:30 p.m., Rptrs: WA6BXN 146.73(-) PL 85.4, W6HOR 146.925(-) PL 85.4. 10/96

United Radio Amateur Club, K6AA.L.A. Maritime Museum, Berth 84, Foot of 6th St. San Pedro, CA 90731. Meets 3rd Fri./monthly (except Dec.), 7:00 p.m. Monitors 145.52 Simplex 10 a.m.—5 p.m. 6/96

Vaca Valley Radio Club. Meets 2nd Wed./monthly, 7 p.m., Vaca Fire Dist. Stn., Vine St. in Vacaville, CA. Rptr. WD6BUS 145.47(-) PL 127.3. Dan Bissell (707) 446-7411. 5/96

Victor Valley Amateur Radio Club. P.O. Box 869, Victorville, CA 92392. Meets 2nd Tues./monthly, 7:00 p.m., Victor Valley Museum, 11873 Apple Valley Rd., Apple Valley, CA. Talk-in 146.94(-), PL 91.5. Net Sun. 7 p.m. 146.94(-). 12/96

West Coast Amateur Radio Club, (WCARC). P.O. Box 2617, Costa Mesa, CA 92628. Meets 3rd Thurs./monthly, 7 p.m., Fountain Valley Sch. Dist. office, 17210 Oak St., Fountain Valley, CA. 145.440(-) PL 136.5. For info: Joe, KA6LPZ, (714) 963-4426. 9/96

Westside Amateur Radio Club. P.O. Box 11092, Marina del Rey, CA 90295. Meets 3rd Thurs./monthly, 7:30 p.m., Red Cross Bldg., 1450 11th St., Santa Monica, CA. Net every Tues., 8 p.m., 146.67(-). Voice mail: (310) 917-1100. 5/96

West Valley Amateur Radio Assoc. P.O. Box 6544, San Jose, CA 95150-6544. Meets: 3rd Wed./monthly, 7:30 p.m. (except Dec.) Cambrian Sch. Dist. Office, 4115 Jacksol Dr., San Jose, CA. W6PIY/R. Net Tue., 8:30 p.m. 147.39(+), 223.96(-). 10/96

Willits Amateur Radio Society, (WARS). P.O. Box 73, Willits, CA 95490. Meets 4th Mon./monthly, 7 p.m., Brooktrails Fire Dept. (northwest of Willits). Talk-in: 145.13(-), PL 103.5. 7/96

Yolo Amateur Radio Society. Meets 1st Tues./monthly, 7:30 p.m., Training Rm. of the Davis PD, 226 F St., Davis, CA. Contact Dave Nishikawa, KC6YFG, (916) 756-6375/Talk-in 144.430. 10/96

Yuba-Sutter Amateur Radio Club, (YSARC). P.O. Box 1169, Yuba City, CA 95991. Meets 2nd Tue./monthly, 7:30 p.m., Yuba City Police Bldg., 1545 Poole Blvd., Yuba City. 12/96

FLORIDA

Gulf Coast ARC. P.O. Box 595, New Port Richey, FL 34656. Meets 4th Mon./ monthly, 7:30 p.m., 3852 Prime Place, New Port Richey. WA4GDN rptrs. 146.67(-) & 145.33(-), serving all of Pasco County. 8/96

Indian River ARC, Inc., (IRARC). 597 Capri Rd., Cocoa Beach, FL 32931-3011. Meets 1st Thurs./monthly, 7:30 p.m., Community Church of the Nazarene, 400 Crockett Blvd., Merritt Island, FL. 3/96

Port St. Lucie ARA. Meets 1st Fri./ monthly, 7:30 p.m., St. Andrews Church, Prima Vista Blvd., Port St. Lucie, FL. Contact: Roy Cox, KE4QJG, (407) 340-4319. Call in 146.955(-). 9/96

Saint Petersburg Amateur Radio Club. Meets 1st Fri./monthly, 7:30 p.m., Red Cross Bldg., 818 Fourth St. North, St. Petersburg, FL. Nightly net 6:30 p.m., 147.06(+). Rptrs. 147.06(+), 224.66(-), 444.475(+). Info: C. Wagner, KE4EYI, (813) 894-2393. 1/97

South Brevard Amateur Radio Club. P.O. Box 2205, Melbourne, FL 32902. Meets 1st Tue./monthly, 7 p.m., Public Library, 540 Fee Ave., Melbourne, FL. 6/97

Vero Beach ARC, W4OT. P.O. Box 2062, Vero Beach, FL 32961. Meets 2nd Thurs./ monthly, 8 p.m., Emerg. Mgmt., Indian River County Adm. Bldg., 1840 25th St. Net Mon., 7:30 p.m. 146.64. 12/96

GEORGIA

Dalton Amateur Radio Club, Inc., (DARC). Meets 4th Mon./monthly, 7:30 p.m., Magistrate Court Bldg., corner of Waugh St. & Thornton Ave., Dalton, GA. Info: Harold Jones, N4OTC, 706/673-2291. 3/96

HAWAII

Emergency Amateur Radio Club, (EARC). P.O. Box 30315, Honolulu, HI 96820-0315. Meets 4th Thurs./monthly, 7 p.m., Lincoln Elem. Sch., 615 Auwaiolimu, Honolulu. Nets: nightly 7:30 p.m., 146.88 & 146.80. Rptrs: 146.76(-), 146.80(-), 146.88, 146.98(-), 146.94(-). Info: (808) 595-6245. 7/96

ILLINOIS

Chicago FM Club Inc., (CFMC). P.O. Box 1532, Evanston, IL 60204. 146.76(-)(PL 107.2)/ 224.10/224.18/443.75 (PL 114.8). Ham help line: (312) 262-6773. Info net Tues., 9 p.m. on 146.76(-). Meets 3rd Wed./monthly, 8 p.m. 6/96

CHI-NET Amateur Radio Club. North & Northwest Chicagoland & Suburbs. Specializing in PACKET Radio and 220 Phone to further the fulfillment of Amateur Radio. Meets last Thurs./even mos. Info: (708) 307-8198 or Packet on 144.99 MHz or Voice on 224.24 MHz. 11/96

Dupage Amateur Radio Club. (DARC). P.O. Box 71, Clarendon Hills, IL 60514. Meets 4th Mon./monthly, 7:30 p.m., Holy Trinity Church, SE corner of Cass & Richmond, Westmont, IL. Net Sun., 9 p.m. on 145.25. W9DUP repeaters 145.25(-) (107.2PL), 442.55(+) (114.8PL), 224.68(-). 11/96

Fox River Radio League. P.O. Box 673, Batavia, IL 60510-0673. Meets 2nd Tue./ monthly, 7:30 p.m., Old Bank Bldg., 900 No. Lake St., lower level, Northgate Shopping Ctr. & Rt. 31, Aurora, IL. 6/96

Hamfesters Radio Club, W9AA. P.O. Box 42792, Evergreen Park, IL 60805. Meets 1st Fri./monthly, 8 p.m., Crestwood Civ. Ctr., 139th & Kostner, Crestwood, IL. Nets: Sun. (local) 0100 UTC, 28.410 MHz; Mon. 9 p.m. 146.43 S., Packet Mailbox 145.65 MHz. Info: (312) 974-3291. 1/97

Peoria Area Amateur Radio Club, (PAARC). Meets 2nd Fri./monthly, 7 p.m., 1401 N. Knoxville Ave. Info: (309) 685-6698. Rptrs: 146.85(-) & 147.075(+). 5/96

The Starved Rock Radio Club, W9MKS. P.O. Box 198, Tabor St., Leonore, IL 61332. Meets 1st Mon./monthly, 7:30 p.m. Rptr. net 7 p.m. Wed./wkly., 147.12(+). 11/96

Wheaton Community Radio Amateurs, (WCRA). P.O. Box QSL, Wheaton, IL 60189. Meets 7:30 p.m., 1st Fri./monthly, College of DuPage, Glen Ellyn, IL. Nets Sun. & Tue. 8 p.m., 145.39(+) MHz. 440 MHz net on Tues., 8:30 p.m. on 444.475(+) MHz. RTTY Net Sun. 9:30 p.m. 145.31(-). 6/96

York Radio Club. Meets 3rd Fri./monthly, 8 p.m., Elmhurst College (Science Bldg.) Elmhurst, IL. Net Mon., 8 p.m. W9PCS/147.42 simplex. Rptr. 442.875(+). 4/96

IOWA

Scoland Amateur Radio Assoc., (SARA). Meets 3rd Tues./monthly, 7:30 p.m., American Red Cross Bldg., 1512 Pierce St., Sioux City, IA. Contact: Glenn Holder, KØTFT. (712) 239-1749. Call-in 146.97(-). 11/96

MAINE

Androscoggin Amateur Radio Club. Meets 1st Wed./monthly, 7:00 p.m., Auburn Police Station, 1 Minot Ave., Auburn, ME. 11/96

MASSACHUSETTS

Quannapowitt Radio Assoc., Inc. 6 Savin St., Burlington, MA 01803. Meets 4th Fr./monthly, 8:00 p.m., (May & Nov. meets 3rd Fr.), at Lynnfield-Wakefield Methodist Church, Wakefield. Info: Jim Chamberlain, N1AKG, (617) 944-5098. 1/97

Wellesley Amateur Radio Soc., & Babson Wireless Club. Meets 1st & 3rd Thurs./monthly, 7:30 p.m., Tomasso Hall, Babson College Forest St., Wellesley, MA (Sept.-June) Talk-in 147.03(+). Info: J. Driscoll, NV1T, (617)444-2686. 12/96

MICHIGAN

Chelsea Amateur Radio Club, Inc. Meets 4th Tue./monthly, 7 p.m., Society Bank, 1478 Chelsea-Manchester Rd., Chelsea, MI 48118. 12/96

Eastern Michigan Amateur Radio Club, (EMARC). Meets 1st Tue./monthly, 8:30 p.m., Woodland Developmental Cntr., Kimball Township (Range @ Smiths Creek Rd.). Contact Frank Forsyth, N8XTO, (810) 987-3540. Talk-in: 147.30(+). 9/96

Genesee County Radio Club, Inc. Meets 3rd Tues./monthly, 7:30 p.m., Genesee Area Skill Center, Torrey Rd., Flint, MI. (810) 634-6077. 2/97

MISSISSIPPI

Jackson Amateur Radio Club, Inc. Meets 3rd Thurs./monthly, 7 p.m., Am. Red Cross Bldg., Riverside Dr., Jackson, MS 39202. 10/96

MISSOURI

PHD Amateur Radio Assn., Inc. P.O. Box 11, Liberty, MO 64068. Meets last Tue./monthly, 7 p.m., Gladstone Comm. Bldg. (816) 781-7313, Volunteer Examiner Coordinator. 2/97

NEVADA

Frontier Amateur Radio Society, (FARS). Meets: 3rd Sat./monthly, bkfst. 8 a.m. & mtg. 8:30 a.m., Rae's restaurant, 2531 Wigwam at Pecos. Club info: Jim Frye, NW7O, (702) 256-5396 or Leona Wallace, WA6OHB, (702) 247-6450. 7/96

Wide Area Data Group, Inc. P.O. Box 3132, Sparks, NV 89432. Meets 1st Sat./monthly, 9 a.m., Jack's of Reno, 5485 Equity Ave., Reno. Info: (702) 356-8200. Call in on 147.30(+) MHz. 5/96

Sierra Intermountain Emergency Radio Assoc., (SIERA). Meets 2nd Tues./monthly, 7:30 p.m., Douglas County Lib., Minden. Contact: George Uebele, WW7E, (702) 265-4278, 147.330. 11/96

NEW HAMPSHIRE

Great Bay Radio Assn., WB1CAG. P.O. Box 911, Dover, NH 03820. (603) 755-2600/335-6643. Meets 2nd Sun./monthly, 7 p.m., Rochester Fire Dept. Training Rm. Talk-in: 147.57. 11/96

NEW JERSEY

10-70 Repeater Assn., Inc. 235 Van Emburgh Ave., Ridgewood, NJ 07450. Meets 1st Wed./monthly (except July & Aug.), 8 p.m., VFW, Valley Rd., Clifton, NJ. Rptrs.: 146.70(-), 224.84(-), 444.15(+). 10/96

Bergen Amateur Radio Assoc., (BARA). P.O. Box 304, Hackensack, NJ 07601. Meets 1st Sun./monthly, New Milford Elks Lodge, Patrolman Ray Woods Dr., New Milford, NJ 07646. Nets: 28.350 Mon. 9 p.m., 144.40 9 p.m. Wed. 5/96

Cape May County Amateur Radio Club. Meets 3rd Thurs./monthly, 7:30 p.m., Human Resource Bldg., Rts. #9 & #47 in Rio Grande, NJ. Talk-in on 146.61(-). Weekly net, 8 p.m. every Thurs. except 3rd. 3/96

South Jersey Radio Assoc., (SJRA). Pennsauken Sr. Hi Sch. at Hylton Rd. & Remmington Ave., Pennsauken, NJ 08109. Meets Jan.-Oct., 4th Wed./monthly, 7:30 p.m. (Nov.-Dec. 3rd Wed.). Talk-in: 145.29(-) rptr. Club call K2AA. 8/96

NEW YORK

Amateur Radio Assoc. of the Tonawandas, (ARATS). P.O. Box 430, No. Tonawanda, NY 14120. Meets 3rd Tues./monthly (except July & Aug.), 7:30 p.m., Sweeney Hose Co., 499 Zimmerman St., No. Tonawanda, NY. Talk-in: 146.955(-) rptr. W2PVL. 10/96

Genesee Radio Amateurs, (GRAM). N.Y.S. Civil Defense Ctr., State St., Batavia, NY 14020. Meets 3rd Fri./monthly, 7:30 p.m. 147.285(+) W2RCX. 12/96

Hall of Science Amateur Radio Club. P.O. Box 131, Jamaica, NY 11415. HOSARC, 2nd Tue./monthly, Hall of Science Bldg., 47-01 111 St., Flushing Meadow Park, 7:30 p.m. Info: Arnie, WB2YXB, (718) 343-0172. 2/97

Orleans County Amateur Radio Club, (WA2DQL). Meets at Emergency Management Office, West County House Rd., Albion, NY 14411, 2nd Mon./monthly, 7:30 p.m. 145.27(-) — WA2DQL. 12/96

PROS, Pioneer Radio Operators Society. Meets 1st Wed./monthly (except July/Aug.), 7 p.m., Sardinia Town Hall, Savage Rd., Sardinia, NY. Net 9 a.m. Thurs. 3853 kHz. 3/96

The Radio Club of J.H.S. 22, N.Y.C., Inc. WB2JKJ. P.O. Box 1052, New York, NY 10002. 24-hr. hotline: (516) 674-4072. Fax: (516) 674-9600. Non-profit org. using Ham Radio to enhance the education of youngsters, nationwide. Join us — "Classroom Net", 7.238 MHz, 7 a.m. E.S.T. PSE QSL! 9/96

Suffolk County Radio Club, (SCRC). Meets 3rd Tues./monthly, 8 p.m., Bohemia Rec. Ctr., Ruzicka Way, Bohemia, NY. Talk-in: 145.21(-) rpt. Morten Eriksen, KA2UIU, (516) 929-6911. 4/96

Westchester Amateur Radio Assoc., (WARA). Meets 1st Wed./monthly, 7:30 p.m., Am. Red Cross Bldg., 106 N. Bway, White Plains, NY. Club net: 145.495(-) rpt. Tues., 7:30 p.m. Info: Dan Grabel, N2FLR, (914) 723-8625. 2/97

Westchester Emergency Comm. Assoc., (WECA). Meets 2nd Mon./monthly, 7:30 p.m., Westchester County Ctr., White Plains, NY. Contact WB2VUK (914) 631-7424 or WECA INFO LINE (914) 741-6606 for details. Talk-in WB2ZII/R 147.06(+) PL 114.8/2A. 10/96

Yonkers Amateur Radio Club, (YARC). Meets 2nd Sun./monthly, 10 a.m., 1st Pct., Yonkers Police Station, E. Grassy Sprain Rd., Yonkers, NY. Info: P.O. Box 378, Centuck Sta., Yonkers, NY 10710. (914) 963-1021. 146.865(-), 440.15(+). 10/96

NORTH CAROLINA

Cabarrus Amateur Radio Society, (CARS). Meets 3rd Mon./monthly, 7 p.m., Forest Hills United Methodist Church in Concord, NC. Net on Mon., 9 p.m., 146.65(-). 3/96

Stanly County Amateur Radio Club. P.O. Box 188, Stanfield, N.C. 28163. Meets 4th Thurs./monthly, 7 p.m. at Stanly Community College, Albemarle, NC. 5/96

OHIO

Ashtabula County ARC. Ken Stenback, AI8S (964-7316). County Justice Ctr, Jefferson, OH. Meets 3rd Tue./monthly, 7:30 p.m. County rptr., 146.715(-). 9/96

Clyde Amateur Radio Society (CARS). Meets 2nd Tue./monthly, 7:30 p.m., Municipal Bldg., Clyde, OH 43410. NF8E rptr. 145.35(-) and 442.625(+) MHz. Net Sun. 9 p.m. Info: E. Remaley, KA8CAS. 3/96

Firelands Area Rptr. Assn., (FARA). Meets 4th Tue./monthly, 7 p.m., Erie County Admin. Bldg., Sandusky, OH. WB8LLY rptr. 146.805(-). Net Sundays, 8 p.m. Info: FARA, P.O. Box 442, Huron, OH 44839. 11/96

Greater Cincinnati Amateur Radio Assn., (GCARA). Meets 4th Wed./monthly, 7:45 p.m., Cincinnati Museum of Nat. History, 1720 Gilbert Ave. Amateur Radio Station W8DZ. Info: WA8STX or (513) 563-7373. 11/96

Lancaster & Fairfield County ARC. Meets 1st Thurs./monthly, 7:30 p.m., American Red Cross, 121 W. Mulberry St., Lancaster, OH 43130. Info net Mondays, 8 p.m., K8QIK/R 147.03(+) rptr. BBS 145.53. 8/96

Northern Ohio Amateur Radio Society, (NOARS). Meets 3rd Mon./monthly, 7:30 p.m., Gargus Hall, Rt. 254, Lorain, OH. Info: rptr. K8KRG 146.70, DX alert rptr. 145.15. 10/96

Toledo Mobile Radio Association. P.O. Box 273, Toledo, OH 43697. Meets 2nd Wed./monthly, 7:30 p.m., Luke's Barn, Lucas County Rec. Ctr., 2901 Key St., Maumee, OH. Contact: Brenda, KB8IUP, 866-5928. 11/96

Van Wert Amateur Radio Club, Inc. P.O. Box 602, 1220 Lincoln Hwy., Van Wert, OH 45891. Meets 1st & 3rd Sat./monthly, 8 p.m. Call-in: 146.85(-). 2/97

OREGON

Central Oregon Radio Amateurs, (CORA). P.O. Box 723, Bend, OR 97709. Meets last Thurs./monthly, 7 p.m., Bend Sr. Ctr., 1036 NE 5th, Bend, OR. Net Sun. 7:30 p.m. 147.06(+) MHz. Info: (503) 385-1156. 6/96

Keno Amateur Radio Club. P.O. Box 653, Keno, OR 97627. Meets 3rd Thurs./monthly, 7 p.m., Keno Fire Stn. Rptr. 147.32(+) W7UFM. Info: Tom Hamilton, WD6EAW, (503) 883-2736. 11/96

Central Oregon Coast ARC. P.O. Box 254, Florence, OR 97439. Meets 3rd Sat./monthly, 9 a.m. for brkfst. Net, Wed. 7 p.m., 146.80(-). Info: 997-2323 or 997-4074. 1/97

Umpqua Valley Amateur Radio Club, Inc. P.O. Box 925, Roseburg, OR 97470. Meets 3rd Thurs./monthly, 7:30 p.m., Douglas County Courthouse, Rm. 310, Roseburg, OR. Info: W5PII/R 146.90(-) or (503) 673-1310. 6/96

Valley Radio Club of Eugene. Meets 1st Fri./monthly, 7:00 p.m., Lane County Red Cross chapter house, 150 E. 18th Ave., Eugene, OR. Info: (541) 484-0502. 12/96

PENNSYLVANIA

Butler County Amateur Radio Assn. P.O. Box 1787, Butler, PA 16001-1787. Meets 1st Tues./monthly, 7:30 p.m., Boy Scout Cntr., 830 Morton Rd., Butler, PA. Call-in W3UDX/R 147.36(+). Net 10:10 p.m. nightly. 10/96

Mercer County Amateur Radio Club, W3LIF. P.O. Box 996, Sharon, PA 16146. Meets 4th Tue./monthly, 7:30 p.m., Shenango Valley Med. Ctr, Farrell, PA. Net, Thurs. 9 p.m. on 145.35(-) W3LIF, Digi. 145.01. 3/97

Mid-Atlantic ARC. Box 352, Villanova, PA 19085. Meets 3rd Thurs./monthly, 8:00 p.m., Radnor Mem. Libraray, Wayne, PA. Call Bob Haase, W3SA, (610) 293-1919. 147.06(+) WB3JOE PBBS 145.09. 1/97

Warminster Amateur Radio Club, WA3DFU. P.O. Box 113, Warminster, PA 18974. (215) 672-9985. Meets 1st Thurs./monthly, 7:30 p.m., Neshaminy-Warwick Presbyterian Church, Warminster, PA. Net on 147.69(-), 147.09(+), Wed. 8:30 p.m. and 28.450 Sun. 9 p.m. 4/96

RHODE ISLAND

South Coast Wireless Society. P.O. Box 1516, Westerly, RI 02891. Meets 4th Tue./monthly, 7:00 p.m., Pawcatuck Neighborhood Center. Info: Dean, N1SXL, (401) 539-0775. 6/96

TEXAS

Brazos Valley Amateur Radio Club, (B-VARC). P.O. Box 1630, Missouri City, TX 77459. Meets 2nd Thurs./monthly, 7:30 p.m., Sugar Land Community Ctr., 226 Matlage Way., 3 blks SW of Imperial Sugar Co. at HWY US-90A & Brooks St. (HWY 58) in Sugar Land, TX. Talk-in: 145.47(-), 442.5(+) rptrs. 7/96

Brownsville ARC (CHARRO). Meets 2nd Tue./monthly, 7:00 p.m., Confederate Air Force Hangar, Brownsville Airport in TX. Talk-in on 147.040(+). 12/96

VIRGINIA

Southern Peninsula Amateur Radio Klub, (SPARK). Meets 1st Tue./monthly Salvation Army Community Bldg., Hampton, VA. Repeaters 146.73(-), 449.55(-). VE Exam Info: (804) 898-8031, W4RTZ. 2/97

Virginia Beach ARC. Meets 1st Thurs./monthly (except July), 7:30 p.m., St. Andrews United Methodist Church, Tucson & Princess Anne Rds., Virginia Beach, VA 23462. 2/97

WASHINGTON

The Mike & Key Amateur Radio Club. Meets 3rd Sat./monthly, 10 a.m., Salvation Army Renton HQ., 720 Tobin St., Renton, WA. Talk-in on 146.82(-) rptr. Doors open at 9:30 a.m. 5/96

WEST VIRGINIA

Jackson County Amateur Radio Club. Meets 1st Thurs./monthly, 7:30 p.m., United Nat'l Bank of Ripley. Net Mon. 9 p.m. on 146.67(-) WD8JNU/R. For info: D. Tenant, N8ZYB, Rt. 1, Box 317, Cottageville, WV 25239. 6/96

Tri-State Amateur Radio Assn. Meets 3rd Tues./monthly, 7 p.m., The American Red Cross, 111 Veteran's Memorial Blvd., Huntington, WV. 5/96

WYOMING

Sheridan Radio Amateur League, 146.82. P.O. Box 7042, Sheridan, WY 82801. Meets 4th Thurs./monthly, 7 p.m., location varies; Saturdays, 8 a.m. at J.B.'s. Info: (307) 674-6666, WA7B. 7/96

QUARTER CENTURY WIRELESS ASSOCIATION INC.

John G. Troster, W6ISQ

Bill Pasternak, WA6ITF, One of Us

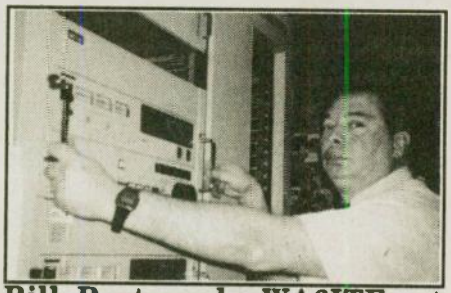
It pays to be careful when talking to ***Worldradio*** FM/Repeater columnist Bill Pasternak, WA6ITF. He's an active guy, and has done so many things that they are hard to keep straight, much less in sequence. But one thing for sure: He's One of Us, the Proud, the Many, the Elite, the QCWA.

If you feel tired and overworked, read what Bill Pasternak, WA6ITF, does as daily routine: video tape expert and consultant to industry, producer and writer for the Amateur Radio news broadcast weekly *Newsline* (estimated 500,000 listeners worldwide), convention speaker, owner of a company that designs and installs postproduction editing room facilities for video, ***Worldradio*** columnist, 6 Meter low power DXer, video producer and writer, and oh yes, his main eight-hour-a-day-employment, overseeing the operation of the video tape machines at Los Angeles' Channel 11, KTTV. What a way of life!

Bill was honored at the Dayton Hamvention in 1981 with a "Special Achievement Award" for his work with *Westlink* (now *Newsline*), and again in 1989 as "Ham of the Year." Just recently he was invited to join the Radio Club of America.

Inquisitive Brooklyn boy

Bill is a native of "The Great Free, Independent State of Brooklyn" which, as he proclaims, is a state of mind. A lot of things happened all at once when Bill was in Junior High School. His father wanted him to become a lawyer, but Bill liked to play with batteries and bulbs, and watch things glow in the dark. He took up photography and began to hang around Mr. Saul Rosenthal's radio and camera shop. It wasn't long before he got interested in those radios upside down on the bench and soon, Mr. Rosenthal became Bill's Elmer, taught him how to use the tube tester, and gradually to trouble-shoot and repair radios. One big plus from this activity was that after getting acquainted with radio bench repair, Bill fixed the old Philco at his house that had long been broken.



Bill Pasternak, WA6ITF, at work at KTTV Fox 11 in Los Angeles.

He became friends with a fellow who liked radios and also was a ham with a Tech license, Charlie Zusman, WA2AKX, now WE2R. Bill had never heard of Amateur Radio, so Charlie took him home for a demonstration. Charlie had a Heathkit AT-1 and an S53A and the boys listened to shortwave and amateurs. From that point on, Bill was hooked on Amateur Radio. A few days later, Charlie and Bill were traveling on the subway when Charlie, who was three times the size of Bill, announced, "if you don't get your license, I'm gonna beat you up." Six weeks and two days later, Bill received the call WA2HVK.

Bill immediately set to work to build a station. He found a great schematic for a 6 Meter radio in Bill Orr's *Novice and Technician Handbook*. Problem was, no money for parts. He scrounged a tube and parts from an old TV. The TV tubes were bigger than the ones called for in the schematic, so they must work better. Then he tore up that Philco he had fixed to get more parts, and pre-empted a power transformer from an old Stromberg Carlson AM-FM set. He didn't have a transformer for Heising modulation, so he found another schematic in Orr's *Handbook* for screen modulation and built that. For the antenna, he had 10 feet of coax which just reached outside the window and to which he attached a 40 foot piece of wire nailed under the eaves. For a receiver he used a converter, and switched from transmit to receive with a knife switch.

So what do you do with a new 40 watt input and 3 watts output 6 Meter rig? Call CQ, of course. He called CQ and W4OEH in Orlando, Florida returned!! Bill says he really didn't know that his new rig was not supposed to work.

After graduation from Lafayette High School in 1959, he enrolled in the local Community College and started

working as a repair man at a TV shop. In his spare time he hung out at local radio and TV stations, helping when possible and working into summer relief jobs as an "engineer" at several stations. In those days, Bill says, engineers were the fellows who ran the station controls, climbed the tower, swept the floor, and whatever else was needed. This sparked his career choice — he wanted to be in radio and TV.

Bill became a Field Representative for General Electric, visiting large repair facilities to deal with problem TV sets no one else could repair. He also wrote a solid state training manual for GE. At one of these stores, owned by a Mr. Bernard Wagner, Bill met the firm's accountant, Miss Sharon Wagner, and they became friends. But in 1970, Sharon left for Los Angeles.

Disco Electronics

Bill always had two or three jobs going simultaneously. When the disco craze swept the country he started a company, "Mind Garden Electronics," with friend Larry Levy, WA2INM, to synchronize lights and music and went into the psychedelic disco business. This was highly successful for about four years, then the craze dropped off, and it was back to the radio/repair business.

In 1970, as the disco business was tapering off, Bill made a trip west. First stop was Albuquerque which he had visited some years earlier, considering it a possible place to live and work. However, on this trip he had a Volkswagon filled with records for Miss Sharon Wagner, who was still sojourning in Los Angeles, so he hastened westward. He delivered the records, took her to dinner, and, you will be not surprised to know, fell in love!

Off to Los Angeles

Six months later, Sharon returned to New York. Bill took her out to Sunday brunch, and en route, in the car, Bill got in 2 Meter mobile contact with friend Steve Mendelsohn, WA2DHF, now the ARRL Director of the Hudson Division. Over the air, Steve, said, "Why don't you ask her to marry you?" Bill pushed the push-to-talk button and said, "Will you marry me?" sort of to the whole world and keeping the button down for Sharon's answer, let the whole world hear her "Yes." They were married in September, 1971, and moved to Los Angles in mid '72.

Columnist to producer

On the trip west, Bill worked his trusty Regency HR-2 2M mobile. He also took copious notes and made astute observations for an article an old Brooklyn friend, Wayne Green, W2NSD, had asked him to write for *73 Magazine*. Bill submitted his article to Wayne in due time and received a succinct reply, "This is putrid. Try again!" By now you can guess a comment like that merely spurred him on to do it right — which he did. He stayed on as a columnist writing "Looking West," a column about FM and Repeaters for *73 Magazine* for 20 years.

In Los Angeles, Bill worked for Sears for seven years working in the Technical Services Department. One day in '73, he had a call from Dave Bell, W6AQ, who had seen a column Bill wrote in *73 Magazine* and asked Bill if he would be interested in providing information about FM and repeaters for a film Dave was making named "Moving up to Amateur Radio." Bill was. In '78, Dave again asked Bill to join him in filming "The World of Amateur Radio" making Bill his Associate Producer. Thus he switched from Lead Trainer Technician at Sears to work big time filming, scripts, story boards, and all the rest of what goes into film production.

About that time, Bill heard the voice of an old friend on a local 2 Meter repeater, and gave him a call. It was Roy Neal, K6DUE. They got together and soon Bill was asked to join in the production of "Amateur Radio, Newest Frontier," a story of W5LFL Owen Garriott's forthcoming, history-making flight introducing Amateur Radio to space. Later they produced a chronicle of that flight. In all, Bill has been involved with seven major films and videos about Amateur Radio.

During this period Bill again joined Dave Bell as an independent contractor to design production facilities for Dave's video program "Alive n' Well," one of the earliest TV health and wellness programs. Bert Hicks, WB6MQV, who worked at TV Channel 11, called Bill one day for a chat. While they were on the phone, the Chief Engineer came by and a discussion arose about video tape. The long and short of it was that Bill went to work for Channel 11 handling electronic news-gathering equipment, on a temporary basis which has lasted now for 16 years! Says Bill, "when the news breaks, I fix it."

Newsline

In August, '76, Bill was asked by Jim Hendershot, WA6VQP, to participate in a 2 Meter program for amateurs to keep everyone in the Los Angeles area apprised of the on-again, off-again FCC plan to deregulate repeater operation. The program was to last two weeks. But after that period, they began to get phone calls asking them to continue the program. For the next 17 months, they did. Then Jim got married and moved away, so Bill, Alan Kaul, W6RCL, and Bill Ornstein, KH6QX, (both of NBC), took it over and developed it into a national ham radio news program that has been on the air ever since — first as *Westlink* and now as *Newsline*.

Bill credits Alan Kaul with teaching him how to write news copy and Bill continues today to be one of the writers for *Newsline*. The weekly program is distributed through 11 telephone node lines and two audio webs, and retransmitted over 2,000 amateur repeaters. It's translated into Spanish for Caribbean countries, Italian for Italy, and probably into other languages the producer doesn't know about. An estimated 500,000 amateurs worldwide hear the program or read a printed version prepared for Internet.

For information about how you can monitor *Newsline* transmissions ask around on the repeaters in your area. Or, write to WA6ITF. Send query to his e-mail address: billwa6itf@aol.com

While all these activities are going on, Bill is still a 6 Meter low power DX enthusiast. He's still working the midwest with his FT-690 and dipole in the attic, not much different from his first mighty 3 watter back in Brooklyn. You'll find him mobiling around L.A. on 220 with an IC-37A.

Bill does all these things with enthusiasm and well. We hope he keeps on doing them for the benefit of all of us and Amateur Radio. Gives QCWA an even better name.

73 + 25. Jack, W6ISQ **WR**

TRAFFIC

Geri Sweeney, N4GHI

In the last column I mentioned my travels to Southern California and the difficulty in finding a traffic net on HF. Glen, N6GIW@WF6O (Internet gmiller @cci.cci-29palms.com), Section Traffic Manager of the Orange Section, was attentive enough to write me and explain what's happening in Southern California. First, a bit of background: The National Traffic System is divided into three Areas (Pacific, Central, and Eastern). These Areas extend into Canada (part of the NTS). Area nets are supported by Region nets which are supported by Section and Local (VHF) nets. There are two cycles of Area nets per day — one in the daytime and one in the evening.

Gary explains, "First of all, there are no CW traffic nets currently operating. We also had trouble with the daytime Sixth Region Net due to lack of participation. The Pacific Area net meets at 1030 on 14.345 or 7.293 kHz. Sixth region stations pick up traffic for Northern and Southern California. A rep from Pacific Area net checks into the Sixth Region net at 1530 on 7.275 or 3.916 kHz.

Southern California traffic is given to packet-active stations who pass it directly to Southern California net VHF sessions via direct packet routes. There are currently *no* VHF net members active on the HF bands. That is why we have to get the traffic to them via packet. The traffic is sent to either Bill, KC6SKK, or, John, KO6RZ. They then take it to the SCN VHF session at 2100 hours on the W6FNO repeater on 146.820 MHz. This net is very active, with good representation to Orange, Riverside, and San Bernardino counties.

Los Angeles county representation has been lacking, but is now improving with the addition of Don, WA6FHG, who recently became Los Angeles STM.

"As a result of the shortage of NTS operators on the HF bands, we have recently established a Region Six HF digital mailbox. This mailbox is used by Pacific area stations to send and receive traffic at their convenience. This allows stations that would not normally be able to participate to help out with distribution of traffic in and out of the region. This mailbox belongs to me, and is the HF port of my Kam+ TNC. I leave it on 24 hours a day. It is on 7.077 kHz during daylight, and 3.612 kHz during darkness (generally). Stations can connect in Amtor, Pactor, or G-Tor. This system of distribution seems to work well in these times of busy schedules, bad band conditions, and other problems such as limited NTS operators. Our dedicated operators on SCN/V get the traffic delivered.

We have plenty of help on VHF because of the influx of new no-code Tech hams. I believe the HF digital mailbox will become more and more utilized and eventually the daytime Sixth Region net will be a thing of the past.

"I am working on methods to report traffic totals on the mailbox. Of course we don't have the traditional statistics such as time in session and number of checkins to report. Right now, I am simply reporting the total pieces of traffic placed on or sent to the mailbox. I am not concerned about how many are removed, or by whom, as long as they move. I get a total traffic count for the mailbox each month, with each message being counted only once. The totals are placed in *QST* (Public Service/NTS) each month at the bottom of the region net totals.

"With the new hams failing to upgrade and get on the HF bands, I believe I have done what had to be done. I would be surprised if this problem is not occurring in other areas. I know we have a heck of a time getting traffic into New Mexico. Hawaii traffic goes via HF digital. It works well and is very convenient."

As you can see, Glenn is trying very hard to keep traffic flowing. He has developed a system which seems to work for the Orange Section. Whatever modes are in use, it's the traffic handler who must be there for traffic to get delivered, and/or originated. Glenn is an example of this. Wouldn't it be of immense value if all 69 Section Traffic Managers could somehow share this kind of information? Those who had no traffic, handlers, nets, and/or ideas but did have interest in getting some and/or solving these problems could review what has worked in other Sections. Still, with all the amateurs in Southern California, it's lamentable that a few can't be persuaded to enjoy the fun of a CW net.

A question we must puzzle over is "Has the machine allowed us to continue on when HF operators have disappeared or, has the machine driven off the HF operators?" Traffic is the lifeblood of the HF net. When traffic is sent the long distance, bypassing the various nets in between, how many stations lose interest? How many traffic handlers do we lose?

E-mail

Is digital the leading edge of traffic handling? Or is e-mail? More and more traffic handlers are using it. Yes, it can be another mode and useful tool. But, I can't help questioning if we should use it. The arguments go: 1) It's not radio. 2) While we use the phone to originate and deliver a message, should we also use the phone to relay the message? 3) If we come to depend on e-mail (telephones), why do we even bother with the radio part? In this scenario we just "wrote out" the Amateur Radio entirely (and, it's no longer free). We pick up a message on the phone, dial our local e-mail carrier, send the message to a traffic handler somewhere else. A few minutes later, s/he has it, picks up the phone and delivers the message.

Traffic handlers would still be traffic handlers; but, no longer on Amateur Radio. Is this the leading edge? It would be even faster than using satellites for relay. Why, this is about as quick as picking up your phone and calling someone without using a traffic handler. . . .

Digital

Perhaps the discussion on 2M packet versus Clover versus Pactor, or Amtor and RTTY may be irrelevant. Whether we should toss out using the local PBBS in favor of individual digital stations appointed by the Area Digital Coordinators (per digital coordinator recommendations) may be a pointless matter. Is the future e-mail?

And does the general amateur population pay any attention to the dedicated traffic core's pronouncements anyway?

Having said that, what's currently happening with the ARRL's digital policy?

Some years ago, three Area Digital Coordinators were appointed by our staff in Field Services. They were given a budget to meet (something no other Area staffs have received in the last 10 years). They produced a digital draft plan. Of course, as with most plans, everyone who read it, wanted to give some input. This is natural. The problem seemed to be that few were given the chance to contribute input, and grass roots discussion wasn't requested, accepted and/or appreciated. Thus, when some stirred the pot a bit, the policy faded away. Out of sight, out of mind.

In December '95, I received papers from our Eastern Area staff chairman, which addressed the issue. Those who met to draft the digital plan seemed fond of referring to the ARRL proposed digital policy as the Lake Limestone Accords (where they met). A more articulate approach would be to call it the proposed ARRL digital policy. Bill, W2MTA, says that Lake Limestone "is now a dead issue." He further states that our staff at ARRL added an "Errata and Supplement June 1995" to the ARRL's *Public Service Communication Manual* to make a digital stand. (Guess who is in charge of editing this manual?) In this way, our staff doesn't have to bother with anyone's opinion which may differ from their own. And what does the Errata say?

1) "The solution is to introduce responsibility and accountability . . . . Interested MBO system operators should be certified as 'NTS Digital Stations' . . . They are appointed by, and are accountable to, their Area Digital Coordinator."

2) "The most effective STMs have appointed 'Net' Managers to manage the NTS element of these PBBs Net members, including Official Relay Stations specializing in packet traffic, ensure that traffic is forwarded properly, or remove traffic from the boards and either deliver it or bring it to Section- and Local-Level NTS nets for handling."

As to number 1, it's quite obvious that responsibility and accountability are needed in anything we do. Now, why should a traffic handling station in Virginia be required to send a monthly activity report to the Area coordinator in Florida and nothing to the STM in Virginia? This is furthering the separation of traffic into modes. Instead of a National Traffic System, with various modes, we seem headed for PBBs doing their thing (run by sysops), Digital HF stations (appointed by coordinators) doing their thing, satellites doing their thing, and Section Traffic Managers trying to keep nets running.

If the NTS is to remain a system utilizing modes, rather than modes utilizing NTS, the primary report should go to the Section Traffic Manager and a copy to the digital coordinator. Otherwise a new position is being offered in competition with STMs. Instead of being there to help Section Traffic Managers, will they have become one — with an overlapping area? Folks in charge of these various modes are not sharing information.

Our staff at headquarters should be encouraging information transfer. For example:

1) How are satellites relaying international traffic? We could utilize this information on the International Assistance and Traffic Net.

2) What's happening in the world of e-mail? Who's doing it (percent of traffic handlers) and has it proven reliable? Is it done at a Section level, and/or across the board? Is there a way to incorporate this approach into the current traffic system? How does local traffic get to the Digital Coordinator HF appointed stations for relay? It's happening all the time, informally. A Florida station sends a Virginia station any traffic heading to Virginia and points north. Does HF digital relaying traffic now depend on chance? If a net and/or packet message happens to pass a 'digital appointee,' is it incorporated into this mode? If not, does it just continue 2M packet forwarding and/or via nets?

Our staff at ARRL seems intent on going ahead with their digital policy sans input and discussion from traffic handlers in the field. Perhaps they know what's good for us. Another question — is it the purpose of our staff to set policy, or to implement the policy established by the membership through their elected representatives? For minorities like the NTS, this often boils down to an individual floating whatever notions that they wish to make into policy. While apathy makes this viable, many of us would prefer to be included in forming a good digital policy. The bottom line is we need our staff to keep us informed on what is happening within the various modes of our National Traffic System.

Point number 2 offers no guidance at all. Yes, I've read ARRL pronouncements that the STM should 'manage' all NTS traffic on PBBs in their Section. Not just manage, but must take responsibility for them. Having assigned this responsibility several times, they have not yet explained how one manages someone else's PBBS. The STM can try talking, and/or writing to them (perhaps send them a packet). If they ignore this and/or any other requirements you may suggest (like a monthly traffic activity report, or insuring they have someone who will check NTS traffic) just how do you stop them from receiving NTS traffic? And, after saying STMs are responsible for all PBBs (digital activity) in their Section, it seems they exclude any digital stations appointed by the Area Coordinators. Is our staff at ARRL Headquarters intent on making the STMs job meaningless?

The bottom line here is that instead of our staff getting meaningful input from actual traffic handlers out in the field (say Official Relay Stations), from which a digital policy could be developed, the whole issue has been 'aerated' to the Public Service Manual. But, then, digital modes may not be the leading edge any more. Surfing the Web seems to be.

Letters

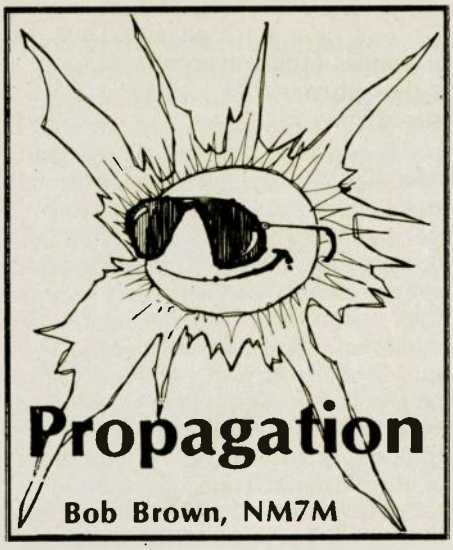
I received some excellent letters this month. They were very much appreciated. Please keep them coming.

CW slow speed traffic nets:

CSN (NC/SC)	6 p.m.	3715
FSN (FL)	8 p.m. (EST)	3715
MSN (MD)	7:30 p.m.	3717
MSSN (ME)	6-10 p.m.	3685
PTTN (PA)	6:30 p.m.	3610

Let me know of any slow traffic nets in your area. Note all but the PTTN in the Novice band. **WR**

Happy St. Patrick's Day!



Environmentalists say "Every litter bit hurts!" I'd have to agree with that and act accordingly. But did you know there's litter or refuse in the ionosphere, dregs or leavings that remain from its own creation? That's true and it's all down in the D-region, not doing much good, at least for our purposes. Let me tell you about it.

The sun, of course, creates the ionosphere on a daily basis, but only .001% of its energy output does the job. That radiation is in the extreme ultraviolet and x-ray portion of its spectrum. The EUV is responsible for the formation of the F-region while x-rays, either "soft" or "hard," are responsible for other regions, say the E-region around 110 km altitude and the D-region below that.

The E- and F-regions are responsible for the real propagation that we enjoy, to places both near and far. That's a way of saying that those regions contain enough electrons per unit volume, say cubic centimeter or cubic meter, to refract or bend our RF back to earth, hop after hop. We depend on them and suffer when solar activity declines or geomagnetic storms deplete their numbers.

But the D-region is only weakly ionized by the "hard," penetrating portion of the x-ray spectrum. On a clear summer day, the level of ionization in the D-region is a factor of hundred or more below that of the nearby E-region. At night, when the source of x-rays is turned off, what little ionization still there is due to the steady influx of galactic cosmic rays or from starlight.

And the D-region is down below the 100-km level, where the atmosphere is still pretty dense by ionospheric standards. That means electrons released there have an abundant supply of collision partners and can exchange energy, keeping the electrons in thermal equilibrium with the neutral gas at about 250° Kelvin. Roughly speaking, the collision rate or frequency between electrons and the nearby molecules is in direct proportion to the density of all those neutral collision partners.

At the 30-km level, the rate is about 2 billion (2E+9) collisions per second. But the number density of neutrals falls by almost four orders of magnitude in going to the 90-km level, bringing the collision frequency down to about 300,000 (3E+5) collisions per second. As you can see, at the 30-km level the electron-neutral collision frequency is far above our highest operating frequency (30 MHz or 3E+7 Hz) in the HF band while at the 90-km level, the collision frequency is well below the lowest operating frequency (3.5 MHz or 3.5E+6 Hz).

In working out the absorption of RF energy as waves traverse the ionospheric regions, the scheme is to consider the motion of the free electrons and the damping of their motions when they're excited by the passing RF. Thus, the electric field E of the passing wave drives electrons in an oscillatory motion at the operating frequency while their collisions with the neutral molecules dampens their motions. In essence, the collisions amount to friction or a drag, taking away some of the energy that the wave imparted to the electrons.

While that's the way RF energy is transferred to the surrounding atmosphere, it's really a two-step process. The first part of the process involves the ionospheric electron gaining energy from the passing wave and the second part is when it undergoes a collision and transfers energy to a molecule. Deep in the D-region where the collision frequency is so high, waves have little chance to impart any energy

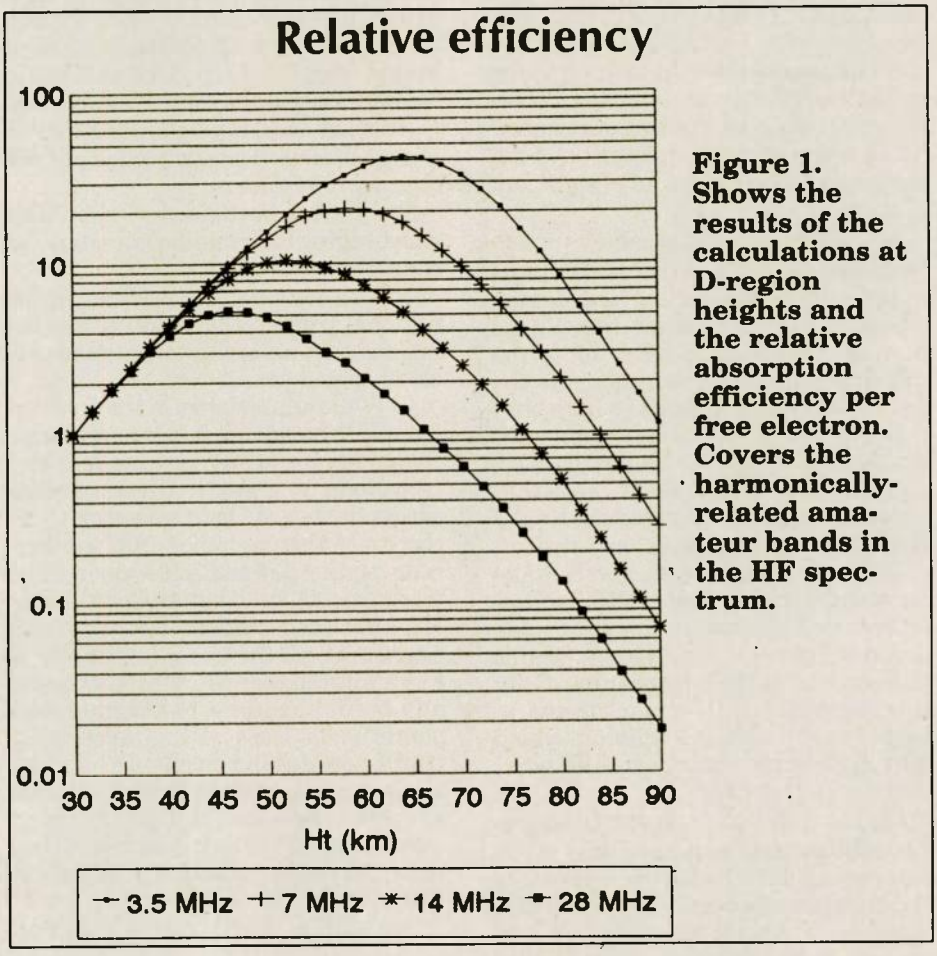


Figure 1. Shows the results of the calculations at D-region heights and the relative absorption efficiency per free electron. Covers the harmonically-related amateur bands in the HF spectrum.

to the electrons before a collision occurs. As a result, the absorption of RF energy by a free electron is very low, even independent of operating frequency.

High in the D-region, the absorption of RF energy by a free electron is very low too, but for another reason. There, the collision frequency is well below the typical amateur operating frequencies; as a result, an ionospheric electron makes many oscillations, re-radiating RF energy from the incident wave, before it finally undergoes a collision and transfers some energy to the atmosphere.

In between those two extremes, the absorption of RF energy by a free electron goes through a maximum, essentially when the collision and operating frequencies are about the same. For that circumstance, the first and second steps in the absorption process are working at comparable rates. All of these ideas can be worked out in detail with the help of an atmospheric model and laboratory observations on electron collision frequencies with typical atmospheric molecules. The results of those calculations at D-region heights are shown in Figure 1 which shows the relative absorption efficiency per free electron and covers the harmonically-related amateur bands in the HF spectrum.

Behind those curves is the analytical form and substance for what you well know from experience — nobody works DX, I mean REAL DX, on the 3.5 MHz in broad daylight. And, for that matter, it's pretty tough on the 7MHz band as well, as the D-region ionization just eats up RF.

But at night, it's another story as the electron density drops to low values. Not only is the "hard" x-ray source turned off, but a good number of free electrons attach themselves to oxygen molecules, making massive negative ions that don't respond very much to passing RF waves. Those negative ions are also formed during daytime hours, but solar UV photons "flick off" the electrons just as fast as the ions are formed, keeping them free to perform their mischief.

As long as there's no disturbance of solar origin which would increase the electron density in the D-region, its effects go through a regular cycle, absorption peaking when the sun is highest in the sky. Of course, on a long HF path to a DX station, absorption occurs every time RF traverses the D-region and the total absorption of signals on the path is the sum of those losses plus losses on ground reflection. But it should be borne in mind that D-region absorption must be calculated along the geometrical ray path. That makes absorption per hop increase at lower radiation angles.

But with disturbed conditions, say a burst of "hard" x-rays during a sudden ionospheric disturbance (SID) or solar protons penetrating to the D-region during a polar cap absorption (PCA), the electron density rises with corresponding increases in absorption. From Figure 1, it is clear that an increase in absorption is sensitive to the operating frequency, the lower amateur bands suffering the most and the higher ones the least.

While those events are not an everyday occurrence, they occur often enough to provide a sense of their typical magnitudes. Also, high-altitude observations of incoming solar radiation have been available from balloon and rocket flights and show that the production of excess ionization is rather widely distributed over the D-region. That is in sharp contrast to the case of auroral events where low-energy electrons excite optical emissions as well as create ionization in the E-region, well above the 100-km level. Those auroral events may have comparable amounts of ionospheric absorption so, given the results in Figure 1, you can see at once that the flux of incoming electrons must give rise to high concentrations of free electrons over a narrow region to produce comparable amounts, numbers of dB, of absorption.

Perhaps you can sense it from the discussion above, however, effects from those types of events differ largely due to how the various forms of radiation penetrate the atmosphere. And the manner by which those effects occur is described better by radiation physics than ionospheric physics. Thus, discussions of those events invariably involve phrases like photons/sq-cm/sec-keV, protons/sq-cm/ster/sec/MeV or electrons/sq-cm/sec/keV — more like atomic and nuclear physics than ionospheric physics, say dB of absorption of signals.

In a way, that's how I happened to get into this business — first with a training in nuclear physics techniques obtained at the Big U in California, some luck being right on the scene during some big solar proton and auroral events, then going on to work with others in Alaska and NOAA on ionospheric effects to bring the fields closer together. And with the rise of NASA in the '60s, our horizons were broadened to include new geomagnetic models and then observations of particles and radiation above the ionosphere. In retrospect, it's been truly a remarkable journey!

But I digress. In order to work out the absorption for any circumstance, disturbed or not, one has to count free electrons along a path and use the results in Figure 1. But "along a path" can be approached in different ways, the hard way by tracing rays, step by step, through the ionosphere from transmitter to receiver and the other way, using the approximation for paths that goes with mirror reflection. The latter is not all that bad as the lower parts of the paths to the "mirror" pretty well coincide with ray paths. So the errors are not too serious.

But in any event, absorption is just as important as the MUF on a path as it makes little difference if you can get through, at least in principle, but not have enough signal left to copy. And you probably know from the rosy days of Solar Maximum during Cycle 22, propagation on the higher bands was really controlled by the MUF, absorption taking the back seat. But now when many DXers are all squeezed into the lower bands, say 40 and 80 Meters, absorption is the controlling factor.

As the song goes, "Mad dogs and Englishmen go out in the noon-day sun" — on the lower bands, that is! (That sounds like something that Rudyard Kipling would have written but being a song, I think the late Noel Coward had a hand in it. In either case, it is profound and should be carved on a DXer's wall lest it be forgotten.) So let's just leave it there for now. Okay? WR

Be sure to look for our April Fool's stories next month. Will you be able to find all of them?

Richard Fisher, KI6SN

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QRP nostalgia

Two pages in Chuck Penson's *Heathkit, A Guide to the Amateur Radio Products* speak volumes about a contribution the company founded by Edward Heath has made to QRP.

Featured on one side is the HW-7 three-band, 3-watt CW transceiver. On the other is the HW-8 four-band, 2-watt CW transceiver — two tremendously popular radios that were bought and built by hundreds of QRPers in the early '70s and mid-'80s. Hang out on a QRP CW frequency even today and you are likely to hear one of these classic Heathkits still piercing the airwaves. But the HW-7 and HW-9 are only small chapters — albeit important ones — in Penson's full-length saga of one of Amateur Radio's preeminent kit manufacturers.

Penson, 43, who is a 30-year radio amateur with the call WA7ZZE, has painstakingly documented the rise and fall of Heathkit in this newly-released large format (8½" x 11") book. The nicely organized guide also gives readers succinct biographical sketches of each entry to Heathkit's line, from rare "QRP" transmitters, such as the AT-1, to the mighty SB-220 kilowatt linear amplifier. Test gear and accessories are also included.

For QRPers, though, Penson's book is a particularly heartwarming stroll down memory lane. Before five watts was mandated the legal limit for low power operation, many operators and organizations considered 100W or below to be "QRP."

So, by early definition, Heath and "QRP" were dating — if not married — as far back as 1952 with the introduction of the AT-16-band, 25-watt transmitter. This kit was, coincidentally, the company's "first serious entry into ham radio," Penson writes.

Then came the DX-20, DX-35, and DX-40 6-band transmitters in the late 1950s, followed by the DX-60 series of CW and AM transmitters. The 100-watt-and-under crowd loved them. As the definition of QRP changed, though, so did Heath's kit offerings. The 3-watt HW-7 transceiver came on the scene in 1972, followed by its cousins, the HW-8, in '76 and the HW-9 in '91.

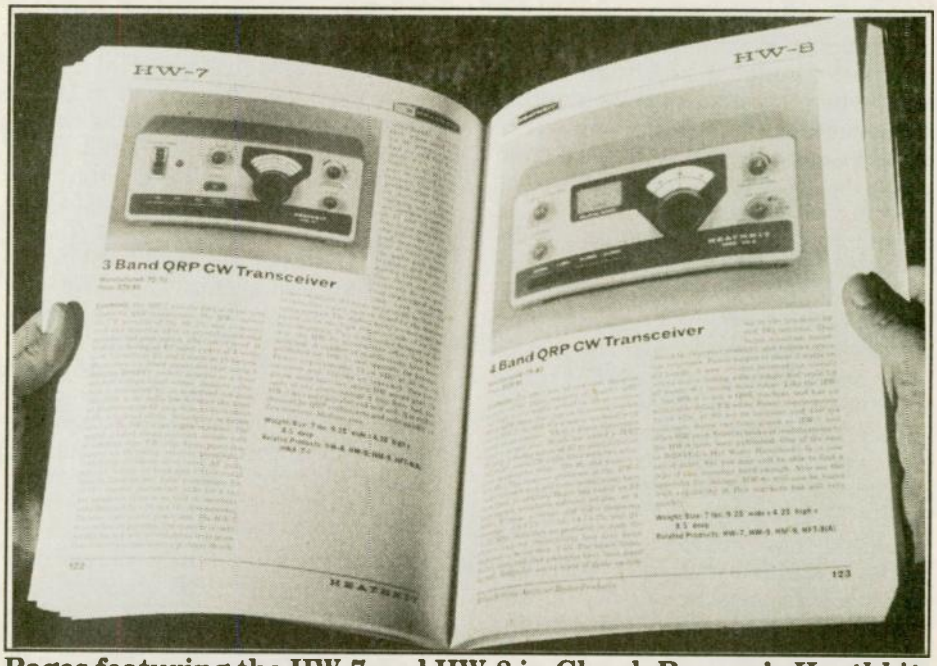
Each of these classic rigs has its own page in Penson's book, described in fine detail for their lineage, features, theory of design and operation, and accessories.

You needn't be a QRPer, or even a Heathkit product alumni to appreciate Penson's work, however. Old favorites, such as the "Benton Harbor Lunchbox" series of 10-, 6- and 2-Meter AM transceivers, the classic HW-101 transceiver and the HX-10 "Marauder" take an encore, along with the rest of Heath's line.

Although he "didn't start off writing a book," Penson conducted exhaustive independent research and interviewed key players in the Heath Co., just to "put my own (Heathkit) collection into context."

A pilgrimage to the company's Benton Harbor, Mich., plant allowed him to "catalog all their catalogs," Penson said. A study of Heath magazine advertising also gave him a window onto the company's rise and fall. "A nutshell of history of the company is all there (in the advertising)," he said. Almost 30 pages are devoted to chronicling Heath's history.

Late in 1995, Penson's wealth of Heath Co., knowledge came together in his guide — 250-pages of can't-put-it-down nostalgia.



Pages featuring the HW-7 and HW-8 in Chuck Penson's *Heathkit, A Guide to the Amateur Radio Products.* ***—photo by KI6SN***

Penson owns all, of about 40 of Heathkit's 160 kits. And as a longtime collector, he offers readers a chapter-long primer on finding, evaluating and buying used Heath gear. The book also includes master product indexes by model and type of equipment, product references and timeliness.

For QRPers, Heathkit fans and nostalgics, *Heathkit, A Guide to the Amateur Radio Products*, is must-reading. It's available for $24.95, plus $3 shipping, from Electric Radio, P.O. Box 57, Hesperus, CO 81326.

Penson, who is director of the Computer Education Center of the Science Museum of Minnesota, can be reached by e-mail at: penson@sci.mus.mn.us

Adventure Radio Society

Russ Carpenter, AA7QU, of Vida, OR, for the last couple of years has been playing with the idea of forming a radio club that "supports people who combine human-powered adventuring

with ham radio." His vision is clearly of an outdoor-oriented group that takes part in club-sponsored events requiring physical activity "by requiring the operating sites to be reached by human-powered means, including backpacking, biking, canoeing, kayaking and cross-country skiing." Enter: the Adventure Radio Society. Carpenter has been soliciting comments from QRPers around the country to solidify specifics about how best to narrow the group's focus, its activities and goals. A "Worked All States Portable QRP" award and other competitive programs are also being developed in conjunction with the society. At the moment, however, ARS is very much a work in progress. "We're not ready to start an 'official' club yet," he says. Final details will appear in the ***Worldradio*** QRP column as soon as they've been hammered out.

MFJ 90's Radio Club lives

David Luscombe, AB5JE, of Lake Dallas, TX, has assumed leadership of the MFJ 90's Radio Club. Founded in 1993 by Joseph Falcone, AA8HV, the organization was built around operation and modification of the popular series of MFJ Industries QRP transceivers — including the MFJ-9040, 9030 and 9020. Luscombe is carrying on the club's newsletter and is looking for volunteers and article contributions. For more information about the newsletter or club membership, write: MFJ 90's Radio Club, P.O. Box 393, Lake Dallas, TX 75065.

Brewing a regen

As part of a meeting in December, the NorCal (Northern California) QRP Club held the "Great NorCal Regenerative Receiver Building Contest," conducted by club president Doug Hendricks, KI6DS. Prior to meeting, members had been given schematics based on a receiver by Paul Harden, NA5N. The challenge was to build a "regen" and bring it to the December get-together. David Fifield, KE6ZBZ, got the "Most Beautiful Receiver" award. Kit Blanke, WA6PWW, received honors for "Functionality," determined after each entrant's receiver was hooked to a 10' long antenna and judged for best reception.

QRP ARCI Board nominees

Nine QRPers have been selected as candidates for vacancies on the Board of Directors of QRP Amateur Radio Club International. They are: Bob Gobrick, VO1DRB/WA6ERB; Byron Johnson, WA8LCZ; Danny Gingell, K3TKS; Doug Hendricks, KI6DS; Cam Bailey, KT3A; Hank Kohl, K8DD; Bob Schnick, KA3YJG; David Johnson, WA4NID; and Jim Stafford, W4QO.

QRP-L group goes numerical

The 700+ member QRP-L Internet QRP Club began issuing membership numbers in early December. An e-mail request with specific commands issues an official QRP-L member number in just minutes — automatically. QRP-L is one of the most active QRP organizations in the world. It is not unusual to find as many as 60 QRP-related messages posted to the mailing list in a day. Anyone interested in subscribing to the cyberspace forum can do so by sending an e-mail message to LISTSERVE.@Lehigh.edu and in the body of the message type: SUBSCRIBE QRP-L followed by your name and call sign. The "subject" field is not important — it can be left blank or filled-in with words of your choice. You will automatically receive a listing of services — including instructions on getting a membership number. If you have trouble getting on, drop a note to me at the e-mail address at the head of this column, and I'll be happy to give you a hand.

QRP series reprint, and more

The Colorado QRP Club's *Lowdown* quarterly magazine has received high marks for a series of articles by Paul Harden, NA5N, covering NE602-based solid state transceiver fundamentals. Lots of low power enthusiasts have wondered if the series will be reprinted. Rich High, WØHEP, club president and *Lowdown* editor, assures that it will — along with other information including "data sheets" giving specifications of popular solid state devices. A price and publication date for the book has yet to be determined, but proceeds will be put toward a club project. If you'd like to be contacted with complete information when the book is ready, send an SASE now to: CQC QRP, 740 Galena St., Aurora, CO 80010-3922.

Spreading the QRP word

The Arizona-based SCQRPION QRP Club found the value of a little bit of public relations recently when it brought some QRP gear to show at a hamfest in Mesa, Arizona. According to club official David Little, AF5U, of Scottsdale, SCQRPIONS QRP nearly doubled its membership with sign-ups during the event. Little also reported being in contact with producers of the nationally syndicated radio program "Ham Radio and More," for a segment devoted to QRP. The show is carried on commercial stations around the country. Stay tuned.

New 80 Meter QRP net (Part I)

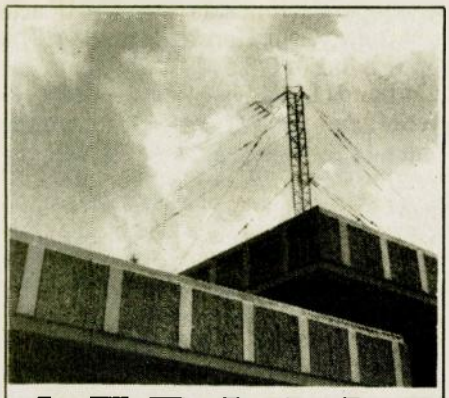
QRPers are gathering every Sunday night (0300 UTC Mondays) on 3.560 MHz for an informal CW net open to all QRPers, according to Paul Stroud, AA4XX, of Raleigh, N.C. The get-together is to keep "QRPers in touch with each other and to have fun." Operators from all call areas are encouraged to QNI.

New 80 Meter QRP net (Part II)

The NorthWest QRP Club, whose CW net on 10.123 MHz Monday evenings (0300 UTC Tuesdays) has been a 30 Meter fixture for several years, now also meets the same evening on 80 Meters. The 3.710 MHz call-up at 0330 UTC follows the 30 Meter net. Early-risers on Saturday mornings can also check in to the club's 80 Meter net on 3.561 MHz at 1430 UTC. For more information about the club, write: The NorthWest QRP Club, P.O. Box 354, Bay Center, WA 98527; e-mail n7mfb @n7mfb.ampr.org

New QRP transceiver series

Small Wonders Labs, the Connecticut-based kit company headed by top-flight designer Dave Benson, NN1G, has developed a new line of small superhet QRP transceivers called the Green Mountain. The single-band rigs can be ordered to cover either 30, 20 or 15 Meters. Both 40 Meter and 17 Meter versions are pending. The board kit is priced $72 postpaid in the U.S., $75 overseas. For more information write: Small Wonders Labs, 80 E. Robbins Ave., Newington, CT 06111; 203/667-3536. **WR**



AERIALS

Kurt N. Sterba

It may be time for a review. And for some, not a review but possibly the very first time ever.

I was sent some material that was seen on one of those computer services. Obviously some of the participants would be better off spending their time with reading a good book. One questioner in particular, sporting an Amateur Radio Call Sign and using the facilities at a university, sparked this month's column. How he got a license I will never know.

Anyway, let us proceed. The frequencies allocated to the Amateur Radio Service are designated by "bands" which are our small slices of the radio spectrum. When one hears "the 40 Meter Band" that means that in one entire cycle of a radio wave (360 degrees) the wave (measured from peak to peak, horizontally) will be 40 Meters in length (sort of, we'll move to that shortly).

What is a Meter (for those who got their license after two days of cram study)? A Meter (Metre in other parts of the world) is the same as 39.37 inches. It can be looked at as a yard plus almost 10% (9.361%).

Since Yagi-Uda antenna elements are a half-wave long you could look at an antenna and tell what band it was for. As an example: You see an antenna you estimate to be about 30 feet long. All right, so you say, "Let's see now, 20 Meters is about (20 x 3 plus) 66 feet. Half of that would be about 33 feet, so that antenna must be for 20 Meters." Very good.

Now a formula. As most, (but quite apparently not all) know, for coming up with a wire antenna for the HF bands the formula is 468/F-MHz. Which means, the number 468 is divided by the Frequency in MegaHertz. An example: 468/14.200 equals 32.957 ft. Or 32 ft., 11 and 1/2 inches.

Let's look at something else, just for fun. Another formula is 300/F-MHz which will give you the wavelength at the frequency of interest. For example 300/14.2 equals 21.12676 Meters.

No one wants to tell others that he likes to operate on the "21 point 12676 Meter Band" so we have just shortened it to "20."

What can we do with 21.12676 Meters? Well, we can multiply it by 39.37 inches and come up with 831.760 inches.

Divide that in half, and we have 415.880 inches. Take off 5% because wire antennas are about 5% shorter than the wavelength. 415.880 times .95 equals 395.086 inches. Divide that by 12 and you have 32.923 ft. which is pretty close to the figure obtained by the 468 formula, the difference being 1/30 of an inch.

The 300 formula comes from the speed of light being 300,000,000 Meters per second, the speed at which radio waves travel through the ether. (Actually, it is 299,792,458, plus or minus a good night's sleep.)

So we can see that what we call the 160 Meter Band is really the 166.551 to 149.896 Meter band. So here are the Meter Bands as we call them, the Frequencies in MegaHertz and the approximate actual Meters (Metres).

80M	3.500	to	4.000
	85.655	to	74.948
40M	7.000	to	7.300
	42.827	to	41.067
30M	10.100	to	10.150
	29.682	to	29.536
20M	14.000	to	14.350
	21.413	to	20.891
17M	18.068	to	18.168
	16.592	to	16.501
15M	21.000	to	21.450
	14.275	to	13.976
12M	24.890	to	24.990
	12.044	to	11.996
10M	28.000	to	29.700
	10.706	to	10.094
6M	50.000	to	54.000
	5.995	to	5.551
2M	144.000	to	148.000
	2.082	to	2.025

You can figure out the rest by yourself.

Now let us move to deciBels. And let's start with an easy one. If you were running the legal limit, 1,500 watts, what would your total (at each step) dB loss be if you kept cutting your power down to one-tenth of its previous level?

Starting at 1,500W, here we go:

150	-10 dB
15	-20 dB
1.5	-30 dB
.15	-40 dB
.015	-50 dB
.0015	-60 dB

So, if someone tells you that you are "40 dB over Nine, really pinning the meter" you could cut your power way down and still be "S9."

It also shows how utterly absurd it is when a company says its mobile antenna could beat another mobile antenna by nearly 40 dB. Which means that 1,500 watts into one antenna would have the same signal strength as .15 (15/100) watts into theirs. That is a power difference of 10,000 times.

And now, here is another way to look at dBs.

1500W		
750W	-3.01 dB	
375W	-6.02 dB	-1 Sterby
187.5	-9.03 dB	
93.7	-12.04 dB	-2 Sterbies
46.8	-15.05 dB	
23.4	-18.06 dB	-3 Sterbies
11.7	-21.07 dB	
5.85	-24.08 dB	-4 Sterbies
2.92	-27.09 dB	
1.46	-30.10 dB	-5 Sterbies
.732	-33.11 dB	
.366	-36.12 dB	-6 Sterbies
.183	-39.13 dB	
.091	-42.14 dB	-7 Sterbies

Thus you can see how the QRPers can give up LOTS of power but not drop too many "S" units and make many contacts at really minimal wattage.

Just so no one misses out on the idea we'll now reverse the process. Our situation is the QRPer who starts out with but one (1) single solitary watt. Here's would happen to the received signal; as the transmitter power keeps doubling.

2W	+3 dB	
4W	+6 dB	+1 Sterby
8W	+9 dB	
16W	+12 dB	+2 Sterbies
32W	+15 dB	
64W	+18 dB	+3 Sterbies
128W	+21 dB	
256W	+24 dB	+4 Sterbies
512W	+27 dB	
1024W	+30 dB	+5 Sterbies

(It should be mentioned here that it was the renowned Roy Lewallen, W7EL, who suggested to the scientific community that a six dB increment be called "Sterby." I humbly bask in the honor.)

The above dB figures were rounded off, disregarding tenths. You can see that going from but only one watt, up to what used to be called "a full gallon" will lift a signal but five "S" units, which can be not much or a whole lot, depending on one's viewpoint, personal philosophy, band conditions and desired elapsed time in getting to DXCC.

One decibel is about the smallest amount someone listening to one single continuous audio tone could detect as a change, if they had exceptional hearing. Probably for most of us the amount it would take for us to detect a change under test conditions, would be two dB.

If you cut your transmitter's power from 100W down to 75W, that's a one dB change. OK, so I don't get letters, it's a 1.25 dB change. But, one-fourth of what you can't make out as a difference isn't worth worrying about.

And now, let's look at SWR. What do those numbers to :1 mean? Perfection, of course, is a 50-ohm transmitter, 50-ohm feed line, 50-ohm antenna. The SWR would be 1:1. That would be a perfect match and no power would return from the antenna. But, what if the condition at the antenna were such that out of the 100 watts coming out of the transmitter one (just one) watt was reflected? The SWR would be 1.22: 1 indicating that the antenna had an impedance either of 61 ohms (61/50=1.22) or 41 ohms (50/41=1.22). Thus follows an SWR vs. watts reflected chart. Please note that reflected does not mean lost. With an external transmatch or tuner in the transmitter the only power lost is the loss in the transmission line which, with top quality line (even under quite high SWR) is small, at HF frequencies.

With 100 watts forward power: Reflected Power in Watts, and SWR.

1	1.22	
2	1.33	
3	1.42	
4	1.50	
5	1.58	
10	1.92	
20	2.62	
30	3.42	
40	4.44	
50	5.83	
60	7.87	
70	11.24	
80	17.94	sniff, sniff
90	37.97	heat
95	77.99	BOOM!
99	398.0	call 911
99.9	3,998	melt down
99.99	39,992	into orbit

Now for those with the ultimate in SWR meters who are kept awake nights by the thought that they get beaten in the pileups because of that small amount of power being lost, we present the SWR reading and the power reflected at the 1,500 level.

1.1	3.4W
1.09	2.8W
1.08	2.2W
1.07	1.7W
1.06	1.3W
1.05	0.9W

Let us mention that one watt out of 1,500 is .000666 and it takes .25 to lose about one dB.

For those who already know all the above, we apologize. But, since there are a whole lot of newcomers (and some old-timers, too) who are wandering in the desert, it seemed highly appropriate to spend the time and the space.

Permission is given to all who wish to reprint the above: credit line must be given.

And as a bonus: Have you ever wondered why . . . if you cut a dipole for the middle of the 80M band the SWR is high on both band edges, BUT if you cut a dipole for the middle of the 2M band the SWR is just fine at both ends? The 80M band is 500 kHz wide and the 2M band is 4 MHz wide, a difference of eight times. Is it that VHF acts differently? No. Here's the answer. The 80M band (4.0/3.5=14.285%) and the 2M band (148/144=2.777%), it's a matter of bandwidth percentage.

A few months ago I chided an antenna book aimed at amateurs which neglected to include the 234/F formula for ¼ wave verticals apparently because it would be too much for amateurs to grasp.

One Kurt pal in Michigan sent in a page from the January, 1996 issue of *Monitoring Times*. There in an article about cutting a receive antenna for a scanner was the 234/F formula. It seems the editors of that magazine have more faith in their non-licensed readers than the writer of a book aimed at those who are ". . . trained operators, technicians and electronics experts . . . ." Part 97.1(d). And who demonstrate " . . . the amateur's proven ability to contribute to the advancement of the radio art." Part 97.1(b).

(Kurt and Lil go by their disguises so they can avoid those who would come up to them at the radio club meeting and say, "I went through your whole column last month and didn't understand a word of it, please explain it to me.") **WR**

Lemons into lemonade!

Now is the time to take advantage of lower sunspot activity. Sounds crazy doesn't it?! Well actually the 160, 80 and to a lesser extent the 40 Meter bands have been quite good this winter. On the Top Band it is particularly noticeable that the best propagation coincides with solar minimums. So go for it! This is the swan song of Winter '95. It's a low spot in the solar cycle and 160 is hot with 80 and 40 very productive. On 40 Meters from the East Coast with good antennas Europe is available virtually 24 hours a day! I assume the West Coast/JA path has also been good. Milk these low bands while you can, remember the summer static isn't too far away!

I've asked our dear editor to publish a list of both the *CQ* zones and the ITU zones. I compiled these, so I'll take the heat for errors. Please use them as guidelines! Remember, when you hear a contest in progress which requires a zone exchange, you need to find out if it is the *CQ* zone or the ITU zone which is needed — yes they are different. This month the *CQ* zones are listed (Fig. 1) with the ITU zones to follow in a future issue.

Here's another comment about contest timing. Take a look at the area which is in your propogation window (e.g.east to EU/west to JA) and operate when most of the folks in EU or JA are up and around. It's a lot easier to run these areas when the casual contest folks are all awake!

Most contests require separate logs per band, check sheets for over 200 Qs, a summary sheet and a signed and dated affidavit attesting to observance of the rules of both the contest and your local regulating authority. A statement wherein you agree to be bound by the decisions of the contest committee is also needed. All times are in UTC.

Late February 'tests

(See February *Worldradio* magazine for full details)

•REF FRENCH SSB 'TEST
24 Feb 06:00-25 Feb 18:00
(RS+number)

•UBA CW 'TEST(BELGIUM)
24 Feb 13:00-25 Feb 13:00
(RST+number or prov for ON stns)

•CQ WW 160 SSB 'TEST
23 Feb 22:00-25 Feb 1600
(RST+48 state/13 prov/country)

•RSGB 7 MHz CW 'TEST
24 Feb 15:00- 25 Feb 09:00
(RST+number; UK send 3 letter county code)

March 'tests

•ARRL INT'L DX SSB
2 March 00:00-3 March 24:00
(RS+state/prov;DX RS+pwr)
W/VE Q DX. DX Q W/VE.

160-10 Meters. No WARC bands.Q 1x per band. Score-pts(W/VE 3 pts per DX QSO; DX 3 pts per W/VE QSO) x mults(W/VE-DXCC countries per band exc. U.S. and Canada; DX-states exc. KL7 and KH6 and DC plus provinces per band. Max 62 per band). /mm or /Aerom Qs count only for QSO pts not mults. Single Op unassisted or Single Op assisted—A-All band: 1A QRP; 1B 150 or less; 1C > 150W. 2 Single Band. B-Single Op assisted. C-multi op; C1 - 1 xmtr; C2 - 2 xmtr; C3 -Unlimited. Ck sheet for 500 or>Qs.Plaques.*QST*

•CLARA SSB/CW HF 'TEST
12 March17:00-13 March 17:00
(RS(T)+ name,QTH and whether QSO is w/ CLARA Member or CLARA family member)CLARA is The Canadian Ladies Amateur Radio Assn)

Open to all. Call CQ CLARA. Q 1x per mode.160 to 10 w/ most activity on 20,40 and 80.Crossband ok but count as SSB QSO. Score- Pts(5w/ CLARA mbr;3 w/ YL non Clara mbr;2 w/ CLARA family mbr; 1 w/OM including OM to OM) x Mult(1 for VE prov or terr(max13)+ DX Country). Trophy, certificates. VA3EZ.

•VA SSB/CW QSO PARTY
16 March 18:00-05:00 17 and 18 March 11:00-02:00
(RS(T)+NR+st/prov/country for non VA or county for VA stns)

Q 1x band and mode.Q VA mobiles in each county they work. Mobiles on county lines are one QSO but as many counties as they represent. 160-10 Meters.VHF 50.125; 147.48 and 223.50. No repeater QSOs. Windows® based logging programs from WA4ZAJ, NJ4F or Ham RadioForum on Compuserve®.

Score-Pts(1 SSB/FM; 2 CW; 3 for VA Mobile SSB/FM or CW) x mults(VA counties 95 Max) or for VAstns(VA counties+states+provs+ countries, count KL7,KH6VE as states or provs not also as country. Mobiles add 100 pts for ea VA county in which you log a Q.QRP < 5W. Clubs-3 logs.Dupe sheet for 200+ Qs.

No disks pls, only paper logs. VA QSO Party, Call Box 599, Sterling, VA 20167

•ALASKA SSB/CW QSO PARTY
23 March 00:00-24 March 24:00
(RS(T)+city if KL7 or state/prov/country for non-Alaska stns.)
Q 1x per mode.Q KL7 only.

KL7s Q KL7 and non KL7.1.8-28 MHz. Score-pts(1 SSB; 2 CW, Digital, SSTV; 160,80 and SAT Qs count double) x Mults (KL7 cities Qd or for KL7 stns st/provs/DXCC countries) certificates. KL7CC.

•CQ WPX SSB 'TEST
23 March 00:00-24 March 2400
(RS+NR)
Q1x/band.1.8 - 28 MHz (NoWARC

CQ zones

Zone 1. Northwestern Zone of North America
KL7; VY1-Yukon; VE8-Northwest Territories. Districts of Mackensie & Franklin and the islands west of 102 longitude including Victoria Banks, Melville & Prince Patrick.

Zone 2. Northeastern Zone of North America
VO2; Labrador, portion of VE2-Quebec north of the 50th parallel and portion of the Northwest Territories VE8 east of longitude 102. Including part of the District of Franklin and the islands of King William, Prince of Wales, Somerset, Bathurst, Devon, Ellesmere, Baffin and the Melville and Boothia Peninsulas.

Zone 3. Western Zone of North America
VE7; W6 and the W7 States of Arizona, Idaho, Nevada, Oregon, Utah and Washington.

Zone 4. Eastern Zone of North America
VE3;VE4;VE5;VE6; the W7 states of Montana and Wyoming; WØ;W9;W8 (excluding West Virginia); W5; and the W4 states of Alabama, Tennessee and Kentucky.

Zone 5. Eastern Zone of North America
FP8(TO5);VE1;VO1; that portion of VE2-Quebec south of the 50th parallel, VP9;VY2; W1;W2;W3 and the W4 states of Florida, Georgia, South Carolina, North Carolina and Virginia and the W8 state of West Virginia.

Zone 6. Southern Zone of North America
XA-XI;and XA4-XI4 (Revilla Gigedo).

Zone 7. Central American Zone
FO8-Clipperton;HKØ(San Andres);HO-HP;HQ-HR;TD/TG;TE/TI;TI9;V3;YN(H6A-H7Z); and YS.

Zone 8. West Indies Zone
C6; CM/CO(T4A-T4Z); FG; FG/FS; FM7; HH; HI; J3; J6; J7; J8; KP1 (Navassa Is.); KG4; KP2; KP4; PJ5; PJ6; PJ7; PJ8; VP2E; VP2M; VP2V; VP5; V2; V4; YVØ(Aves Is.); ZF; 6Y5; and 8P6.

Zone 9. Northern Zone of South America
FY7; HJ-HK; PJ1; PJ2; PJ3; PJ4; PJ9; P4; PZ; YV-YY; 8R; and 9Y-9Z

Zone 10. Western Zone of South America
CP; HC-HD; HC8-HD8; and OA-OC

Zone 11. Central Zone of South America
PP-PY(ZV-ZZ); PYØ/ZWØ(St.Peter & Paul Rocks) (Trindade) (Fernando de Noranha); and ZP

Zone 12. Southwest Zone of South America
CA-CE; CEØ; 3Y(Peter Is.); and some Antarctic prefixes.

Zone 13. Southeast Zone of South America
CX; HFØ; LO-LU(L2A-L9Z); VP8; 4K1 and some Antarctic prefixes

Zone 14. Western Zone of Europe
C3; CT; CU/CT2; DA-DL; EA-EH; EA6-EH6; EI-EJ; F; G; GB; GC; GD; GI; GJ; GM; GU; GW; HB; HBØ; LA-LN; LX; ON-OT; OY; OZ; PA-PI; SA-SM(7SA-7ZZ/8ZA-8ZZ); ZB2; 3A; 4U1ITU and 4U1VIC

Zone 15. Central European Zone
ES; HA/HG; HV; I; ISØ/IMØ; LY; OE; OF-OI; OHØ; OJØ; OK/OL; OM; RK2; SN-SR(3ZA-3ZZ); S5; TK; T77; T9; X5; YL;YT-YU; ZA; Z32; 9A; and 9H

Zone 16. Eastern Zone of Europe
EU-EW; ER;RA-RZ(UA-UI); UA9/RA9 (S,W)-Bashkir and Chkalov; and UR-UZ(EM-EO)

Zone 17. Western Zone of Siberia
EZ; EX; EY; UA9/RA9 (A, C, F, G, J, K, L, Q, S, X) - Sverdlovsk, Chelyabinsk, Komi, Jurgan, Molotav, Omsk, Tyumen; UT-UM; and UN-UQ

Zone 18. Central Siberian Zone
UA9/RA9 (H, I, O, P, U, V, W, Y, Z) — Novosibirsk, Tomsk, Kamerovo, Alta;UAØ/RAØ (A, B, H, O, S, T, U, V, W) — Krasnovarsk, Irkutsk, Chita, Bruyate, Mongolia and Dickson Island.

Zone 19. Eastern Siberian Zone
UAØ (C, E, F, G, I, J, K, L, M, Q, R, Z) - Khabarovsk, Amur, Yakutsk, Primorsky, Sakhalin Island, Wrangel Island and Soviet Kuriles.

Zone 20. Balkan Zone
JY; LZ; OD5; SV; SV5; SV9; TA-TC; YK;YO-YR; ZC4/5B/P3/H2; and 4X-4Z

Zone 21. Southwestern Zone of Asia
A4; A6; A7; A9; AP-AS; EK; EP-EQ;HZ/7Z; J2/A; YA; YI; 4J/4K; 4L; 4W; 7O; and 9K

Zone 22. Southern Zone of Asia
A5; S2; VU; VU5(Laccadive Is.); 4P-4S;8Q6 (Maldive Is.); and 9N1.

Zone 23. Central Zone of Asia
BY Provinces of Tibet, Sinkiang, Kansu & Hinghai; JT-JV; and UAØY-Tanna Tuva.

Zone 24. Eastern Zone of Asia
BV; BY (except the provinces in Zone 23); CR9; and VS6.

Zone 25. Japanese Zone
HL/HM; JA-JS; and P5-P9Z

Zone 26. Southeastern Zone of Asia
HS; XV(3W); XU; XW; XY-XZ; VU2 (Andaman and Nicobar Islands); and 1S (Spratley Is.).

Zone 27. Philippine Zone
DU-DZ; JD1 (Minami Torishima); JD1 (Ogasawara); KC6(Eastern and Western Caroline Is.); KH2(Guam); and KHØ (Mariana Is).

Zone 28. Indonesian Zone
H4; P2; T2; V8; YB-YH; 9M2, 4 (West Malaysia); 9M6, 8 (East Malaysia); and 9V1.

Zone 29. Western Zone of Australia
VK6; VK8; VK9X (Christmas Is.);VK9Y (Cocos-Keeling Is.); & some Antarctic prefixes.

Zone 30. Eastern Zone of Australia
VK1-VK5;VK2(Lord Howe Is.);VK9Z (Willis Is.);VK9 (Mellish Reef);VK9 (Willis Is.);VKØ (Macquarie Is.); and some Antarctic prefixes.

Zone 31. Central Pacific Zone
C2; FØ (Marquises Is.); KH1 (Baker, Howland Is.); KH3 (Johnston Is.); KH4 (Midway Is.); KH5 (Palmyra & Jarvis Is.); KH5K (Kingman Reef); KH7 (Kure Is.); KH (Hawaii); KH9 (Wake Is.); T2 (Tuvalu Is.); T3Ø (W. Kiribati); T31 (C.Kiribati); T32 (E.Kiribati); V7(Marshall Is.); and ZK3 (Tokelau).

Zone 32. New Zealand Zone
A3; FK8; FØ(Society Is.); FW8; KH8 (American Samoa); VK9(Norfolk Is.); VR6 (Pitcairn Is.); YJ; ZK1 (Cook Is.); ZK1 (Manihiki Is.); ZK2; ZL-ZM (including Auckland, Campbell, Chatham & Kermadec Is.); 3D2; 5W1; and some Antarctic prefixes.

Zone 33. Northwestern Zone of Africa
CN2; CN8; CT3; EA8-EH8; EA9-EH9; 3V8; 7T-7Y; and IH9(IG9).

Zone 34. Northeastern Zone of Africa
ST; SU; and 5A.

Zone 35. Central Zone of Africa
C5; D4; EL; J5; TU; TY; TZ; XT; 3X; 5N-5O; 5T; 5U; 5V; 6V-6W; 9G; and 9L.

Zone 36. Equatorial Zone of Africa
C9; D2; ET; J28; TJ; TL; TN; S9; TR; TT; ZD7; ZD8; 3C; 3CØ; 5H; 5X5; 5Z4; 6O; 7O; 7Q7; 9I-9J; 9Q-9T; and 9U

Zone 37. Eastern Zone of Africa
C9; ET; J28; 5H-5I; 5X; 5Y-5Z; and 7Q

Zone 38. Southern African Zone
A2; H5; S8; ZD9; ZE; ZR-ZU; ZR2-ZU2 (Prince Edward & Marion Is.); ZR3-ZU3; Z2; 3D6; 3Y(Bouvet Is.); 7P8; and some Antarctic prefixes.

Zone 39. Madagascar Zone
D6; FB8W; FB8X; FH; FR(Reunion Is.); FR/G(Glorioso Is.);FR/J,E; (Juan de Nova Is., Europa); FR/T(Tromelin Is.); FT8W; FT8X; FT8Z; S7;VKØ (Heard Is.); VQ9; 3B6; 3B7; 3B8; 3B9; 5R-5S; and some Antarctic prefixes.

Zone 40. North Atlantic Zone
JW; JX; OX; TF and UA1 (Franz Joseph Land R1FJA-FJZ); and 4K2.

Figure 1.

bands). Single ops only allowed 30 of 48 hrs. Multis allowed 48 hrs. Off periods at least 60 mins and clearly marked in log.

Scoring

North America-Qs outside NA 3 pts on 28,21,14MHz; 6 pts on 7,3.5,1.8 MHz. Qs w/other NA countries 2 pts on 28,21,14MHz; 4 pts on 7,3.5,1.8 MHz. Qs w/ own country no pts but ok for prefix multipliers.

EU/AS/AF/OC/SA-Qs outside own continent 3 pts on 28,21,14MHz; 6 pts on 7,3.5 and 1.8. Qs w/other countries on own continent1pt on 28,21,14 MHz; 2 pts on 7,3.5 and 1.8 MHz. Qs w/own country no pts but ok for prefix multiplier.

Multipliers

Ok to score same station on each different band for QSO pts but prefix credit may be taken only once no matter how many times you work the same station or other stations with the same prefix.

PREFIX = the 3 letter or number combination of the first part of the call. YZ1, 3W8, AA1, AA2,etc. Stations operating from a different call area than their call sign must sign portable indicating the correct geography and country of operation. e.g. KB6HP/1 = KB1;KA1DWX/6 = KA6; K2UYC/LX = LXØ

Single op-all band/single band

2. Multi op-all band only, single xmtr/multi xmtr. Multis use separate numbers for each band. Club competition. QRP<5W, state max pwr output used in log. Include prefix list w/log. Trophies, plaques. *CQ* WR

hamfests March

Arkansas

The LITTLE ROCK HAMFEST and ARRL STATE CONVENTION will be held on 15 and 16 March at the Little Rock Exposition Center, exit 126, I-30, southwest Little Rock. Admission is $7. Call for dealer prices. Features include flea market, exhibitors, forums, and working stations on packet, amateur television and satellite. For information, contact Jim Blackmon, KB5IFV, 501/246-6734 or 501/246-7833 (24 hr. recorder).

California

THE LIVERMORE ARK is sponsoring an Amateur Radio/Electronics/Computer Swap Meet on 3 March from 7 a.m. to 12 noon at Las Positas College. Features include refreshments, free parking and covered spaces in the event of rain. Admission is free. Sellers pay $10 space fee. Talk-in on 147.045(+) PL 94.8 from the west and 145.350(-) PL 100Hz from the east. Contact Noel Anklam, KC6QZK, at 510/447-3857 eves. or leave message days at 510/783-2803.

•

The YUBA SUTTER ARC will hold their first of a planned annual hamfest on 16 March (rain or shine), from 8 a.m. to 1 p.m. at the American Legion Hall in Linda, off Highway 70, 4 miles south of Marysville. Tailgaters are welcome. Admission is $3 and there will be an all-you-can-eat breakfast on site. Contact Hugh, N7OKM, 916/846-6702 or Ron, WB5FIX, 916/674-8533 for details and space reservations. Talk-in on 146.085(+).

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The QUARTER CENTURY WIRELESS ASSOC. Leo I. Meyerson Chapter #154 in the Coachella Valley will hold its 11th annual Spring Luncheon on 9 March, at the Erawan Garden Resort Hotel in Indian Wells, CA (Palm Springs area). Festivities will commence on 8 March with a no-host cocktail party. On 9 March, there will be a seminar featuring Lew McCoy, Ron Luttringer and Dave Bell (main speaker during luncheon). For information and reservations, contact Don Doughty, W6EEN, 42-605 Bryon Place, Bermuda Dunes, CA 92201.

Worldradio — subscribe — page 9!

Connecticut

The SOUTHINGTON ARA will hold a flea market on 31 March from 9 a.m. to 1 p.m. (vendor setup 7 a.m.) at the Southington High School on Pleasant Street. Admission is $3 with door prizes throughout the day. Six foot tables are $12 in advance or $15 at the door. All VEs given on a pre-registration basis only. Make checks payable to SARA. Contact Chet for information at 860/628-9346. Talk-in on 147.345(+), 224.80(-), 444.25(+), 145.49(-) PL 77 Hz.

Florida

PLAYGROUND AMATEUR RADIO CLUB will host its 26th annual North Florida ham/swapfest on 16 and 17 March at the Fort Walton Beach, FL Fairgrounds from 8 a.m to 5 p.m. (Sat.) and 8 a.m. to 3 p.m. (Sunday). Features include large flea market, commercial vendors, forums and meetings. Admission is $5. Ladies and those under 16 admitted free. Tables are $17 for both days (which includes one free admission). Call Bud, K8YNU, at 904/243-5404 or Scott, KE4BFT, at 904/244-3182. For RV space call Roberta at 904/862-0211. For information, you may write PARC, Box 873, Fort Walton Beach, FL 32549.

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The WEST PALM BEACH ARC will hold a free flea market for both buyers and sellers in John Prince Park, Lake Worth, Florida, at Mound Circle on 9 March, 8 a.m. to 2 p.m. Good food available at very reasonable prices. For information, contact Marvin Kaskawits, KD2CK, at 407/683-2930. Talk-in on 147.13(+).

Georgia

The N.E. GEORGIA BUBBA NET will hold their First Bubba Hamfest on 2 March from 9 a.m. to 3 p.m. at the Madison County Fairgrounds, ½ mile south of Comer, GA on Highway 22. Features include dealers and covered flea market, VE exams, and good food.

Setup/camping is available Friday night, all hookups $6. For reservations or information, contact Dan Daniel, AE4HS, 152 Windfall Dr., Winterville, GA 30683; telephone 706/742-2777. Talk-in on 147.30(+).

Illinois

The LIBERTYVILLE and MUNDELEIN AMATEUR RADIO SOCIETY, assisted by the North Shore Radio Club, will hold its annual LAMARSFEST at the Lake County Fairgrounds on 31 March from 8 a.m., setup from 6 a.m. Large, all indoor electronic, radio and computer swapfest, commercial exhibitors. Rest area, free parking, public cafeteria, VE testing. Admission is $5; swapfest tables $10; wall tables $15; commercial tables $25. Advance table reservations (only with tickets) until 23 March. For information, write Lamarsfest '96, 650 Green Bay Rd., Lake Bluff, IL 60044, or call Frank Avellone, W9GLO, at 708/234-4124 before 10 p.m. Talk-in on 147.345(+) NSRC repeater or 146.52(S).

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The STERLING-ROCK FALLS ARS hamfest will be held on 24 March (setup on the 23rd from 6-9 p.m. and the 24th from 6:30 a.m.) at the Sterling High School Fieldhouse, 1608 4th Ave. Doors open to public 7:30 a.m. There will be a large indoor flea market, radio electronic items, computer and hobby items. Free parking, including areas to accommodate self-contained campers and mobile homes. Dummy load available to test equipment. Admission is $3 in advance, $4 at the door. Tables $5 without electricity, $6 with electricity. In groups of tables only one will be $6, the rest $5. VE testing (walk-in only). Please bring original current license plus copy and photo ID. Information, tables or tickets, contact Lloyd Sherman, KB9APW, Sterling-Rock ARS, P.O. Box 521, Sterling, IL 61081-0521, or call 815/336-2434. Talk-in on 146.85(-).

Indiana

The MICHIGAN CITY ARC will hold a hamfest and computer flea market on 30 March from 8 a.m. to 2 p.m. (early setup for vendors). Admission is $4 and children under 12 are free with paid adult. Table reservations and general info is available from Ron Stahoviak, N9TPC, 213 S. Dickson St., Michigan City, IN 46360; 219/872-6594.

Kansas

The TROJAN AMATEUR RADIO CLUB will sponsor their swapfest on 9 March from 8 a.m. to 2 p.m. CST (setup 6 a.m. the Colby National Guard Armory. Admission $2, tables $5. Food on site. Forums on National Weather Service, Kansas Packet Group and ARRL. Early-bird dinner Friday, 8 March, 6 p.m. at the Sirloin Stockade. For information, call Jim, KGØPI, 913/462-6436,

140 N. Garfield, Colby KS 67701 or e-mail 2033027@mcimail.com Talk-in on 146.82(-).

Maine

The ANDROSCOGGIN ARC will hold a hamfest and computer show on 1 and 2 March in the Ramada Conference Center, 490 Pleasant St., Lewiston. Features include forums, club meetings, new and used radio and electronic gear including computers. VE exams will begin at noon. Special room rates available at the Ramada. Call 207/784-2331 for reservations and mention the hamfest. Contact Ivan Lazure, N1OXA at 207/784-0350 for reservations. For more information, call or fax Bill Woodhead, N1KAT, c/o AARC, INC., P.O. Box 1, Auburn, ME 04212-0001; 207/782-4862, fax 207/784-0222. Talk-in on 146.91(-).

Massachusetts

The SOUTH SHORE ARC will hold a hamfest on 3 March from 9:30 a.m. to 2 p.m. at Dav #29 Hall, Liberty St., in Braintree (rain or shine). Ample parking — indoors — hot dogs and soda. Features include: door prizes, static equipment displays. Admission is $2, tables $12 before 20 Feb; $15 at door. No tailgating in parking lot. VE exams will be given to preregistered participants only. Mail payment to: William Morgan, 25 Helena Rd., Boston, MA 02122. Talk-in on 146.67(-).

New Hampshire

The NORTH COUNTY ARC and LITTLETON ARK will hold a ham radio/computer flea market on 2 March from 9 a.m. to 3 p.m. (setup 8 a.m.) at the Twin Mountain, NH Townhall near the intersection of Routes 2 and 3. Admission is $2. Eight foot table $5 (tables limited). Talk-in on 146.55(S). Contact Richard Force, WB1ASL, 12 Cottage St., Lancaster, NH 03584-1903; 603/788-4428 or e-mail r_force@moose.ncia.net

New Jersey

The SHORE POINTS ARC will sponsor its 14th annual hamfest, Springfest '96 on 2 March from 9 a.m. (setup 7 a.m.) at Holy Spirit High School, located on Route 9, ¾ mile south of Route 30, in Absecon, NJ. Features include indoor heated selling area, outdoor tailgating, free parking, and refreshments. Admission is $5 (non-hams, XYLs and children are free). Tables (indoors) are $7 per 8' section. Reservations will be accepted. Outdoor tailgating (weather permitting) is $5 per painted parking space (first come, first served, no reservations accepted). For more information, contact SPARC, P.O. Box 142, Absecon, NJ 08201. Talk-in on 146.38(+).

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The DELAWARE VALLEY RADIO ASSOCIATION, INC. will hold their HAMCOMP'96 flea market on 24 March from 7:30 a.m. to 2 p.m. (setup 6:30 a.m.) at Trenton State College in the student recreation center on Route 31 in Trenton. Admission is $5; tailgaters $10 (includes space and admission); inside vendors $20 (includes space and admission). For more information, call the DVRA hotline at 609/882-2240. Talk-in on W2ZQ repeaters 146.67(-) or 442.650(+).

Ohio

The HAMFEST ASSOCIATION OF CLEVELAND will hold its winterfest on 3 March from 8 a.m. to 2 p.m. (setup 6 a.m.) at the Cuyahoga County Fairgrounds in Berea. VE exams will be administered early — must have proper ID, copy of license, and $6.07 check to ARRL/VEC. DXCC/WAS QSL checking before 10 a.m. Advance tables $15 (includes admission), extra tables $12 until mid-February. Admission $5 at gate. For more information, contact Hamfest Association of Cleveland, P.O. Box 81252, Cleveland, OH 44181-0252 or call 800/CLE-FEST (216/999-7388 in Cleveland area) Talk-in on 146.73(-).

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The TOLEDO MOBILE RADIO ASSOCIATION (TMRA) will hold a hamfest on 17 March from 8 a.m. to 3 p.m at the Lucas County Recreation Center, 2901 Key St., Maumee, OH. The event is all indoors and parking is free. Admission is $4 in advance and $5 at the door. For advance tickets send an SASE to Brian Harrington, WD8MXR, 4463 Holly Hill Dr., Toledo, OH 43614. For table application, send an SASE to Bob Mann, N8UPT, 8035 Lewis Ave., Temperance, MI 48182. For other information, send SASE to TMRA, P.O. Box 273, Toledo, OH 43697-0273 or Robert Hanna, K8ADK, 2154 Circular Rd., Toledo, OH 43614-4205; 419/382-2529. Talk-in on 147.27(+) or 442.85(+).

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The TEAYS ARC will hold a hamfest on 10 March from 8 a.m. (breakfast served 7-11 a.m., vendor setup 6 a.m.), at the new AmVets Building, U.S. Route 23 S of Circleville ½ mile east on Tarlton Road. Admission is $4 in advance, $5 at the door. Tables are $5 in advance, $6 at the door (until filled). For information, contact Roy Ulko, KG8EK, 132 W. Main St., Circleville, OH 43113; 614/477-2771 or voicemail at 614/477-8310. Talk-in on 147.18(+).

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The LAKE COUNTY ARA will hold a hamfest on 24 March from 8 a.m. to 3 p.m. at Madison High School on North Ridge Rd., in Madison, OH. Features include door prizes, forums, equipment test and VE exams. Admission is $5 at the door. Six foot table for $6, eight foot table for $8. For reservations, contact Bob at 216/257-2036.

Pennsylvania

The KEYSTONE VHF CLUB will hold a hamfest/computer show on 17 March from 8 a.m. to 4 p.m. at the Dover Fire Hall in Dover. Features include two floors of indoor exhibitors, tailgating, flea market, free parking, over-flow parking w/ free shuttle service, VE testing (10:30 a.m.) at the Log House Recreational Area, 2481 W. Canal St., 3 blocks west of hamfest site, free parking at testing site or free shuttle service from hamfest. Refreshments. Admission $3, tables on main level, in advance $15 before 25 Feb; $12 for lower level; tailgating $5 (includes admission and one space). Advance table registration, contact York Springfest, P.O. Box 266, East Berlin, PA 17316-0266. Ted Rodes, KE3SO, 717/259-8063, fax 717/259-7870. Talk-in on 146.97(-).

Texas

The MIDLAND AMATEUR RADIO CLUB will hold their annual St. Patrick's day swapfest on 16 March 9 a.m to 5 p.m. and 17 March 8 a.m. to 2:30 p.m. (setup on the 17th from 3 to 6 p.m.) at the Midland County Exhibit Building east of downtown Midland on the north side of Business 20. Features include huge flea market inside, many dealers, T-hunts, large concession stand and VE exams at 12 p.m. on Saturday. Admission is $7 in advance or $8 at the door. Tables are $10 each for the first two and $15 each for additional tables. For information, contact the Midland ARC at P.O. Box 4401, Midland, TX 79704, or e-mail: oilman @marshill.com

Wisconsin

The TRI-COUNTY ARC will hold its annual hamfest on 17 March from 8 a.m (setup 7 a.m.) at the Jefferson County Fairgrounds, in Jefferson. Admission is $4. Six foot tables will be $5 each and eight foot tables are $6. Information may be obtained by writing W9MQB, 711 East St., Fort Atkinson, WI 53538, or call 414/563-6502 evenings. WR

Information in "New Products" is supplied by the manufacturers to acquaint *Worldradio* readers with new products on the market.

Radio Interface Kit

JBI Produces & Technologies introduces a computer-radio interface kit as a low-cost alternative to the amateur community for computer control of their radio equipment. The JBI Universal Radio Interface is compatible with the following makes and models of transceivers and receivers and their control software:

Kenwood: TS-140/440/450/680/690/

711/811/850/940/5000.

Yaesu: FT-736/747/767/890/980/990/1000/1000D

ICOM: IC-271/471/725/726/728/735/751A/761/765/781/970/R71/R72/R700/R7100/R9000.

Heathkit: SB-1400 and

Ten-Tec : Argonaut II, Delta II, Omni VI, and Paragon

The radio interface kit can be easily constructed in about an hour; it is powered directly through the computer COM port, and fits completely within the metal die-cast serial port connector. The kit comes complete with a PC-board, all components, 6-ft cable, DB-25 connector, radio port connector and control software diskette. Also available is a CW keying option and completely wired and assembled kits.

The basic radio control kit is available in kit form for $29.95 and $45 assembled. Kits including the CW keying option are available (assembled kit form only) for $59. Quantity and club discounts are available. Shipping and handling for the kits is $4.50. Kits can be ordered from JBI Products, 1418 South Yale, O'Fallon, IL 62269-2738. For more information on the JBI Universal Radio Interface Kit, call 800/524-8658 or 618/624-6227 in Illinois.

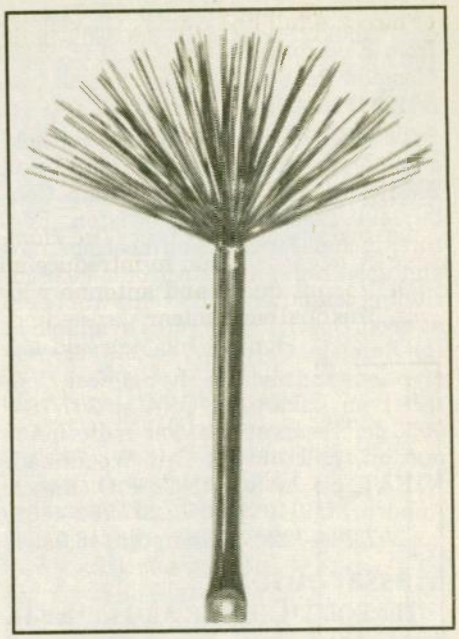
Static discharge and lightning protection

NI4P's static discharge dissipater is designed to minimize the risk of lightning damage to communication antennas and towers by providing a low resistance ionization discharge point between tower or antenna and the surrounding air. By discharging the charge built up on an item, the possibility of a lightning strike is greatly reduced.

When a charged air mass (thunderstorm) comes in to your area, the ground directly below becomes deficient in electrons. Repelled by an army of electrons in the cloud's base, free electrons on the ground are pushed away and this results in the ground becoming positively charged. Tall objects such as towers, masts, antennas, trees, and chimneys become more positively charged than the ground upon which they stand. If this static charge is not dissipated rapidly, small sparks called "feelers" start coming from the end of your tower, antenna, etc. When these "feelers" meet the primary stroke from the cloud, a conducting path from cloud to ground is completed . . . lightning!

Ben Franklin was one of the first to become intrigued by the ability of a sharp point to "draw electrical fire." He had seen that a charged body with a sharp point or rough edges loses its charge much faster than a flat or smooth body. When ions collide in a concentrated area, such as a charged region at the tip of a point, additional ions are produced and a transfer of electrons take place between the ions and the point. This is called "point discharge."

The NI4P static charge dissipater's purpose is to provide an ionization discharge path at a stress point on a mast, tower, or antenna system before the potential between cloud and antenna becomes excessive.



A free brochure is available by writing: NI4P, 3236 Walter Road, Robards, KY 42452; 502/830-6206. The NI4P Dissipater is priced at $19.95 plus $4.50 S/H or two for $39.

Fritzel antenna line

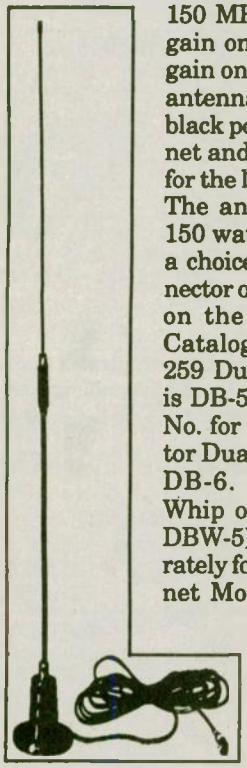
Electronic Switch Company, Inc. is proud to announce the introduction of the Fritzel antenna line to its products. The Kurt Fritzel Antenna Company is well known throughout Europe and has been in business over 30 years. Many U.S. operators have worked European hams using the Fritzel antennas. The company manufactures a complete line including Yagis, both monoband and multiband varieties, verticals and wire dipoles. Fritzel has pioneered many unique design ideas such as the "non-disposable" beam where you start with a rotatable dipole and as your budget permits expand it up to a 5-element, 6-band high performance Yagi. Also their FD-4 dipole manufactured with vinyl-coated steel "aircraft" cable is the industry leader for strength and band coverage. This antenna works 80-10 Meters at <2.0:1 SWR across the entire band (including the WARC bands), it incorporates the famous Windom design with a molded 6:1 balun allowing the user to feed the system with coaxial cable. All exposed parts are stainless steel or galvanized for total weather protection. They are available in 500 watt, 2 kW and 5 kW models, these antennas will take all you and Mother Nature give them.

Electronic Switch Company is the exclusive distributor of these antennas in North and South America. They are available through your favorite dealer

or direct. A full line catalog is available from Electronic Switch Co., Inc., 8491 Hospital Dr., Suite 328, Douglasville, GA 30134; 770/920-1024, fax 770/920-0700, e-mail k4mzw@Mindspring.com

Dual band antenna

Lakeview Company, Inc. *(The Hamstick People),* is proud to introduce an NMO mount dual band antenna with gain. This dual band antenna is pre-tuned for 144-148 MHz and 440-150 MHz. It has 3.7 dB gain on VHF and 6.0 dB gain on UHF. The 37" tall antenna has a very strong black powder-coated magnet and 15' of RG-58 coax for the low price of $44.95. The antenna is rated at 150 watts. The buyer has a choice of a PL-259 connector or a BNC connector on the dual band. The Catalog No. for the PL-259 Dual Band Antenna is DB-5, and the Catalog No. for the BNC Connector Dual Band Antenna is DB-6. The Dual Band Whip only (Catalog NO. DBW-5) is available separately for $29.95; the Magnet Mount (Catalog No. NMO-MAG), it is available for $16.95.



For more information, contact Lake-view Company, Inc., 3620-A Whitehall Rd., Anderson, SC 29624; 803/226-6990, fax 803/225-4565.

Revison 4.0 Firmware

Revison 4.0 Firmware is now available for the NIR-10 Noise and Interference Reduction Unit. The new firmware provides much improved NIR (Spectral Subtraction) and Dynamic Peaking (PEAK) noise reduction modes. It also features an AUTO mode when the NIR control is turned fully clockwise which provides an automatic adjustment of the noise reduction for best intelligibility based on the measured signal to noise ratio of the incoming audio signal. The PEAK function noise reduction level now can be continually varied, using the NIR control, to give the most effective noise reduction in that mode. The NOTCH filter has been changed slightly to eliminate the "nasal" quality sometimes given to "musical" voices.

The price is $69.96. For information, contact JPS Communications, Inc., P.O. Box 97757, Raleigh, NC; 919/790-1011.

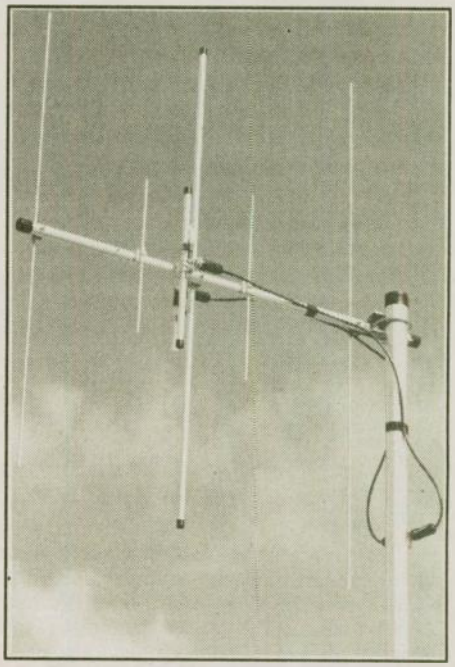
AEA's 1996 catalog

Advanced Electronic Applications, Inc. has mailed the new AEA 1996 product catalog. Sixteen new products were announced throughout 1995 and the 1996 catalog is packed with information and pictures for each one of them, plus all the other AEA data controllers, software, antenna analysts, remote radio controllers, and keyers.

AEA mailed the catalogs in December and if you were on AEA's mailing list, you should have received a catalog by now. If you did not receive a catalog and want one, send your name, call sign, and address to: Advanced Electronic Applications, Inc., '96 catalog, P.O. Box C-2160, Lynnwood, WA 98036; 206/774-5554, ext. 306; fax 206/775-2340.

A270-6S dual band Yagi

The Cushcraft A270-6S dual bander for 2 Meters and 70 cm is the perfect beam for a ham on a budget. It has the gain and directional characteristics of a



Yagi and the convenience of a single compact antenna with one feed line. It has a turning radius of under 3 feet and stainless steel hardware. Assembly is quick and a fully illustrated manual is included. The list price is $73. For more information on the A270-6S dual band Yagi and other Cushcraft products, write Cushcraft Corporation, P.O. Box 4680, Manchester, NH 03108 or telephone 603/627-7877, fax 603/627-1764. **WR**

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AUTO-CALL MAGAZINE, official journal of the Foundation For Amateur Radio, a federation of over 80 clubs in the greater Baltimore/Washington DC area. Great coverage of FCC, ARRL, VEC, Public Service and club activities in the area. A must for those even passing through the area. For a sample copy write FOUNDATION FOR AMATEUR RADIO, P.O. Box 7612, Falls Church, VA 22046-7612. F296

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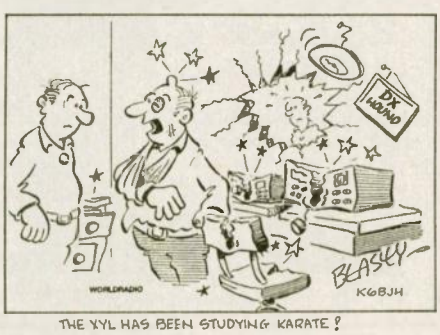

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VE exam schedules

As a service to our readers, ***Worldradio*** presents a feature listing those VE exams, times and locations which are sent to us.

Please remember that our deadline for publication is three months in advance. For example, if your VE group is scheduling an exam for January, please have the information to us by mid October.

p/r pref. = pre-register preferred, but w/i OK
p/r = pre-register only — no w/i

Worldradio, 2120 28th St., Sacramento, CA 95818. Please mark the envelope "VE Exams."

List the location, any information examinees should have (advance registration, etc.) and the name and telephone number of a person to contact for further information.

w/i pref. = w/i preferred to p/r
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Date	City	Contact	Notes
Arizona			
4/13/96	Tucson	Joe, K7OPX 520/886-7217	
Arkansas			
4/20/96	Gassville	Phil, AB5ZU 501/425-7406	p/r pref.
California			
4/14/96	Chico	Jackie, W6YKU 916/342-1180	p/r pref.
4/25/96	Colton	Harold, AB6RN 909/825-7136 days or 909/685-6073 eves	
4/07/96	Concord	Gene, WW6H 510/254-5090	w/i only
4/27/96	Culver City	Scott, K6PYP 310/459-0337 or Dave N3BKV 818/559-2572	p/r pref.
4/27/96	Escondido	Harry, WA6YOO 619/743-4212	p/r
4/27/96	Fairfield	Dick, AB6EY 916/791-0268	w/i pref.
4/02/96	Fremont	Greg, KJ6EP 510/791-6818	w/i only
4/21/96	Hanford	Carleton, AA6GZ 209/924-4221	w/i only
4/06/96	Jackson	Ray, AA6EW 209/296-3412	p/r pref.
4/27/96	Lake Elsinore	Charley, AA6TI 909/244-3630	p/r pref.
4/03/96	Lake Isabella	Tom, KN6TS 619/379-2947 or KD6YNX 619/379-5236	p/r pref.
4/27/96	Pomona	Don, WA6HNC 909/949-0059	p/r
4/20/96	Redwood City	Joe, KB6OWG 408/255-9000	w/i only
4/03/96	Sacramento	Jim, AB6OP 916/334-4887 or Larry, KD6OLN 916/361-2476	p/r pref.
4/20/96	Sacramento	Lyle, AA6DJ 916/483-3293 or Phil, N6ZVA 916/338-3223	w/i
4/13/96	San Pedro	Elvin, N6DYZ 310/325-2965	p/r pref.
4/10/96	Santa Ana	Red Cross, 714/835-5381 x140	w/i
4/13/96	Santa Rosa	Claude, 707/527-8593	p/r pref.
4/27/96	Sonoma	Jim, 707/996-6461	p/r pref.
4/20/96	Stockton	Mark, W6DKI 209/465-7496	w/i
4/13/96	Sunnyvale	John, KG6XF 408/255-9000	w/i only
4/13/96	Torrance	Joe, WB6MYD 310/328-0817	p/r pref.
Colorado			
4/13/96	Denver	Glenn, WØIJR 303/366-9689	p/r pref.
Florida			
4/20/96	Melbourne	Bill, WB9IVR 407/724-6183	p/r pref.
Georgia			
4/20/96	Marietta	Joanne, AC4JQ 770/955-3171	w/i
4/01/96	Marietta	Delaine, KM4FV 770/993-9758	w/i
Idaho			
4/13/96	Boise	Lem, W7JMH 208/343-9153	p/r pref.
Illinois			
4/20/96	Loves Park	Dennis, W9SS 815/877-6768	p/r pref.
4/13/96	Oak Forest	David, NF9N 708/448-0580	p/r pref.
4/27/96	Oglesby	Don, K9EWU 815/223-4402	p/r
4/25/96	Villa Park	Lyle, WB7EED 708/325-5694	w/i pref.
Indiana			
4/14/96		Fred, K9EBK 812/466-2122	p/r pref.
Iowa			
4/27/96	Cncl Bluffs	Lorraine, AAØBS 712/322-1454	p/r pref.
4/27/96	Mt. Pleasant	Fred, WCØA 319/385-7458	p/r pref.
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4/30/96	Annapolis	Lois, KA3VVQ 410/647-4178	p/r pref.
Massachusetts			
4/26/96	Holyoke	Dave, N1MHP 413/592-4978	w/i
4/20/96	Melrose	Scott, WB1F 617/665-7654	p/r pref.
Missouri			
4/06/96	Kimberling	Jim, NQØG 417/739-2888	p/r pref.
New Jersey			
4/18/96	Bellmawr	Bill, NT2N 609/933-1500	w/i pref.
4/13/96	Cranford	24 hour hot-line 201/377-4790	w/i pref.
4/10/96	Ft. Monmouth	Gerry, WB2GYS 908/532-5354	p/r pref.
4/27/96	Rio Grande	John, AA2TZ 609/884-8117	p/r pref.
New Mexico			
4/06/96	Las Cruces	Gunnar, AE4W 505/525-2159 or Dean WA7EPU 505/525-1962	p/r pref.
New York			
4/20/96	Long Island	Les, AA2FJ 516/364-0030 or 516/922-0947	p/r pref.
4/09/96	Long Island	Bob, W2ILP 516/499-2214	w/i pref.
4/07/96	Yonkers	Emily, AC2V 914/237-5589	p/r pref.
Ohio			
4/06/96	Cincinnati	Herb, WA8PBW 513/891-7556	p/r pref.
4/13/96	Van Wert	Robert, KA8IAF 419/795-5763	p/r pref.
Oregon			
4/10/96	Roseburg	Dick, AA7GC 541/672-7564	p/r pref.
Pennsylvania			
4/06/96	Erie	Norma, W3CG 814/665-9124	p/r pref.
4/20/96	Mercer	Dennis, WM3H 412/347-5960	w/i
Rhode Island			
4/11/96	Providence	Judy, KC1RI 401/231-9156 or Al, NN1U 401/454-6848	w/i pref.
Texas			
4/27/96	Austin	Jim, AB5EK 512/327-6184	w/i pref.
4/09/96	Houston	Harold, ND5F 713/464-9044	p/r pref.
Virginia			
4/06/96	Williamsburg	Mike, KD4HYT 804/566-8015	w/i only
Washington			
4/13/96	Port Angeles	Athan, N1PYO or Nancy, N1RAG 360/928-9588	p/r pref.
Wisconsin			
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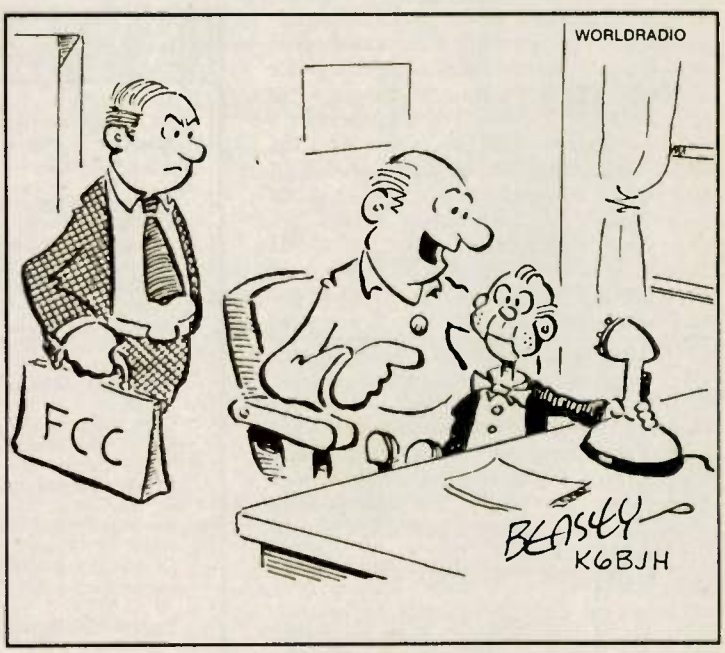

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Emergency power and bad gasoline

What you should know

Bob Wiser, KD6FXQ

The 1995 Simulated Emergency Test (SET) has come and gone, and a very important lesson was learned by our group. Other than Field Day operations, the SET is when most ARES/RACES Amateur Radio operators fire up the old generator and operate on emergency power. If this is only one of a few times a year when you give any attention to this important piece of emergency equipment, you had better think again!

Most prepared radio operators keep their generators ready for operation at a moment's notice. But, when it comes to that important subject of the storage of fuel, there are two very different schools of thought. One idea is to drain the fuel system dry and keep the gas stored in an approved gas can. The theory here is the lack of gas in the system will prevent the formation of varnish in the carburetor passages as the gas breaks down over time. The second concept, of which I am a believer, is to keep the generator fueled and ready to go at all times.

The weekend before the SET, a check of field packet operations was needed at a local shelter location. So, out came my generator and the packet gear and it was off to the shelter site. The generator ran fine after a few tugs (well, more like quite a lot) on the starter rope. After the test was complete, the generator was shut down, refueled with gas from a gas can stored with the generator and cleaned up. The morning of the SET, one week later, the equipment was pulled out and set up at the local Red Cross office. But the generator wouldn't start! It had spark, and fuel was making it into the cylinder. It had all the symptoms of loss of compression (a stuck open valve). It was off to the motor repair shop for a second opinion. The diagnosis was "bad gas" that caused "rapid" varnish buildup on the valve stems. You can guess the rest.

The item of greatest interest was the mechanic's comment about the gas. He said the average shelf life of today's automotive gas, especially the winter time oxygenated gas, has decreased substantially from the gas mixtures of years past. In an effort to reduce the by-products exiting the exhaust pipe, the gas makers have removed lots of additives from the formulas. One of the side benefits of some of those "former" additives was the extension of the shelf (storage) life. I operated my generator on what I thought was an acceptable schedule (once every 2 months for about 10 minutes). But, in reality, what I was doing was generating a nasty varnish film on the exhaust valve stem that decided to stick at the worst time. We are talking about a 1-year-old generator that doesn't have more than 10 hours on the motor. There were no outward signs of problems developing other than beginning to get harder to start.

Now for the second of those two ideas on how to store a generator. Before you think to yourself, "I'm right, store it dry and add the gas when I needed it," think about this. Most small gas engines have a foam filter in the fuel tank or a cartridge filter in line with the fuel tank. "When these filters are left dry for an extended period of time," said the mechanic, "they dry out, crack and break down." When fuel is replaced back into the tank, these filter particles can flow through the fuel system and clog it, just like varnish can. Sounds like the old Catch-22, doesn't it?

Many generator manufacturers suggest the use of a gas additive to extend the shelf life of the gas. Ten years ago I would never have given this kind of stuff a thought. It seems however, today's fuels are a different story. If you still have your manual or a sticker on your generator that suggests a specific gas additive, you may want to give the idea another thought. If you have problems with slow starting, rough running or no starting at all, you may want to look at your gas. Don't let this problem happen to you. Be a prepared radio operator! *—via packet*

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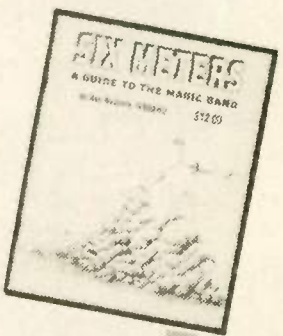

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