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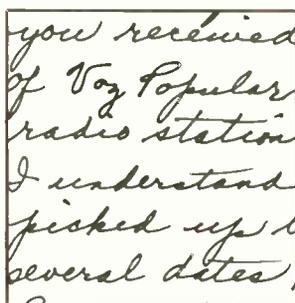
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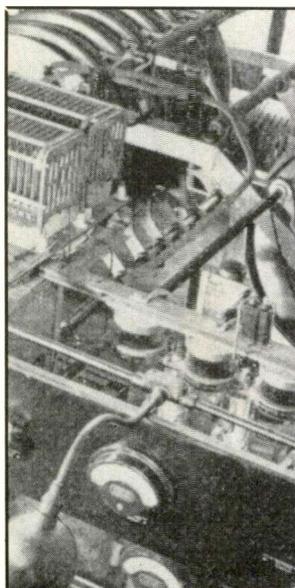
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This month's cover: Members of the Key Largo, FL EMT and fire rescue units work to extract victim from car during training. The SW skip season is back again, and worldwide emergency situations like this can be tuned in starting now. Read about it on page 9. Photo by Larry Mulvehill.

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M-900 System Components

A complete M-900 system would require:

- Universal M-900
- 12 VDC Power Supply
- Your SW Receiver
- Video Monitor
- Parallel Printer
- Cables for above

Please write to Universal for full information on the M-900 and the above optional items.

COMMUNICATIONS BOOKS

Passport To Worldband Radio

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AN EDITORIAL

New Age Electronics

Some trendy terms get pushed on the public by media hype. There they find themselves welcomed with open arms and handily stripped clean of whatever specific significance they might have once held. *High Fidelity* is one of those terms. These days, even a junky palm-sized portable TV set with an earphone is often claimed to provide high fidelity sound. Believe it or not, there was a time when nothing less than the likes of a Fisher, Scott, or McIntosh amplifier with a pair of push-pull KT-88's or EL34's driving a speaker system the size of phone booth could get away with using that term.

Looks like "New Age" has now become yet another one of these all-purpose, meaningless terms. I'm not exactly certain what "New Age" means, or what it might have ever meant. I strongly doubt that anybody else does, either. These days it encompasses philosophy, religion, gurus, food, clothing, art, handicrafts, ecology, cosmetics, farming, astrology, toys, medicine, music, jewelry, and lots of other things. I see that it's also now been tacked on to electronics. I can sit quietly by with a straight face for all of those other things, but when they begin waving it around in terms of radio, then I figure it's time to officially declare that "New Age" has turned a crucial corner. It has at last entered into the final stage before it fizzles into history and joins the many other dead or dying "hip," "with it," and "now" pop culture lifestyle fads the likes of Psychedelic, Hippie, Yuppie, Disco, Surfer, Preppy, New Wave, Urban Cowboy, Punk, Valley, Flower Power, Beat Generation, and whatever.

To me, electronics entered what I consider the new age at some point in 1954. That's when someone showed me a handful of tiny doohickies with wires sticking out of them and identified them by names like 2N35, 2N107, and CK722—saying that they were replacing vacuum tubes. I saw it as the new age because when 6L6's and 12AU7's were dumped in favor of 2N372's and 2N1524's, I'm afraid I first began to part company with understanding what the heck was going on in electronics. To me, everything in electronics that has come along since then, more or less, up to and including IC's, microprocessors, advanced digital techniques and *Star Wars* technology, has been part of a puzzling new age that began with the 2N35, CK722, their friends, cousins, and descendants.

And for more than thirty five years the parade of developments has been nothing short of stupendous. Yet, trying to keep tabs on the current crop of amazing electronics



You could put this UFO Detector right up there on your dashboard, next to your Fuzzbuster. (Courtesy Super Science.)

equipment hasn't quite prepared me for the gear offered now under the banner of being "New Age." It appears that several companies are producing so-called New Age electronics equipment. A great catalog showing many of these items offered by a Dayton, OH firm was passed along to me by a POP-COMM reader. Have you seen New Age electronics yet? I'll tell you about some of it.

First, forget about Armstrong, Fleming, DeForest, Marconi, Alexanderson, Fessenden, and the rest of your idols. Understand that others are the demigods in the world of New Age electronics. Nikola Tesla is one of them. Tesla heads the list of those always fawned over by hip, fringe, pseudo, quack, quasi, and other offbeat and unorthodox scientific movements. A pity, because Tesla really was a genius. Unfortunately, his reputation and body of work has become slightly tattered by his being held in such reverence by so many exotic and bizarre counterculture scientific movements. If the poor man only knew that he's now thought of primarily for his having been proclaimed the high priest of hokum, he'd reverse polarities and short circuit in his grave.

OK, it's no wonder that Tesla is much beloved in the era of New Age electronics. But you may never have heard of the other icons in this field. They include a Russian named Lakhovsky, also the martyred Dr. Wilhelm Reich, and someone with the improbable name of Royal R. Rife. Who are these people? Let's just say that achieving a place of solemn veneration in New Age electronics seems not in the slightest ham-

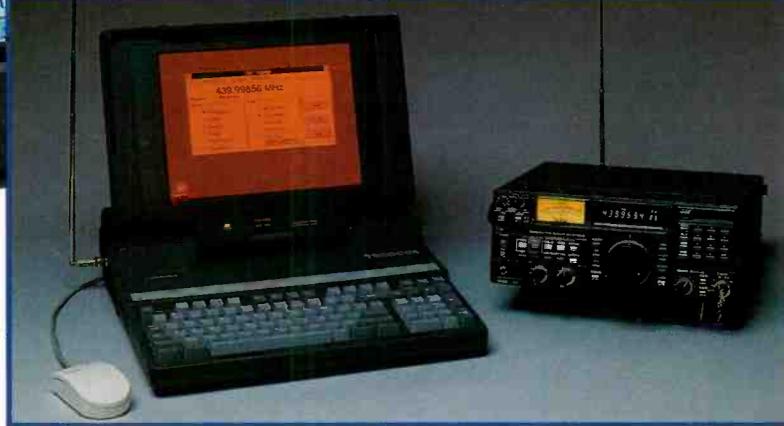
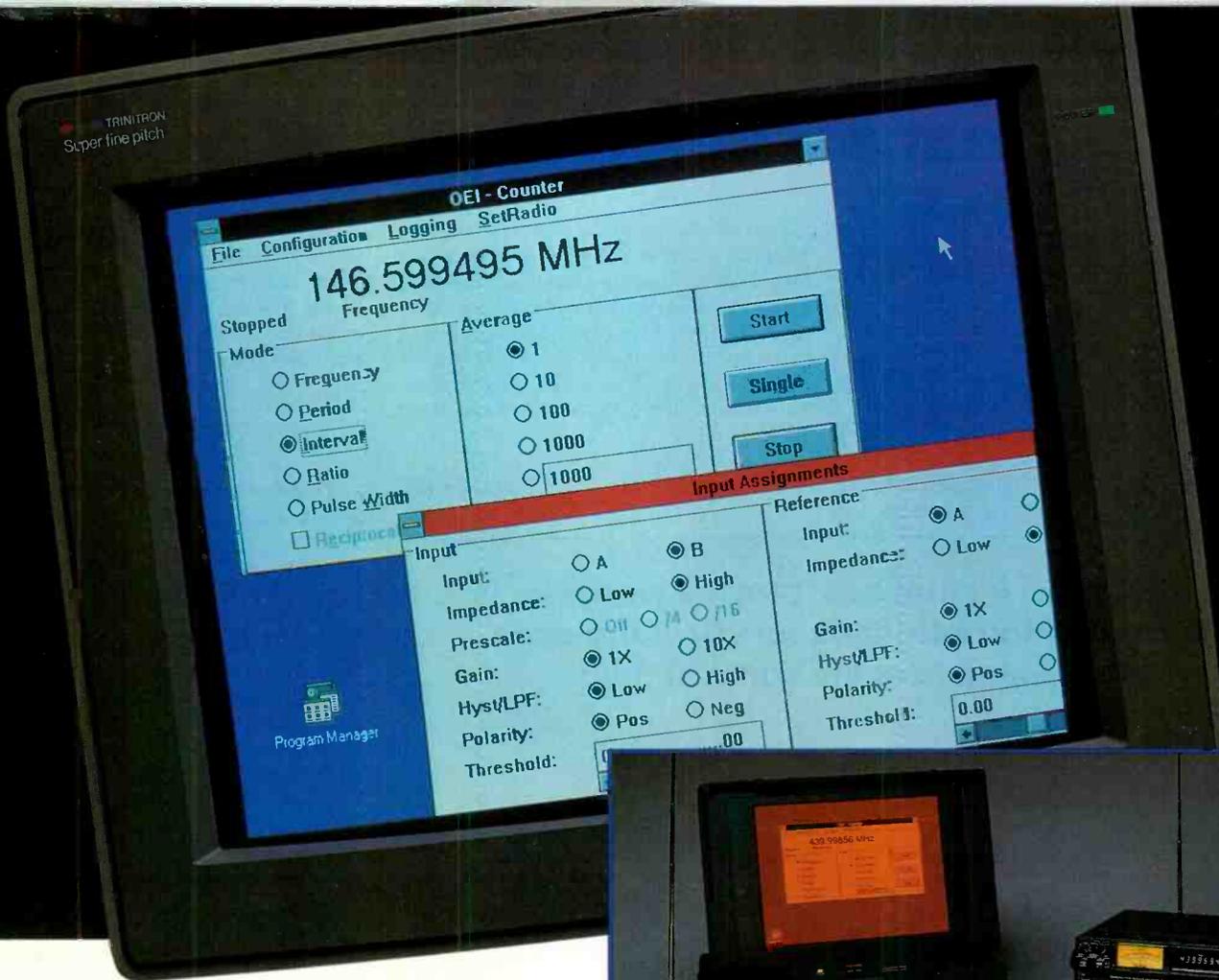
pered by the person so honored having been professionally discredited or disproven, laughed at, harassed, considered a madman by his peers, persecuted, defrocked, fined, jailed, or (at the very least) run out of town on a rail for being a crackpot, charlatan, mountebank, swindler, or snake oil peddler. Now, on to the hardware.

The *Lakhovsky Multi-Wave Oscillator* costs about \$1,050, but, after all, it's powered by a Tesla Coil. The idea of this machine is that each different type of cell in a person's body is claimed to resonate at its own specific frequency. The entire human body, therefore, will react to bombardment by a wide spectrum of radio frequencies. This device is contained in an attache case, and comes with two antennas that each consist of a series of concentric printed circuit copper rings on 16 inch Fiberglas sheets. The literature states that the MWO puts out more than 35 watts and "radiates RF interference" from 15 kHz to "well beyond" 250 MHz. They suggest operating it in a shielded room so you don't make all of your neighbors unhappy, or get in trouble with the FCC for operating an unlicensed transmitter.

The antennas are set up a few feet apart, and a person sits between them. The MWO is then turned on. The person may stay between the antennas for a short time (no more than 10 to 12 minutes the first try, but eventually as long as 30 minutes). The catalog warns that because of the high voltages

(Continued on page 74)

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MAILBAG

LETTERS TO THE EDITOR

Hot Off The Printer

Many people are reporting about how the FCC is putting through a new law that will ban the manufacture of scanners capable of receiving police, fire, and other public safety frequencies. This has been on bulletin boards and written up in several publications. *Popular Communications* has offered no comment on his impending law. Why?

J. DiBona, Sr.,
San Francisco, CA

For months there have been stories going around the boards and in newsletters saying that Uniden denies they are now marketing a current series of scanner frequency directories. But your magazine said they are, and I see Uniden directories available at Uniden dealers and even Sears. The Uniden directory I recently bought was current and dated 1990.

Red O'Farrell,
Tulsa, OK

On the *Prodigy* BBS earlier this year there was a message that Tom Kneitel had died. Then, later, Bob Grove wrote in *Monitoring Times* that the report wasn't true. Please make up your mind as to your status and stop fooling around.

Margaret L.,
Lewes, DE

These are only a few of the plethora of unfounded and ridiculous rumors that have been boiling up from the BBS drivel pits for months. *POP'COMM* receives a steady stream of letters from people taking it all in at face value and then asking us to comment upon such scuttlebutt, like the fake story of how I was arrested for divulging military frequencies during Desert Storm. We could easily fill a few pages in every issue with this stuff. Some newsletters thrive on this type of junk, sensationalizing it as if it were revelations of factual "inside information." The supposed FCC anti-scanner law grew out of somebody's gross misinterpretation of an FCC inquiry (Docket 91-36) intended to stop mobile ham radio equipment from being adversely affected by locally enacted laws established to restrict mobile scanner installations. Docket 91-36 never had any intention of or potential for federally outlawing or limiting the manufacture, sale, ownership, or use of standard scanners. The preposterous Uniden "discontinued directories" story is a slice of baloney served for the gullible. It's part of a malicious smear campaign seemingly intended to undermine and discredit the Uniden directories. These (and other similar) tall tales about the Uniden directories give every indication of being spewed out by some person (or persons) who, for whatever reason, is decidedly unhappy about Uniden's efforts to renew and expand its influence in police/fire frequency guide publishing. As for the recent report of my passing, fact is I suspect I never was. I've been told that I'm a Commodore VIC-20 software program stored on a floppy. It was good to see the ARRL finally acknowledge and complain about the "rumor-mongering" that is "cluttering electronic mail and packet bulletin boards." For our part, we are taking this opportunity to note that our publication and its staff have neither the time, interest, patience, nor inclination to devote to further exploring, explaining, or wasting valuable page space on the possible meanings and motives behind any more of the inane parade of far-fetched fantasies and fabrications that continue to clog the nation's BBS and packet networks, and also fill a few newsletters that look to have nothing more useful to report. —Editor.

ALPHA DELTA antennas provide world-class reception solutions for our world-wide customers—and here are some of their comments

Murray Ferguson
Owairaka
Auckland
New Zealand

November 10, 1990

Dear Sir,

This is just a short letter, to let you know how pleased I am with my new Alpha Delta (DX-SLOPER 60ft) which I have just received; I bought the antenna from Gilfer Shortwave, 52 Park Avenue, Park Ridge, NJ 07656, USA. They were very helpful to me.

I have put the antenna up, according to the instructions, I was able to get to 20ft without any problems.

The receiver I have, is a JRC NRD-525, and the antenna I had was an active antenna, and the bands it covers are 49, 41, 31, 25, 19, 13 meters, but it does not even come close to the performance of the Alpha Delta Sloper; Frequencies that were very weak or barely readable, in the past, are now loud and clear, and have a very good signal strength, and also the down lead, takes away all of back ground hum, which has always been a problem in the past.

Very sincerely yours,

Murray Ferguson

L.A. Locklear
Gulfport, MS 39501

December 21, 1990

Dear Sirs,

I recently purchased a "DX-EE" antenna from Universal Radio after seeing an advertisement in *Popular Communications*.

As a long time SWL and DX enthusiast all I can say is WOW!

I've tried them all over the years—nothing I've tried compares to the DX-EE. I have the DX-EE running North and South with an NRD-525 and FRG-8800 with unreal results. Your antenna, the DX-EE is the quietest dipole I've ever used.

Kudos on the DX-EE! Sales should pick up on this one as I have praised it time and again to fellow SWL'ers.

Sincerely,

L.A. Locklear

Alpha Delta Model DX-SWL International Broadcast Band Sloper
(AM BDCST thru 13 mtrs-60 ft. long)..... \$69.95

Alpha Delta Model DX-EE General Coverage "Utility" Dipole
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Globe Trotting With Your Scanner

**Here Comes That Scanner Skip Season Again!
Get Ready to Tune in The World!**

BY CHUCK ROBERTSON

It happens every year, starting just about now and increasing into the winter months. The 30 to 50 MHz band on your scanner comes alive with a myriad of exotic languages on offbeat frequencies. By monitoring these distant signals, your scanner is hooking you up with stations in other nations, even on the other side of the world. It's exciting. It's adventuresome. It's a part of scanning that transcends hearing your local police, fire department, and even fast food drive-up window.

Let's get set up for the season by preparing the monitoring post to pick up some of the most frequently reported of the better stations that come skipping into North America thanks to the F2 layer of the ionosphere. These are shown in our logging list. These are the regulars, the old reliables that have been heard for years. They make great weathervanes to let you know which way the DX winds are blowing at any given time, so you'll know which parts of the world are coming through.

For example, if the pager on 35.34 MHz in the US Virgin Islands is being heard, then you can bet that the rest of the Caribbean is pouring in across the band. Or, if you hear the German Autobahn Assistance repeaters on 34.76 to 35.00 (in 20 kHz steps), then Europe is open to your inspection.

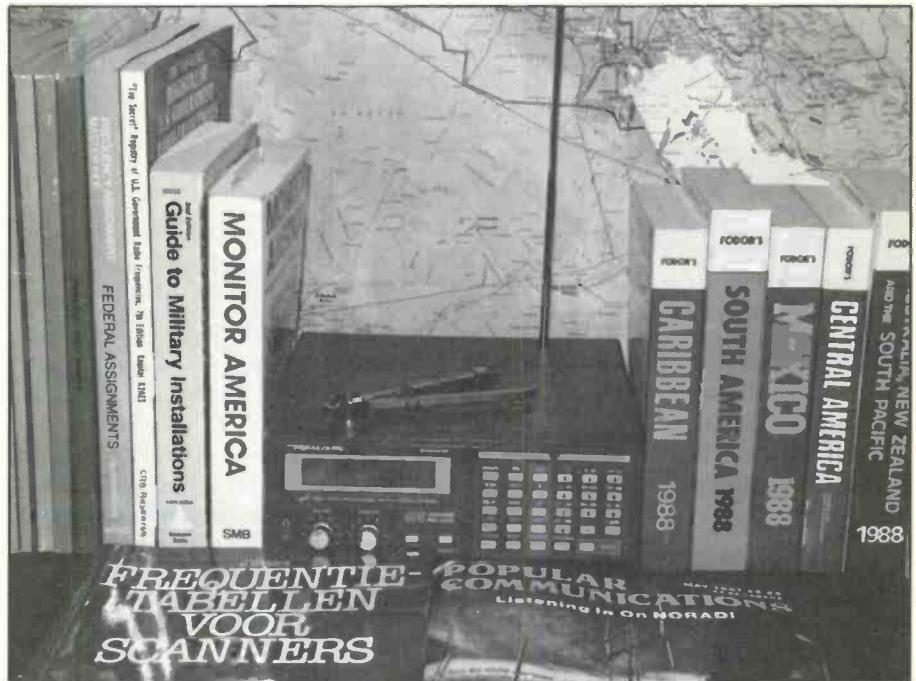
Once you've determined that the band is open (regardless of where), program in search limits from 29.70 to 50.00 MHz. Then, sit back and let your scanner carry you off to the far flung corners of the world.

We'll take a look at some of the things you'll want to know to help you get the most from your trips.

Skip Happens

Readers write to me and ask, "How can I monitor the same low band skip stations I see listed in *POP'COMM*?" There are several things to keep in mind.

First, you'll want at least a basic understanding of what DX propagation is all about in the 30 to 50 MHz band. Whole books have been written on the topic, so we'll just



Frequency guides and reference books help to ID those distant stations that show up during F2 season. Use a log book to keep a record of what you've heard.

lightly make contact with only a few points relating to the F2 layer, since that's the part of the ionosphere of primary interest to us now.

The ionosphere, an area of tiny electrically charged particles about 250 miles above our planet, is comprised of various different layers. Each of these layers has different potentials for reflecting some radio signals. The layer known as F2 is primarily active during daylight hours. The sun must be shining in the nation the skip is coming in from as well as at your monitoring post. So, Europe, Africa, and the Mideast can be heard only during the morning and midday hours in North America.

Check for French police stations between 34.90 and 36.20 MHz (12.5 kHz steps), or the police in RSA from 37.00 to 38.50 MHz (25 kHz steps), or the many Turkish repeat-

ers between 34.00 and 34.90 kHz (25 kHz steps).

Pacific areas show up by mid-morning. Listen on 41.15 MHz for Kaneohe Bay USMC, in Hawaii. Or the Range Control at Hawaii's Wheeler AFB using 38.30 MHz.

By late afternoon, Australia, China, and much of Asia begin rolling in. Check out the Korean police between 34.00 and 35.00 (25 kHz steps).

North America, itself, can be heard during most of the daylight hours. Monitors in the east must wait until mid-morning to hear stations in the west. Monitors in the western areas can begin at the crack of dawn to pick up stations in the east, which can be heard to mid-afternoon. From my monitoring post in Illinois, I've noticed that Alaska shows up best during the late afternoon.

As for stations in Latin America, check



"Radio Llamada" (Radio Call) is the name of a pager in Mar del Plata, Argentina. Operating on 35.22 MHz with 500 watts into a collinear antenna, it has been reported by listeners throughout the world.

Max van Arnhem, of the Netherlands, received this letter veri from Uruguayan "Radio Aviso" (Radio Advise), a paging station. This station uses Spanish on 31.35 MHz, running 100 watts into two dipoles. It has probably been heard by more DX'ers around the world than any other low band skip station.

RADIO AVISO

Montevideo, 16 de febrero de 1989

Señor
Max Van Arnhem

Holanda

Estimado amigo:

Tenemos el agrado de volver a escribirle, aunque nuestra respuesta a su carta del 11 de julio de 1988 no la ha usted recibido, por tal motivo le adjuntamos una copia de la misma.

Confirmamos que la emisión que usted recibió es de nuestra estación de Radio Llamadas.

Le adjuntamos un Boletín de nuestra empresa, con una foto del personal.

Sin otro particular, saludamos a usted muy atentamente;

por RADIO AVISO S.R.L.


Gerardo Gonzalez
Gerente

GG/amma.

18 DE JULIO 1985 - Entrepiso de Galería City Hall - Tel. Administración: 90 13 18 - Cables RADIOAVISO - Montevideo - Uruguay

the paging stations in our logging list this month.

September through April is when F2 reigns from 30 to 50 MHz. Within this season, there are additional patterns. Fall and spring produce the best openings to South Africa, South America, and Australia. November to February is great for east/west skip, so that's fine for tuning Europe, Hawaii, the Mideast, and other areas of North America.

F2 brings in DX from a minimum of 1,000 miles away at 30 MHz, and 1,800 miles at 50 MHz. Maximum skip? How about

12,000 miles, which means your scanner can hear all the way around to the other side of the world!

Looking High & Low

Check the lower frequencies first for DX when dealing with the F2 layer. If you hear DX between 30 and 40 MHz, then try higher frequencies. Early in the morning, you'll probably find that DX will be observed only in the lower frequency portion of the band, maybe 30 MHz or below. As the sun continues to rise, the F2 layer becomes charged

up with additional ionization and it is able to reflect signals at increasingly higher frequencies until a peak between mid-morning and midday.

This means you'll have a better chance at intercepting higher frequencies arriving from east and south, and on lower frequencies from stations westerly or southwesterly of your location. That's why Europeans often show up on higher frequencies, such as the bootleg radiophones between 44 and 50 MHz. That's also why you seldom hear Asian stations above 42 MHz.

The geographic location of your monitoring post makes a difference in how high the maximum usable frequency (MUF) will be, as well as the number of 30 to 50 MHz band openings that will occur during the F2 layer skip season. Fact is, in the USA, the farther south you are, the hotter the DX. Not that northern areas are left standing in the cold. Not at all.

In my northern location, I regularly copy skip from Alaska and all areas of Canada. If you can hear Alaska, then listeners in Alaska can hear stations in your area.

Couple of Words About Hardware

I have had excellent results in the 30 to 50 MHz band using standard "big" multi-band antennas like the Avanti AV-801 and the Channel Master antenna that looks like a

ICOM™ R7000 Sweeping 1300 Channels/Min.

DELTA COMM™ 1.04 gives you a custom interface and optimized software that will not just control but will maximize the potential of your R7000. Spectrum log at speeds in excess of 1300 channels/min. while automatically generating a histogram of frequency/activity. Advanced priority channel monitoring and program control, by channel, of remote tape recorders during scanning. Here are a few (there are many more) examples of the advanced features DELTA COMM has to offer:

- Birdie log during frequency search automatically characterizes your R7000, then locks out those frequencies.
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- Each frequency within a scan file has an area (40 characters wide) for channel information.
- Auto frequency detection and storage during search and spectrum log.
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- Full support of serial ports COM1-COM4.
- On-screen HELP reduces need to refer to user manual.
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CIRCLE 123 ON READER SERVICE CARD

F2 Skip: Watch For These

Having trouble filling up the channels on your scanner? Plug some of these "most reported" skip stations in and open your horizons. Standard abbreviations are used.

- 30.02, 30.22, 30.42, 31.42, 31.92, 32.42, 33.42, 33.92: Canadian pagers, voice & non-voice, AM & NFM.
- 30.055: Radiophone on Barbados, EE.
- 30.10: Pager, Swedish(?), AM w/tones & some voice. Also try 29.80, 29.90, 30.10 30.30, 30.40, 30.90, 40.08 MHz.
- 30.24, 31.35, 32.68, 32.82, 32.96, 35.08, 35.18, 35.22, 35.28, 35.32, 37.12, 37.42, 37.60, 37.62, 37.65, 37.70, 42.64: SS pagers, Latin America. Lots being reports by monitors in all areas.
- 30.35: "Long Rifle," the range control at Camp Pendleton, CA. Also heard: Short Pistol, Crestline, Red Beach, Range 407, etc.
- 30.45: Range coordination at Ft. Hood, TX. ID's: Black Gap Pistol Qualification Range, Cow House Machine Gun Range, Claymore Range, Arctic Range, Chemical Range, Shrapnel Multi-Use Range, Lone Star, Multi-use Range, Sugar Loaf Multi-use Range, more.
- 30.475: Taxi service, San Salvador, El Salvador. A high security operation w/trips to banks & the suburbs. All SS.
- 30.48: Minisaga Probation Camp, Manitouline Isl., Ontario. A nature camp for delinquent youth. It's on an island in Lake Huron. This is the repeater's output freq. Officers use ID's with animal names (like Lobo). The seaplane ID's as Gray Goose.
- 30.50: US Embassy, England. Security activities, NFM mode. These radios can use freqs in 12.5 kHz steps.
- 30.635: Arabic radiophone. Widely reported.
- 30.70: Ocean Drilling & Exploring Co., Gulf of Mexico. Base ID's as "Odec." Vessels have names like Crimson Tiger.
- 30.86: St. Johns River Water Mgt., FL.
- 30.94, 31.02: South FL Water Mgt.
- 31.08: Pipeline laying ops, near Calgary, Alberta.
- 31.14: San Francisco Muni Railway, also Boston Transit Authority.
- 31.35: "CHV Radio Aviso" pager in Montevideo, Uruguay. SS with 100 watts.
- 31.48: Gulf Fleet Marine Corp., Harvey, LA in contact with its vessels around the world via skip. Mostly NFM, but AM & SSB also noted at times. See POP/COMM for March '90 (page 22) for more info.
- 31.56: Lots of Asian stations 31.18 to 31.68 (20 kHz steps).
- 31.775: Brandon Hill Security, Montego Bay, Jamaica.
- 31.85: Repeater out for Mexican fed & state police agencies.
- 32.10: Ft. Irwin, CA Prime Observer Controller Channel. Also try 30.30, 30.65 32.35, & 33.40. ID's include Scorpion, Cobra, Dragon, Werewolf, Dragon, Tarantula, Eagle, Goldminer, & Bronco. Also here, a repeater out (32.70 in) in Zulu or Xhosa, also some EE & Afrikaans. Johannesburg mentioned. Others around 32 MHz in 25 kHz steps, but this one is the best.
- 32.25: Romanian repeater out. Others 32.00-32.40 (25 kHz steps).
- 32.30: Iraqi repeaters out, Baghdad & Basra. AA + some RR.
- 32.46: Managua, Nicaragua business ops, in SS.
- 32.475: Drapper Hardware Store, Kingston Jamaica. Deliveries.
- 32.56: "Moscow Radio Telephone Station"
- 32.60: Honduran business net, ID's: Tegucigalpa, Juticalpa, San Antonio. Also a radiophone here.
- 32.87: Pentagon, DC. VIP taxi or limo service. Mobiles on 32.53. Callsign is WAR315, ID's only as "315." NFM mode.
- 33.06: KGA842, Washington, DC ambulance dispatch. Also Los Angeles Street Dept.
- 33.10, 33.40, 40.74, 40.98: UN Forces (from UK) in Cyprus.
- 33.16: Repeater out (30.92 in) of Guam Cable TV Co., Agana, GU.
- 33.375, 33.35: Collective farms in Cuba.
- 33.46: Fire Dept., Maceira, Portugal. Others (20 kHz steps).
- 33.525: Repeater out (39.525 in), Central American business sometimes repeats US police skip from 39.52 MHz. Others 33.425 to 33.875 in 25 kHz steps (inputs +6 MHz).
- 33.55, 33.76: Mexican petro(?) business. City of Zacatecas noted.
- 33.56: Greek station.
- 33.60: Repeater out (37.125 in), Havana, Cuba. At times picks up US police on 37.12 MHz.
- 33.70, 33.82: Los Angeles FD w/ID as "OCD" (Operations Control Division). Digicom tone bursts on 33.48, 33.86 & 33.90. Also a pager on 33.70 in Guadalajara, Mexico w/2-tone sig + SS voice.
- 33.90: KQ1316, Hamilton Co. FD, Cincinnati, OH.
- 34.11: Elmendorf AFB, AK. NFM mode.
- 34.20: Repeater out in HH, Jerusalem. Also try 34.02, 34.40, 37.00, & 38.00 for other HH repeaters (military?).
- 34.31: Repeater out (34.85 in) White Sands Missile Range, NM. Video Recording Channel 2, NFM mode. Has countdowns, etc.
- 34.325: Turkish repeater sometimes rebroadcasts FF & GG skip. Others 34.00-34.90 (25 kHz steps).
- 34.50: Korean mil. Others around 34 MHz (25 kHz steps).
- 34.79: KID703, Statue of Liberty, NY uses ID of "703." Ferries ID as Liberty 1 & Liberty 2. NFM mode.
- 34.81, 34.83: US Fish & Wildlife Service. NFM mode.
- 34.86: Repeater out, Autobahn highway assistance, Dusseldorf,

- Germany. Check 34.76-35.00 (20 kHz steps) for more.
- 35.04, 43.04: US itinerant businesses. Always interesting here!
- 35.10: Baker Protective Service, Los Angeles, CA.
- 35.22: AZI229, Radio Llamada, Mar del Plata, Argentina. 500 w.
- 35.26: KOS225, pager in San Juan, PR w/SS phone-in messages.
- 35.525 to 35.975 (25 kHz steps): Brazilian voice pagers & 3-tone signalling devices, AM mode.
- 35.75: Burkina Faso (ex-Upper Volta) in FF.
- 35.81, 41.75: Beacons ID'ing w/Australian ham call VK6RO.
- 35.90: Hilo Security & Investigation, HI.
- 35.94: Sourdough Express Co., Fairbanks, AK.
- 35.9625: French police & railway ops, in FF. Lots of these 34.90 to 36.20 MHz (12.5 kHz). Tone burst access.
- 36.05, 36.33, 36.39: These repeaters (34.99 in for all) at Nevada Test Site relate to road closings, general ops.
- 36.22: Dept. of Health & Human Services, DC. Car pool ops repeater out, NFM mode.
- 36.51: Repeater out (36.91 in). Video Recording Channel 1 at White Sands Missile Range, NM
- 36.70: "Rattlesnake Radio." Yakima Firing Center, WA.
- 36.825: Repeater out (33.875 in). Bookmakers in Jamaica. Bases are at Kingston & Mandeville. Races are Wed & Sat.
- 37.10: Repeater out (34.10 in). "Friendship Farm," Ocho Rios Shopping Center, Jamaica.
- 37.62: Radio Llamado, Uruguay. SS pager.
- 37.85: Italian security ops. Lots in 37 to 39 MHz band; 25 or 50 kHz steps.
- 38.00: RSA police, in EE & Afrikaans. More 37.00 to 38.50 in 25 kHz steps.
- 38.30, 38.50, 38.60, 38.90: "Control Taladra" (Drill Control), Mexical petro ops.
- 38.56: Repeater out, Azulan FD, Germany. Bad Iburg also mentioned. Listen for the word "florian," a word associated with firefighting activities in Germany, as in "Florian Azulan."
- 38.65, 38.675, 38.725, 38.75: Pakistani police.
- 39.25: Power Wales, Australia.
- 39.65: Amsterdam, Netherlands, non-voice pager as confirmed by Joop Prosee, Spanbroek. Look 39.50-40.00 (25 kHz steps) for more.
- 39.75: Kotka, Finland. Police. More 39.50-40.50 MHz (50 kHz). Also US MP's in Seoul, Korea. ID as "Protector Foxtrot."
- 39.86: Brazilian station in PP. Alagoas named.
- 40.10: Maybe Nepal, Katmandu mentioned.
- 40.31, 40.33, 40.37: US Bureau of Indian Affairs school buses in AZ & NM.
- 40.45: VA Med Center pagers.
- 40.68: Worldwide industrial, scientific, & medical telemetry freq. Also some GG paging here & 40.70, AM mode.
- 41.00: Palmerola AFB, Honduras. Security. EE/SS. Also try 32.00.
- 41.15, 43.15: STL's for Radio Netherlands, Hilversum, Netherlands. These are 100 kHz WFM mode. Actual center slots may be a couple of kHz off. Also 41.15 has Kaneohe Bay USMC Air Sta, HI. Base ops w/phone patch. The helos are on 36.50.
- 41.455: SS messages to parties in San Jose, Costa Rica. Also try 41.10, 41.28, 41.34, 41.40, 41.52, 41.58, 41.64, 41.70, & 41.80 MHz.
- 41.65, 45.70: STL's for Radio Cadena Nacional, Cartagena, Colombia. NFM mode.
- 41.71: Radiophone, India?
- 42.15: "Control de Paris," in FF.
- 42.65: Repeater out in FF, East Africa.
- 42.875: Swaziland police.
- 42.90: Offshore drilling & tankers, Trinidad. In EE.
- 43.065: STL for Radio Yerevan, USSR.
- 43.65: Colon FD, Panama. Repeater out in SS.
- 43.70: Mystery repeater, location unknown. Rebroadcasts US pagers, also industrial skip on 31.48. Must have 2 input freqs.
- 43.92: Transtrack, Marion, MA has meteor burst comms here. Several 2 kW remote controlled bases around USA to contact their truck fleet. Also see 49.595 MHz.
- 44.27: "Kings Wharf," repeater out, Fyzabad, Trinidad.
- 44.40: Petro ops repeater, Port of Spain, Trinidad. Also try 46.07.
- 45.015, 45.345, 45.36: Japanese radiophones.
- 46.12: Repeater out (42.62 in), SS. Probably S. America. Has been heard for 10 years rebroadcasting US police skip.
- 47.42: American Red Cross. Sometimes gets interesting.
- 48.00, 48.08, 48.20, 48.28, 48.42, 48.82, 48.96, 49.40, 49.42, 49.62: Bahamas. Radiophone links, semi-duplex. These stations transmit at all times, even when not in use.
- 48.50: Caracas, Venezuela. Police w/tones burst access. Others 47 to 49 MHz (25 kHz steps).
- 48.75: Trinidad FD.
- 49.595: Pegasus Message, Herndon, VA. Meteor burst comms from several 7 kW remote controlled bases across US.
- 50.00: Ft. Campbell, KY live fire range control. ID's: Hellfire, Redleg, Fire Control, Fire Marker, & Range 6. Also a Mexican business here.

pitchfork. If you want to concentrate your efforts below 40 MHz, you might want to convert a CB (27 MHz) or 10 Meter ham (28 to 30 MHz) antenna. Even a simple half-wave dipole tuned to 30 MHz (make it 16 ft. long) will do a good job here.

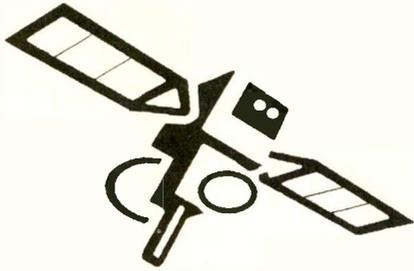
If you're really serious about DX'ing in this band, try a six element beam cut to 30 MHz. The type with both horizontal and vertical elements (like a Moonraker CB beam

tuned to 30 MHz) is ideal since you can switch from vertical to horizontal polarity to see which offers you the best reception on a given signal, and will also allow you to cut out certain interference.

Still, there's no reason to think that you can't hear anything without a formidable antenna. One of our readers lives in an apartment and hears DX using the building's ventilator ducting for his antenna.

Other readers use the longwire antennas that they have connected to their shortwave receivers. Even a plain, unmodified CB or 10 meter band antenna does a reasonable job on the low end of the band, just as a 6 meter (50 MHz) ham band antenna does a good job at the high frequency end of the band.

Try your hand (and ears) at this. It's a lot of fun!



Hearing Hidden Satellite Signals

Scanning For Satellite Radio's Secret Sounds

BY MARK LONG

It was the day of the 1990 baseball season and Cecil Fielder had yet to hit his 50th home run. A quick scan through the satellites revealed that no video channels—even PASS—was carrying the Detroit Tigers/New York Yankees baseball game. Undaunted by my fruitless search, I pointed my dish at the Galaxy 2 satellite and began using a special communications receiver to tune through dozens of “hidden” radio signals which are transmitted on transponder 3. Within moments, I was rewarded by the unmistakable voice of the legendary Ernie Harwell describing the play-by-play as Fielder came up to bat. Through the power of satellite radio, I was instantly transported to Yankee stadium as Fielder, with one furious swing of the bat, slammed the ball over the fence and rounded the bases.

WJR's regular satellite feed of Tigers baseball games represents just one of more than 150 channels of unpublicized radio signals which are available from North America's ever expanding fleet of communications satellites. Unlike conventional audio subcarriers, which can be tuned in by anyone with a satellite TV receiver, these special radio channels use an alternate transmission format called SCPC (for Single Channel Per Carrier) that only can be picked up by satellite dishes equipped with special SCPC receivers.

By adding a special SCPC receiver to your satellite TV system, you can gain access to a dazzling array previously-unavailable radio programs. SCPC radio feeds should be of particular interest to avid sports fans who wish to gain access to virtually any major collegiate or professional sports event. What's more, music lovers can listen to dozens of music stations, including the various broadcasts of National Public Radio. Best of all, dish owners in rural farming communities can tune in to weather, agricultural and commodities services that can keep them to date with latest farming developments.

What Is SCPC?

SCPC is an audio transmission system that is commonly used to transmit a variety of audio program services via satellite. SCPC services transmitted by North American domestic satellites offer a wide selection of program possibilities ranging from news broadcasts, talk radio and commodities reports, to live sports events, religious broadcasts and a wide spectrum of music formats. For example, news services like ABC, CNN, Mutual, and UPI use SCPC to transmit regular feeds to affiliate stations throughout the country. National Public Radio uses SCPC to simultaneously uplink numerous unique educational programs, classical music performances, and a wide variety of foreign-language programs, including news and entertainment programs in Span-

ish and Chinese and the overseas radio broadcasts of the Voice of America.

SCPC signals have their own independent carriers and frequency assignments within a given satellite transponder. Analog FM modulation commonly is used to superimpose the audio signal onto the SCPC carrier. Because of relatively narrow bandwidth of each SCPC transmission, a single satellite transponder can contain dozens of individual audio program feeds. The amount of bandwidth actually occupied by any SCPC signal depends on how much the SCPC carrier is deviated by the modulating signal. While FM-modulated voice signals typically have a bandwidth of 25 to 45 kHz, broadcast quality audio program distribution requires a bandwidth of 100 to 250 kHz in order to faithfully reproduce the entire

Table 1
SCPC Satellite Transponders

Satellite	Tr. #	No. of Channels	Description	Low/High Scan*
Satcom F2	14	07	Voice of America	1150 to 1190 MHz
Galaxy 2	03	40	Regional Radio Nets	1373 to 1406 MHz
Satcom K2	12	08	Various Radio Feeds	1312 to 1317 MHz
Spacenet 3	01	04	Associated Press	1430 to 1436 MHz
Westar 4	01	14	Religious Radio	1424 to 1448 MHz
Westar 4	02	19	Mutual/ABC	1393 to 1409 MHz
Westar 4	03	43	Ntl Public Radio	1374 to 1406 MHz
Westar 4	04	10	Regional Radio Nets	1375 to 1386 MHz
GStar 1	13	04	Spacecom Systems	1242 to 1246 MHz
Anik D1	01	05	Canadian Radio	1412 to 1414 MHz
GStar 2	01	01	CNN Radio	953 to 955 MHz
Anik D2	10	06	Canadian Radio	1261 10 1263 MHz

*Note: Most C-band LNBs use a “high side” local oscillator that inverts the 3.700 to 4.200 GHz frequency band so that 3.700 GHz = 1450 MHz and 4.200 GHz = 950 MHz in the IF output band. Ku-band LNBs, however, use a “low side” local oscillator that does not invert the 11.7 to 12.2 GHz frequency band, so 11.700 GHz = 950 MHz and 12.2 GHz = 1450 MHz.



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PRO-35 is a 100-channel scanner that includes a rechargeable battery pack and AC adapter/charger. It's loaded with features, including search to find new services and one-touch access to weather channels. Covers 29-54 MHz, 108-136.975 MHz commercial aircraft, 137-174 MHz and 406-512 MHz.

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Remote unit mounts outdoors away from electrical noise for maximum signal and minimum noise pickup. Mount it anywhere - atop houses, apartments, ships, buildings, balconies.

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Table 2

Galaxy 2 Single Channel Per Carrier (SCPC) Frequency Chart

Tr.	Pol	Downlink Frequency	Intermediate Frequency*	Service/Description (Indicates Activity Observed in 12/90)
03	[H]	3744.400	1405.600	KIRO, Seattle
		3746.000	1404.000	WIP-Star 610 Radio
		3748.000	1402.000	KOA Denver, CO
		3748.600	1401.400	WGR Radio
		3748.900	1401.100	—Music (1)
		3749.200	1400.800	WBAL Radio
		3749.400	1400.600	—Talk Radio, St. Louis, MO
		3751.700	1398.300	—Music (2)
		3752.200	1397.800	—Talk Radio, Sports feeds
		3752.800	1397.200	WMTJ Milwaukee, WI
		3755.150	1394.850	Florida Radio Network
		3755.300	1394.700	—Talk Radio
		3755.500	1394.500	—Talk Radio
		3755.700	1394.300	USA Radio Network/closed circuit
		3756.000	1394.000	—Talk Radio
		3756.400	1393.600	Florida Radio Network
		3757.300	1392.700	KNAX Radio
		3757.700	1392.300	WWJ Detroit, MI
		3758.400	1391.600	Spanish Radio feed
		3759.100	1390.900	AP Radio News
		3762.200	1387.800	—Music
		3762.500	1387.500	KWKW/Spanish Radio
		3762.900	1387.100	WJR Detroit, MI
		3763.100	1386.900	Mutual Radio Network
		3763.300	1386.700	WJIM News Talk Radio
		3763.500	1386.500	WJR Detroit, MI
		3764.500	1385.500	WNN Radio
		3764.700	1385.300	WBT Radio
		3764.900	1385.100	American Radio Network
		3765.200	1384.800	KSFO/KYA Radio
		3765.800	1384.200	KMCP Radio
		3766.000	1384.000	AgriAmerican Network
		3766.200	1383.800	KJR Seattle
		3767.400	1382.600	—Spanish Radio
		3772.400	1377.600	—Classical Music (1)
		3773.000	1377.000	—Classical Music (2)
		3775.700	1374.300	Sun Radio Network
		3775.900	1374.100	The New Mix 106.7 FM Portland, OR

*See note at bottom of Table 1.

spectrum of audio frequencies (50 Hz to 15,000 Hz) that comprise most musical compositions.

SCPC Signals

One way to gain access to SCPC signals is to connect a scanner to your satellite system. Two scanners which can be used effectively to tap into satellite SCPC transmissions are the AOR 2515 and the Icom IC-R7000. Available for under \$499, the AOR 2500 scanner (1-800-445-7717) features a 2016-channel programmable memory and provides continuous coverage of all frequencies between 1 and 1500 MHz. Available for under \$1100, Icom America's 99-channel IC-R7000 (1-206-454-7619) can tune continuously from 25 MHz to more than 2000 MHz.

An alternative to the communications scanner is the first dedicated SCPC tuner designed especially for the home satellite

dish owner. Available for \$450, the Heil SC-1 (1-618-295-3000) can be used to tune in to any SCPC channel. Instead of relying on an expensive keyboard, frequency readout and programmable memory circuit, the Heil SC-1 comes with a simple tuning knob and a relative three-digit readout that will allow you to easily relocate your favorite SCPC services after their relative readouts have been determined and logged onto a list of favorite services. The Heil SC-1 connects the 950 to 1450 MHz IF output of the LNB via coaxial cables and a built-in, three-way tap.

The auxiliary SCPC receiver should be connected to the IF output of the LNB by means of an isolated three-way tap module. This tap should be connected in line between the LNB and the satellite TV receiver. A "thru connection" supplied by two of the tap's three "F" connectors acts as a two-way valve, passing DC voltage from the satellite

TV receiver to the LNB and feeding the IF output signal from the LNB to the satellite TV receiver. The third F connector on the tap delivers the IF signal to the antenna input of the scanner by means of a short coaxial jumper cable. Supplying -10 to -20 dB of attenuation, the isolated output on the tap reduces the signal level and blocks unwanted DC voltages from damaging the scanner's antenna input circuitry. Keep in mind that you will need a BNC to "F" connector adaptor if connecting to the AR2500's antenna jack, or an "N" to "F" connector adaptor if connecting to the IC-R7000's antenna jack.

Scanners offer digital frequency readouts which provides an approximate indication of the IF frequency of each SCPC audio service. Table 1 provides the range of IF output frequencies which correspond to the SCPC audio services carried aboard several North American satellite transponders. Table 2 is a representative list of what was being carried by Galaxy 2, transponder 3 during December of 1990. Since many SCPC circuits are reassigned on a continual basis to accommodate the immediate needs of broadcasters, readers should view Table 2 as representative rather than definitive.

Getting The Drift

Once the SCPC receiver has been connected to the satellite TV system, you can start tuning into the available programming. Move the dish to one of the satellites listed below and then use your satellite TV receiver's remote control to select a transponder that has the same polarity as the transponder that you will be scanning. Now you are ready to calibrate your system.

You can use the scanner's calculator-style keyboard to enter in the frequency for one of the SCPC audio services listed below. If you don't initially encounter an audio service, you may need to fine tune the frequency setting of the scanner. Once you have positively identified a particular SCPC service, search up or down in frequency to locate all other SCPC channels of a given polarity that are on the satellite. Remember to adjust the wide/narrow audio bandwidth control on the SCPC receiver for best reception.

Many of the block downconverters used today for satellite TV reception exhibit a stability of +/- 200 kHz. The dielectric resonant oscillators (DRO) commonly used in most LNBs is susceptible to drifting problems caused by variations in outside temperature changes over the course of any 24 hour period. To minimize the amount of drift, the block downconverter should be well insulated so that it will have a more constant operating temperature.

To calculate the amount of downconverter drift, select one of the full-time SCPC services listed in the chart below and then adjust the scanner's fine-tune control up or down until the service is received. The amount of variance between the listed fre-

quency and the actual frequency required for best reception can be mentally added to or subtracted from the other channel listings given below in order to compensate for the DRO frequency shift caused by outside temperature changes. Alternatively, you also could rescan an SCPC transponder and store the results in memory at different times of the day to compensate for any frequency drift.

When tuning in to some of the channels, all you may hear is a quieting of the background noise. This indicates the presence of a carrier that is temporarily unmodulated, but which may burst into a frenzy of activity at certain designated times, such as when a news network is scheduled to feed a report

to its affiliate stations. Each time that a new SCPC channel is received, its frequency will be displayed on the scanner's digital readout. If the new service being received is of interest to you, use the appropriate button on the scanner's keyboard to store the setting in memory. Once stored in memory, SCPC services can be reaccessed at any time.

Mark Long is the author of the 1991 World Satellite Annual and the president of MLE INC, a Florida-based technical publishing company which specializes in information products for the satellite professional. For a complete listing of what's on satellite around the world, including a complete list of SCPC services, order a copy of MLE's World Satellite Transponder Loading Report, just \$30.00 for a one-time sample copy of the most recent issue, or \$125.00 for a one-year subscription (4-issues). Send check or money order to MLE INC, P.O. Box 159, Winter Beach, FL 32971 Tel: (305) 767-4687.



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**Lockheed Corp. Test Shows
Wilson 1000 CB Antenna Has
58% More Gain Than The
K40 Antenna (on channel 40).**

In tests conducted by Lockheed Corporation, one of the world's largest Aerospace Companies, at their Rye Canyon Laboratory and Antenna Test Range, the Wilson 1000 was found to have 58% more power gain than the K40 Electronics Company, K40 CB Antenna. This means that the Wilson 1000 gives you 58% more gain on both transmit and receive. Now you can instantly increase your operating range by using a Wilson 1000.

**Guaranteed To Transmit and Receive
Farther Than Any Other Mobile
CB Antenna or Your Money Back**
New Design**

The Wilson 1000 higher gain performance is a result of new design developments that bring you the most powerful CB base loaded antenna available.

Why Wilson 1000 Performs Better

Many CB antennas lose more than 50% of the power put into them. The power is wasted as heat loss in the plastic inside the coil form and not radiated as radio waves.

We have designed a new coil form which suspends the coil in air and still retains the rigidity needed for support. This new design eliminates 95% of the dielectric losses. We feel that this new design is so unique that we have filed a patent application on it.

In addition, we use 10 Ga. silver plated wire to reduce resistive losses to a minimum.

In order to handle higher power for amateur use, we used the more efficient direct coupling method of matching, rather than the lossy capacitor coupling. With this method the Wilson 1000 will handle 3000 watts of power.

The Best You Can Buy

So far you have read about why the Wilson 1000 performs better, but it is also one of the most rugged antennas you can buy. It is made from high impact thermoplastics with ultraviolet protection. The threaded body mount and coil threads are stainless steel; the whip is tapered 17-7 ph. stainless steel. All of these reasons are why it is the best CB antenna on the market today, and we guarantee to you that it will outperform any CB antenna (K40, Formula 1, you name it) or your money back!

*Inductively base loaded antennas
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Aug. 21, 1987

Wilson Antenna Company Inc.
3 Sunset Way Unit A-10
Green Valley Commerce Center
Henderson, Nevada 89015

Subject: Comparative Gain Testing of Citizen's Band Antennas
Ref: Rye Canyon Antenna Lab File #670529

We have completed relative gain measurements of your model 1000 antenna using the K-40 antenna as the reference. The test was conducted with the antennas mounted on a 16' ground plane with a separation of greater than 300' between the transmit and test antennas. The antennas were tuned by the standard VSWR method. The results of the test are tabulated below:

FREQUENCY (MHZ)	RELATIVE GAIN (dB)	RELATIVE POWER GAIN (%)
26.965	1.30	35
27.015	1.30	35
27.065	1.45	40
27.115	1.60	45
27.165	1.50	41
27.215	1.60	45
27.265	1.75	50
27.315	1.95	57
27.365	2.00	58
27.405	2.00	58

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POWER GAIN
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Radio's Rugged Relics

Rummaging Through The Archives of Radio & Wireless

BY ALICE BRANNIGAN

The old saying about great oaks growing from tiny acorns must have been inspired by Los Angeles broadcaster KNX. Hard to believe, but if you dig back far enough you find that this 50 kW fixture on the AM dial began in about as humble a situation as any broadcaster ever faced.

That is to say, exactly 71 years ago, on September 10th, 1920, this station first began operation. It was a 5 watt ham station with the callsign 6ADZ, operated from the bedroom of electrical engineer Fred Christian. On December 8, 1921, the station received a commercial license for 50 watts on 833 kHz under the call letters KGC, issued to Christian's Electric Lighting Supply Co.,

5110-1/2 Harold Way, Hollywood. Air time was scarce in those days, and KGC shared time on its frequency with no less than twenty-two other local area broadcasters.

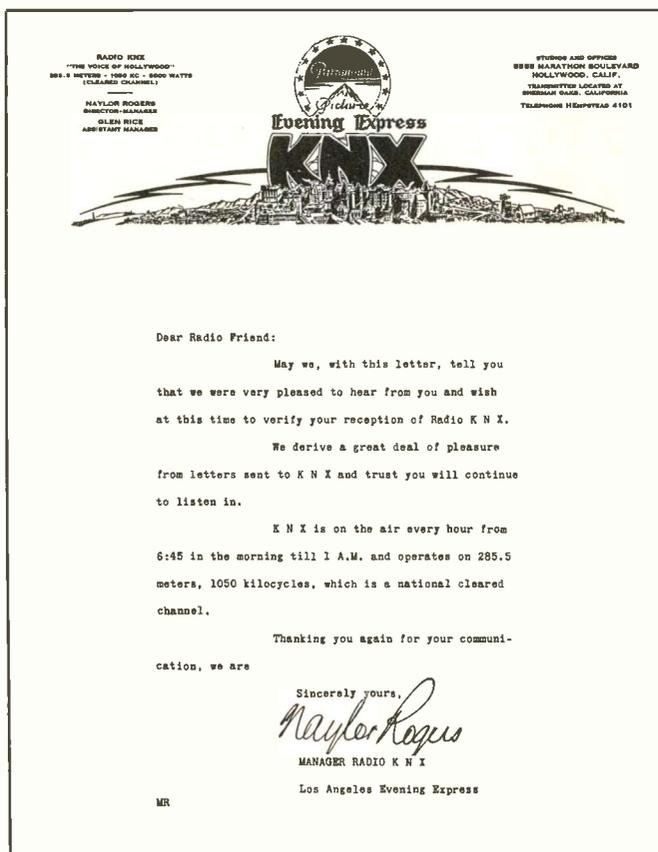
October 10, 1924, this station evolved into 100 watt KNX on 833 kHz, later on 890 kHz, and (in 1928) moving to 1050 kHz. In 1924 it was purchased by Guy Earl, who owned the *Los Angeles Evening Express*. The *Express* operated KNX from the lot at Paramount Pictures through 1931, when it was sold to CBS. In the early 1940's, the frequency was shifted to 1070 kHz.

The station's power output continually increased, going through various stages such as 500 watts, 5 kW, 10 kW, 25 kW, and, in

1938, to its present 50 kW. KNX always took pride in staying on the cutting edge of technology, although sometimes it was a double edge.

For instance, in 1929, when KNX went from 500 watts to the 5 kW power level, it was the culmination of months of promo and publicity build-up heralding the installation of the equipment. The cue for engineer Harold Isbel to throw the switch was announcer Harry Von Zell reading a glorious tribute to KNX's engineering achievements, followed by the dramatic word, "Listen . . ."

Von Zell read his statement and pronounced his impressive cue in sonorous tones. There was a slight pause as Isbel

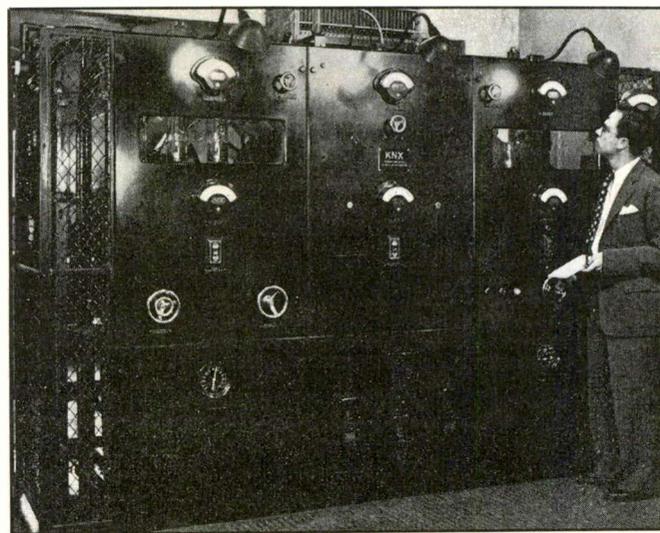


This undated veri letter from KNX had to be from 1931, or earlier. (Courtesy Joseph Hueter, PA.)

This is the 5 kW driver for the KNX 50 kW transmitter that went into operation in 1938. Examining it is Allen Packard, the Maintenance Supervisor for CBS' West Coast operations.



The beautiful KNX studios and offices that were built in 1938.





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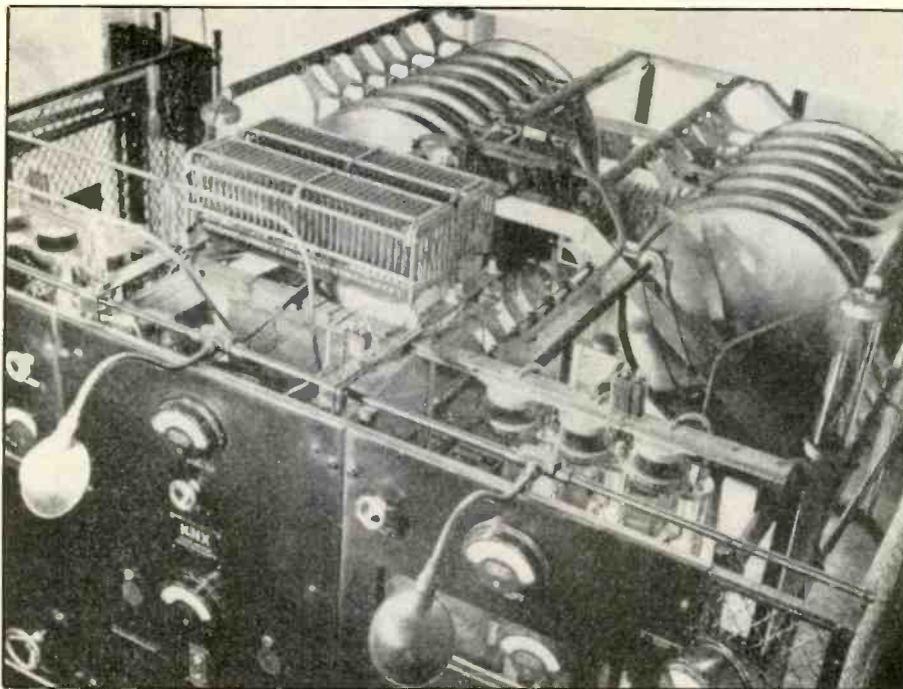
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A peek inside some of the KNX 50 kW transmitting gear installed in 1938.

threw the switch. Fate can be most cruel when tempted at moments such as this. Something still wasn't working properly in the new transmitter at Sherman Oaks, despite all of the tests and preparations. The listening audience was rocked with an ear-splitting feedback howl that cleared the dust out of many loudspeakers and sent household pets running for shelter behind couches.

The creaky old 500 watt rig was hurriedly fired up again and switched back into service, amidst many memos and red faces at KNX. Several weeks later, the kinks were ironed out of the 5 kW rig and it was quietly put into use without any further fanfare or mention. Even so, the signal pattern of the new antenna system wasn't right, with the major lobe of the signal directed away from Los Angeles and into other areas of the west. The Los Angeles area received only a puny signal. It took two more years of re-engineering and tinkering to get the signal pattern properly adjusted.

The 50 kW installation that was put in service in August of 1938 was eighteen miles from the studios. It was on 37 acres in the El Nido section of Los Angeles, near Redondo Beach. A 490-ft. Ideco guyed tower was put into use. The transmitter was an RCA Model 50-D.

Simultaneously with the construction of this facility was the building of a magnificent new KNX studio and office complex. This was put up covering a complete square block at Columbia Square, on Sunset Boulevard in Hollywood. The site was the very spot where the motion picture industry first took root in Hollywood (in October of 1911).

The KNX studio complex was built with a dominant five-story building that quickly became a local landmark. The complex was

designed as more than the KNX studios alone, it was the western headquarters of CBS. Therefore, it had network control facilities, seven studios, two audition rooms, a 1,050 seat theatre, laboratories, and executive offices. The entire construction employed the latest acoustic designs, plus sound and vibration absorbing materials and techniques.

When the studio complex was opened on April 30, 1938, it was an event befitting Hollywood's golden era. From 6 a.m. that day until well after midnight, a program went out from the new studios. It was sent coast-to-coast, over Canadian stations, and via shortwave to Europe and South America. Some of the personalities who participated were Al Jolson, Eddie Cantor, Cecil B. DeMille, Edward G. Robinson, Joe ("Wanna buy a duck?") Penner, Jean Hersholt, Frances Langford, Martha Raye, and comic Parlyakarkus.

Presently running an all news format, great KNX is still owned by CBS. It continues as a long-time resident of the Southern California airwaves on 1070 kHz with its potent 50 kW clear channel signal. And it's still located on famous Sunset Boulevard. Happy seventieth birthday, KNX. Keep on keepin' on!

Propaganda, & Proud!

The word "propaganda" has taken a bad rap, no doubt thanks to the negative connotations it was given during WWII by Dr. Goebels and the Nazi war machine. Hasn't been able to hold its head up since then. It hardly deserves being tossed in the dumpster.

A QSL sent to us by George F. Franklin, WOAV, Kansas City, MO recalls an era

when the word was used proudly and properly. This is a card dated June 1, 1940 confirming reception of shortwave station PSH, 10220 kHz, in Rio de Janeiro, Brazil. The QSL observes that the PSH was operated by "The National Department of Propaganda." This card was originally sent to a DX'er named Carl M. Sare (now long deceased). George purchased a lot of radio odds and ends at a garage sale and found this QSL among the items.

PSH ran the "Brazilian Hour" every Monday night in English with news and pop music. It was operated by the federal government as the shortwave outlet for a mediumwave network of thirty stations in various states of Brazil. Although the QSL card doesn't specify the power, *Radio Station Treasury* lists it as 12 kW. PSH operated on the same frequency until the late 1960's as *Agencia Nacional*.

This QSL reminds us how the meaning of words changes with the passage of time. Can you just picture the words "National Department of Propaganda" on QSL's from any of the world's government-operated stations these days?

Marconi Calling

Our story about Marconi last May showed an early transmitting facility we could identify only as being located by the railroad tracks in Aldene, NJ. We asked if any of our readers knew where this community was or is, or what it might be called presently.

Many readers in New Jersey knew, and wrote to advise that Aldene was a railroad location (junction of the Jersey Central Railroad and Lehigh Valley Railroads) name and not an official name of a community. It was an area on the west side of Roselle Park, exactly where Exit 137 of the Garden State Parkway now exists. The Marconi installation there had been the company's only US manufacturing facility. When the Marconi assets were sold to RCA, this plant was retained and leased to GE, since RCA was not permitted to manufacture equipment, according to the terms of the sale.

Once we learned Aldene was identical with Roselle Park, NJ, it clarified several things. Those towers in the photo were first in use by Marconi under the Experimental license 2XR. More importantly, they were later used for RCA's first real venture into broadcasting, WDY, which ran 500 watts on 833 kHz.

WDY's clock had started running indirectly, and under the call letters WJY, a one-day license issued for operation only on the sweltering Sunday afternoon of July 2, 1921. The place was an arena called "Boyles Thirty Acres," Jersey City, NJ. Jack Dempsey, the heavyweight boxing champ, and Georges Carpentier, the handsome European champion and "orchid man" of France, entered the ring at exactly 3:16 p.m. It was called the "Battle of the Century," and the match was the historic broadcast over WJY, with a ringside blow-



There was a time when "propaganda" wasn't a nasty word. This 1940 QSL from Brazilian station PSH thought it accurately described their programming.



This Marconi facility at Aldene, NJ has finally been identified by our sharp readers. What a story this building has to tell!



Want one of these historic KM1CC Marconi 75th Anniversary QSL cards from 1978? One of our readers has a small supply of them that he is willing to share with other readers. See this month's column.

by-blow description given by Major J. Andrew White. White was a radio hobbyist and the editor of *Wireless Age Magazine*.

No, this wasn't the first broadcast ever sent out over the airwaves. Broadcasting (more or less) had actually started about 1920 by experimental, ham, and unlicensed stations. These broadcasts included 9XM/WHA, 8XK/KDKA, WWJ, KQW, and others. They were experimenting with voice transmissions and scratchy phono-

graph records. An earlier broadcast of the Harding-Cox election returns had kindled some interest in radio. However the audience listening to the Dempsey fight was estimated at between 200,000 and 300,000. The fight was received by hams and played for local audiences located in some 200 theatres and lodge halls, ballrooms and barns, from Maine to Florida, and as far inland as West Virginia. The WJY broadcast was the brainchild of RCA's General Man-

ager, David Sarnoff, who had a long-held dream that radio should become the national medium for sports and entertainment.

Sarnoff had asked the US Navy to allow GE to loan him a new 500 watt long range voice transmitter for WJY's use during this fight. GE just completed building the transmitter in Schenectady, NY. The Navy approved the idea, and GE even sent an engineer to help install and operate the unit at a Lackawanna Railroad shack near the

WLW-T TELEVISION SCHEDULE
Week of November 15, 1948

MON	4:15-4:30	Curtain Time
	4:30-5:00	Kitchen Klub (Kelvinator Corp.)
	5:00-6:00	Junior Jamboree
	7:20-7:30	News - Howard Chamberlain
	7:30-7:50	Video Varieties
	7:50-8:00	Newsreel Theatre (Camel Cigarettes)
	8:00-8:15	Pointers on Pets
	8:15-8:25	Looking Ahead
	8:25-8:30	American Creed - f
	8:30-8:45	Nothing for Granted - Brenton Grant
	8:45-8:52	Cartoon - f
	8:52-9:00	Underground Farmers - f
	9:00-9:10	GE Presents NBC Newsreel - Gen. Elec. Co.
	9:10-9:40	Syrrian Chanters
TUE	4:15-4:30	Curtain Time
	4:30-5:05	Kitchen Klub (Kelvinator Corp.) Juengling Meats - Speed Queen Ironer
	5:05-6:00	Junior Jamboree
	7:20-7:30	News - Howard Chamberlain
	7:30-7:50	Ernie Lee
	7:50-8:00	Here Comes the Circus - f
	8:00-8:30	Who Am I? (Greater Cin. Pontiac Dealers)
	8:30-8:45	Swanee River Boys (Schoenling Brewing Co.)
	8:45-9:00	Musical Featurette; Isle of Spice - f
	9:00-9:05	Barbarossa Sports Album (Red Top Brewing Co.)
	9:05-9:30	Highway for Oil - f
WED	4:15-4:30	Curtain Time
	4:30-5:00	Kitchen Klub (Kelvinator Corp.)
	5:00-6:00	Junior Jamboree
	7:20-7:30	News - Peter Grant
	7:30-7:50	Cartoons - f
	7:50-8:00	Newsreel Theatre (Camel Cigarettes)
	8:00-8:05	Barbarossa Sports Album (Red Top Charades Brewing Co.)
	8:05-8:30	Mr. TV
	8:30-9:00	Top Flight Tennis - f
THU	4:15-4:30	Curtain Time
	4:30-5:05	Kitchen Klub (Kelvinator Corp.) Juengling Meats - Speed Queen Ironer
	5:05-6:00	Junior Jamboree
	7:20-7:30	News - Peter Grant
	7:30-7:55	Hobby Show
	7:55-8:05	Musical Featurette - f
	8:05-8:20	Football Closeups
	8:20-8:30	World We Want To Live In - f
	8:30-8:45	In The Bag; Fire! Fire! - f
	8:45-9:00	Swanee River Boys (Schoenling Brewing Co.)
	9:00-9:30	Gulf Road Show (Gulf Oil Company)
	9:30-10:00	Bigelow-Sanford Floor Show
	10:00-10:20	INS Newsreel (Hudepohl Brewing Co.)
FRI	4:15-4:30	Curtain Time
	4:30-5:00	Kitchen Klub (Kelvinator Corp.) Juengling Meats
	5:00-6:00	Junior Jamboree
	7:10-7:30	Philco Touchdown - f (Philco-Dreidame)
	7:30-7:50	Dance Time With Nancy Wright
	7:50-8:00	Newsreel Theatre (Camel Cigarettes)
	8:00-8:15	Swanee River Boys-Tulip Festival Farms
	8:15-11:15	Wrestling (Geo. Wiedemann Brewing Co.)
SAT	2:15-4:30	UC vs. Tulane at UC (Greater Cin. Dodge Dealers)
	4:30-5:30	Alios the Badman - f
	5:30-6:00	Football Review
	7:25-7:30	Musical Featurette
	7:30-8:30	Midwestern Hayride - Bavarian Brewing Co.)
	8:30-9:38	Mr. Celebrity - f
SUN	2:15-4:15	Purcell vs. St. Xavier at XU Cincinnati Enquirer
	4:15-4:30	Travel Time
	4:30-5:00	Visit with Cincinnati Churches
	7:20-7:30	Sunday Review of the News - Disney Hats
	7:30-8:30	House of Errors - f
	8:30-9:00	Olympus Minstrels
	9:00-10:00	Philco TV Playhouse -Philco Corp.
	10:00-10:15	It's Baldwin By Request (Baldwin Piano Co.)

An entire week's worth of TV sked on a postcard! That's what Cincinnati's WLWT had in 1948, and it included their test pattern times.

line's terminal in Hoboken, NJ, about two and a half miles from ringside.

The transmitter site had been selected because it was adjacent to a large abandoned antenna tower the railroad had used in 1914 for testing (tests resumed in March, 1922) of wireless train-dispatching. A telephone line was leased from the arena to the transmitter. The broadcast was widely publicized by Marconi's National Amateur Wireless Association, and in *Wireless Age* magazine, so that hams could tune it in.

Some 300 old "tulip" phonograph horns were purchased at a junk yard for 30 cents each and attached to hearing aids to be used as makeshift sound amplifiers. These devices were mailed out, with printed operating instructions, to all ham operators who had written in to say that they would be playing the fight in public places. Hams volunteered their services, and had to pay for the antennas and other equipment they were using in theatres and elsewhere. A small admission fee was charged, all of which was donated to charity.

Luckily, the Dempsey fight lasted only four rounds. At the end of the match, J. Andrew White succumbed to heat stroke due to the strain of his ringside duties in the baking sun. Even worse, a minute after the fight ended, the WJY transmitter blew up.

This was the first "big" radio broadcast, and was a highly publicized and overwhelming success. The project had cost RCA only about \$1,500 of its own money, but it went down in history as the one event that put radio on the map as something everybody wanted in their own home. It put David Sarnoff in a position to convince RCA that the company needed to be in the broadcasting business, and in cosmopolitan New York City. Westinghouse was opening station WJZ in Newark, NJ, just across the river from New York City, with its signals aimed at New York City listeners. WJZ's regularly scheduled broadcasts began with the World Series on October 1, 1921, the day after its license was issued.

The license for RCA's WDY had been issued earlier, on September 19, 1921. Working as quickly as possible, and purchasing the blown WJY transmitter from the Navy, RCA put up station WDY at the Marconi/GE/RCA facility in Roselle Park, NJ. But the earliest they could prepare the studios, then negotiate for, buy, rebuild, install, and get the transmitter operating was December 14th, 1921. WDY was under the direction of WJY's J. Andrew White.

However, by the time WDY went into operation, Westinghouse's WJZ had become a sensation with a firm lock on the New York audience. It had a ten week head start on WDY and also a strong signal. WJZ was New York's first commercial broadcaster, and the first broadcast station in the USA to have live musical programs. WJZ had live stage broadcasts of stars such as Ed Wynn, and even presented complete operas. WDY was seven miles more distant from

New York City than WJZ; the WDY signal was feeble in New York. WJZ soon announced that they were going to open studios in New York City so that performers would no longer have to travel to downtown Newark by the station's limousine. A problem WDY faced was convincing big name talent to leave New York City and travel by train to its rail yard studios. So, WDY mostly played phonograph recordings. Sarnoff was disappointed and embarrassed by the WDY fiasco.

On February 24, 1922, after only two months of tenuous operation, Sarnoff abruptly shut down WDY before it had a chance to give RCA a bad name. It was one of the shortest-lived broadcasting stations in American history. If you can't beat 'em, join 'em. The day WDY went dark, RCA's wiley Sarnoff revealed that he had just finalized arrangements with Westinghouse to share in half the operation of popular WJZ. J. Andrew White and the rest of the former WDY people went on staff WJZ. By 1926, RCA fully owned WJZ (660 kHz, later 770 kHz), and for years it was the key station in RCA/NBC's Blue Network (which later evolved into ABC). This station is now WABC with 50 kW on 770 kHz.

In 1923, RCA started a second New York City station, a 500 watt broadcaster using the old WJY callsign. It was located in Aeolian Hall, and dedicated to presenting lectures, classical music, concerts, and "quality" programming (as opposed to WJZ's "pop" programming). WJY was a commercial flop and didn't last very long. In August of 1922, AT&T opened WEAJ in New York City. WEAJ had 500 watts on 610 kHz. In 1926, RCA bought WEAJ and for many years ran it as their second New York City station (later with 50 kW replacing WJZ on 660 kHz under the callsigns WEAJ, WRCA, then WNBC). It was the flagship station of NBC's Red Network. It went dark a few years ago when WFAN (ex-WHN, ex-WMGM) moved to 660 from 1050 kHz.

WEAJ had been AT&T's second try at putting on a station in New York City. Their first try, WBAY (built in July of 1922), was the engineering nightmare that first demonstrated something to be considered when locating a broadcast transmitter in a large steel-frame building (24 Walker St.). WBAY's transmitting wavelength (about 400 meters) bore a dissonant harmonic relationship to the resonant steel framework of the building, so the signal pattern was distorted and stunted. AT&T fired up WEAJ a month later.

The old Marconi/WDY building still stands. It's now a factory called the Romerosecki Brothers Building where old clothes are processed into industrial rags. We appreciate those who wrote to inform us about Aldene, NJ. Special thanks to Ptl. William Masterson, of the Roselle Park Police Dept., NJ; also to Norman H. Williams, P.E., K6BI, of San Rafael, CA.

Among the other mail received in re-

sponse to the Marconi story was a letter from attorney Duncan Kreamer, W1GAY, who is President of ham radio's *Old Old Timers Club*. He's a Marconi buff who runs the Marconi Library, and was connected with the KM1CC Marconi Special Event ham station operation in 1978.

We were honored to learn from Mr. Kreamer that he has added our May article to the Marconi Library. Mr. Kreamer still has some historic KM1CC QSL cards left, which he has offered to send to any readers who would like one (while his supply lasts). If you would like one, please furnish Mr. Kreamer with a self-addressed, stamped (US 29 cents, Canadian stamps won't work in the USA), return envelope. Address your request to: Duncan Kreamer, Esq., W1GAY, Box 637, Vineyard Haven, MA 02568. These are very attractive, showing a photo of a young Marconi seated at his spark apparatus. Get one while he's still got some.

Lastly, at the beginning of the Marconi piece, we noted that he was "arguably" the inventor of radio. We said this because there has long been controversy over claims by other inventors and also historians, as to who was really first, and whether Marconi's works incorporated the ideas of others who worked before or simultaneously with him. We even listed a few names from among the many others who have been suggested as entitled to the title "inventor of radio." We put in this disclaimer because we wanted to be impartial. But, to mention Marconi without observing that he is generally considered to be one of those claimed to have invented radio, would be pretty silly.

Still, that was not good enough. No matter what kind of disclaimer was presented, at least one letter was bound to arrive berating us for falsely crediting Marconi with inventing radio and not it's true inventor, Nikola Tesla. In fact, two people wrote in. Gregory Cook, KC6USO, of Chico, CA called our mention of Marconi a "fairy tale." Chris Johnson, of the Santa Cruz Center for the Transforming Arts, in CA, said our article was part of "one of the most tremendous cover-ups of all time . . ." Johnson hoped that someday our magazine will give Tesla suitable coverage that acknowledges and summarizes his work. In fact, *POP'COMM* did run a major story about Tesla in the April '85 issue. It was far longer and more in-depth than what we had presented about Marconi last May.

We still feel that no reasonable interpretation of what we wrote in May could have been construed as slighting Tesla, or placing a wreath on Marconi, or anybody else.

Ohio Doings

A letter from J. Theodore Brown, of Dayton, OH tells us that back in 1948, WLWT was the only TV station broadcasting in the Cincinnati-Dayton area. It operated only a few hours each day, and newspapers didn't list its schedule. The relatively few viewers within reception range of WLWT could call

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Frequency range: 29-54, 118-174, 406-512, 806-912 MHz. Excludes 823.9875-849.0125 and 868.9875-894.0125 MHz.
The Bearcat 200XLT sets a new standard for handheld scanners in performance and dependability. This full featured unit has 200 programmable channels with 10 scanning banks and 12 band coverage. If you want a very similar model without the 800 MHz. band and 100 channels, order the BC 100XLT-A3 for only \$179.95. Includes antenna, carrying case with belt loop, ni-cad battery pack, AC adapter and earphone. Order your scanner now.

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Bands: 29-54, 118-174, 406-512, 806-912 MHz. Now...nothing excluded in the 806-912 MHz band.
The Uniden 800XLT receives 40 channels in two banks. Scans 15 channels per second. Size 9 1/4" x 4 1/2" x 1 1/2". If you do not need the 800 MHz. band, a similar model called the BC 210XLT-A is available for \$178.95.

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Bands: 29-54, 116-174, 406-512, 806-956 MHz.
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WSMK RADIO STATION

STANLEY M. KROHN, JR.

Radio Publicity

TOWER STUDIO—U. B. BUILDING
DAYTON, OHIO

December 1, 1931.

Mr. Joseph Leo Hunter,
1802 W. Columbia Ave.,
Philadelphia, Pa.

Dear Sir:

Thanks very much for your letter of November 3, 1931. We are glad to tell you that your verification of our program is correct.

On December 12th, we are running a special D. X. Program from 12:00 midnight to 3:00 A. M. Eastern Standard Time. We cordially invite you to tune in.

Thanking you very much and hoping we may hear from you often, we are,

Yours very truly,
WSMK RADIO STATION

WTK:SMK

Per *Stanley M. Krohn, Jr.*

WSMK sent out this veri letter in 1931 to DX'er Joe Hueter. This Dayton station began as a 5 watt experimental transmitter in 1921. Today you may recognize it as 5 kW station WING.

A W9XZK mobile unit. The year was 1938. The frequency was 33.10 MHz. The arrow points to the cradle for the telephone hand-set used by the Chicago Park District Police.



the station and ask to be added to their mailing list.

Once on the mailing list, the station would send out a postcard containing the entire week's schedule, including the hours that the test pattern was on. Programming was run between about 3 p.m. and 9 or 11 p.m., except for the test pattern run during the dinner hour when they figured nobody was watching, anyway. The programs leaned heavily on cooking shows, travelogues, local sports, amateur entertainment, and news.

Ted sent us several of these postcards. He recalls how handy they were when watching his father-in-law's DuMont TV set. That set covered the FM band, and even had TV Channel 1 on the dial.

Ted is also interested in knowing something about early broadcasting in Dayton, OH. He asks if we have any knowledge of a station WFO located in the Rike-Kumler department store. Although it was before his time, he recalls his dad mentioning that WFO once existed, although he has never heard anyone else ever mention the station, which he understands was Dayton's first station.

He also recalls that, many years ago, he saw a listing of broadcasting stations that showed a station at Nushaug's Poultry Farm, New Lebanon, just outside of Dayton.

We can confirm WFO, which was operated in 1922 by the Rike-Kumler Co., Main and 2nd Streets. As Ted pointed out, this store later became known as Rikes, then Shillito-Rikes, and is now Lazarus. The station in New Lebanon was WPG, which operated on 833 kHz in 1923. Our informa-

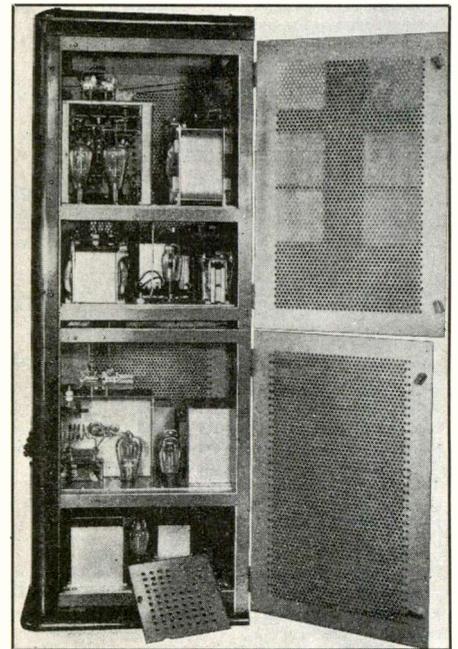
tion shows the licensee name spelled Nushaug Poultry Farm.

Other early Dayton stations included WABD, operated at Parker High School. That one ran 5 watts on 1000 kHz in the early 1920's. In May of 1921, there was 5 watt 8XAX, operated by Stanley M. Krohn, Jr. By 1924, 8XAX had become known as WDBS, with 5 watts on 1060 kHz, operated by Krohn's SMK Radio Corp. In 1926, it had evolved into WSMK, 200 watts, on 1010 kHz (moved to 570 kHz in late 1928) from the Hotel Gibbons.

When the government told WSMK it could increase its power in 1926, the station worked hard to meet its announced deadline for the power increase. When it seemed obvious that the deadline wasn't going to be met, the station announced that transmitter engineer Wyle Wenger had received a bad electrical shock while installing the equipment, and that he had been rushed to the hospital. The story wasn't true, but it was plausible and it bought Wenger the extra couple of weeks he needed to work on the equipment in order to increase WSMK's power.

By 1930, WSMK had moved to the Tower Studio of the U.B. Building, and was operating on 1380 kHz. During May of 1939, WSMK was purchased by Charles Sawyer's Great Trails Broadcasting Corp. (which still owns the station) became WING and went up to 500 watts. WING increased to 5 kW and switched to 1410 kHz in 1941; it remains on that frequency with 5 kW.

WING pegs its origins at the start-up date of May 24, 1921, which was when Experimental 8XAX began.



The RCA 100 watt VHF transmitter used for the W9XZK operations ran AM mode from the tower in Chicago's Field Building.

Movin' On Up

We have often mentioned how public safety systems shifted from frequencies just above the AM broadcasting band to newly opening bands above 30 MHz. The largest surge of activity in this area began in the late 1940's, after technological developments

from WWII became reflected in commercial radio equipment. One of the main advantages was that some systems operating between 1600 and 2500 kHz consisted of base station dispatchers talking to mobile units outfitted with receivers alone. The systems above 30 MHz were fully two-way.

Still, it all didn't happen overnight. Pioneer two-way VHF systems had been tested for many years, even before WWII. They were a cause for considerable interest within communications circles. One such early system was licensed in 1938 as Experimental station W9XZK, with 100 watts on 33.10 MHz.

This system was placed in operation by the Chicago Park District Police, in Illinois. It was used in addition to the Chicago Police Department's main system, which consisted of three one-way dispatching transmitters on 1712 kHz, licensed as WPDB, WPDC, and WPDD (in the 1950's, these were known as KSA954, KSA955, and KSA956).

The W9XZK transmitter was located in the tower of the Field Building, on West Adams Street, in the Loop. This was one of the highest points in the city, and there they mounted a vertical "J" type antenna. The receiver was located a half mile away at Park Police headquarters in Grant Park. The HQ link with the transmitter was via leased landline.

In the Field Building, W9XZK used an RCA Type ET-5017 exciter with a type AA-5019 Amplifier. It was a rack-mounted job, fully enclosed. The transmitter used a type 800 intermediary power amp, and four 800's push pull power amplifier. The system operated in AM mode. Reception reports (via skip) were received from as far away as Wyoming, Texas, California, and Pennsylvania.

Mobile units all had 15-watt transmitters and were able to contact the dispatcher from any part of the city. A standard telephone handset was used, with a cradle being mounted on the dashboard. Taking the handset from the cradle turned on the tube filaments. Pressing a button on the handset put the carrier on the air and also muted the receiver.

An unusual feature was that mobile units in this system each had two antennas. The transmitter was connected to a vertical antenna mounted on the rear frame of the vehicle. The receiver was operated from a horizontal antenna on the vehicle's roof. We guess they were still learning about cross-polarization.

It was from several of these early experimental VHF two-way systems that the first lessons were learned for what was to come as a commercial reality years later. We think it's good from time to time to remind ourselves of those folks whose early efforts meant so much to the development of land mobile communications.

We hope that you can join us again next month for a leisurely and relaxing stroll through the POP'COMM archives. ■

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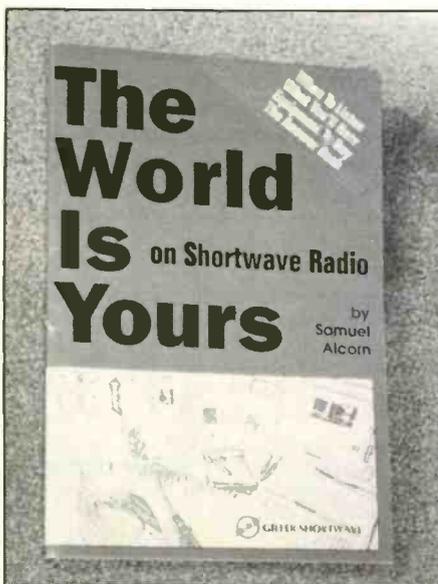
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The World Really Is Yours

With each new world crisis (and there seems to be no shortage of them), the public becomes further exposed to shortwave (or, as many call it, *world band*) radio. During the Gulf war, things got so frenzied that shortwave portables were selling as quickly as stores could put them on their shelves.

Most of this equipment went to people who were vitally interested in tuning in on the propaganda war raging on shortwave, or pick up every drop of information about a conflict in which friends or family members were involved as members of the military, or just to be about 200% more informed than possible by following the domestic media. And, yes, the literature furnished with most equipment does provide the beginning listener with just enough basic data to tune in some of the most powerful overseas international broadcasters. But that's about all.



Sam Alcorn, KB2BXH, fills in the information gaps with the 3rd Edition of his excellent book, *The World Is Yours*. In his 80-page illustrated handbook, Alcorn discusses the major aspects of shortwave listening, right from how to select a receiver to what kind of antenna you need.

His book is directed at the beginner, the person who understands that world band radio offers great potentials, but fears that perhaps it's going to be far too technical for participation by the average person. Sam proves this isn't true. His book avoids the jargon and technical gobbledygook that so often scares off newcomers, yet succeeds in explaining it very well and retaining the mystique of sitting in your home and hearing the voices and ideas of people on the other side of the world.

He tells how to tune in English Language

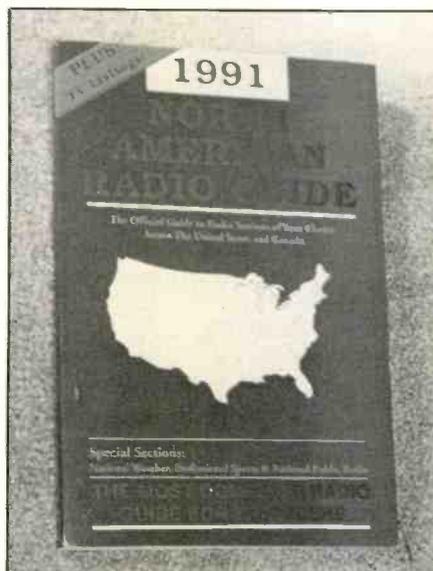
broadcasts from many nations, then sprinkles in information on listening to aircraft, ships, hams, and many other types of fascinating stations. Alcorn is a fine wordsmith. He knows how to always keep it interesting and informative without ever dragging the reader over the line and clobbering him/her with so much that it seems overpowering.

This is just the ticket if you've recently begun in radio and are still a little confused about how to make your way through the early stages. It's also a fine book to give to someone (of any age) whom you think would really get a kick out of shortwave if only they could be gently given some non-intimidating information on what it has to offer.

The World Is Yours, 3rd Edition, by Samuel Alcorn, is available from Gilfer Associates, Inc., P.O. Box 239, Park Ridge, NJ 07656. It is \$9.95, plus \$3 for UPS shipping.

North American AM/FM/TV Station Guide

Remember the old *Whites Radio Log* and the *Vane Jones Log*? They used to be the popular priced way DX'ers kept track of broadcasters in the USA and Canada. They're history now. But, here comes the 1991 edition of the *North American Radio Guide* to supply station information at a reasonable cost.



This guide has more than 12,000 entries, and it covers all AM/FM/TV stations at press time in the USA and Canada. Listings for AM/FM stations are arranged by state (or province), then by city. Information provided for each station includes call letters, frequency, and programming format from 24-categories (such as rock, talk, religious, oldies, country, Spanish, etc.)

There are special sections, such as the one showing all National Public Radio affiliates. Another section lists the four major professional sports (baseball, football, basketball, and hockey) on AM/FM stations, and which stations cover which teams. This section also includes listings of the CBS Radio Network stations carrying nationally broadcast sports events.

A special National Weather section helps you find the latest weather conditions as reported on the AM/FM bands. These listings are categorized by Interstate and major highway numbers, so if you're in a vehicle you can quickly access this important information no matter where you're located.

The TV station listings indicate all stations, and indicate which are independent, which are PBS, and which are affiliated with the commercial networks.

This attractive book is well prepared and organized. It's easy to use, and contains an enormous amount of information in its 158-pages. It's useful for all radio listeners, whether at home or on the go in a car, RV, or truck, or visiting new areas for business or on vacation. It's a great source of helpful information, whether you're a DX listener, sports fan, music lover, or simply a casual listener who wants to have a concise, handy, and inexpensive guide to everything there is to hear on AM/FM radio, or see on TV.

The late Vane Jones, and Charles DeWitt White, would have been proud to see that the noble traditions they so diligently pursued have been so well maintained in this popularly priced reference source.

The North American Radio Guide, 1991 Edition, is only \$7.95, plus \$3.50 for UPS delivery (sent by 1st Class mail to AK, HI, PR, APO, FPO, and Canadian addresses). Residents of NY State, please add 60 cents sales tax. Order it from CRB Research Books, Inc., P.O. Box 56, Commack, NY 11725.

Handyman Special?

Are you aware that there are lots of people who delight in locating, buying, and restoring broken old radios and changing them into working antiques and classic radios? Some ratty looking cheesebox covered with cobwebs found at a tag or yard sale, or in a corner of granny's barn, can be put back into shape and turned into something that is elegant, collectible, and perhaps quite valuable. And it can be done with a lot less effort than you might imagine. On the other hand, a few critical wrong moves in the process, and the set could be ruined.

It's a lot of fun, and it doesn't take a lot of skill, but you do have to know what to do (and what not to do). There is a special satis-

faction in hand winding coils, soldering taps and lugs, and fabricating the simple components that went into those old sets but which are mostly no longer commercially available.

Old Time Radios! Restoration and Repair, by Joe Carr, is a 256-page fully illustrated handbook about the history, theory, and practical operation of old time radio receivers. Also, the detailed instructions and schematics needed to repair, rebuild, and restore them to their original condition.

In addition to covering the pre-1950's vacuum tube sets, author Carr provides transistor theory and practice that applies to many of the radios produced in the 1950's and early 1960's.

Carr gives lots of detailed coverage of power supplies, capacitors and other components, AM detectors, test equipment, and special needs of radio displaying water damage.

Whether you just want to fix up a family heirloom, or if you want to embark upon this as a new aspect of your hobby, you'll find Carr's book to be a wonderful storehouse of information regarding the restoration of radios from the past. Plenty of photos, diagrams, and illustrations make it as easy as pie.

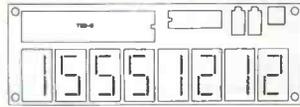
Old Time Radios! Restoration and Repair is TAB book number 3342. It costs \$16.95 from TAB Books, Blue Ridge Summit, PA 17294-0850.

In Addition . . .

The Toronto Scanner Directory, 1991, by Phillip Boucher, VE3BOC, covers the Toronto, Peel, York, and Durham areas of Ontario, Canada. This is a 40-page book containing public safety frequency listings, plus lots of information on the systems used in those areas. This well done publication is \$10.00, plus \$2 postage. Ontario residents, please include 80 cents sales tax. Order it from Joe Skyfoot Word and Music Creations, P.O. Box 37, Station N, 2930 Lakeshore Blvd. W., Etobicoke, Ontario, Canada M8V 3S4.

RVACS Systems Scanner Guide for Oklahoma has the bare bones makings of a decent scanner guide. Yes, it contains some good frequency listings. But it looks to us like far too much of this publication (from a source in Tulsa, OK) is padded out with things like crime statistics charts and similar. Plus, there's an overkill of catalog material showing equipment offered by its publisher. In addition, it even reprints (without attribution, and with the author's name removed) several pages we recognized as copyrighted textural material originated by and belonging to the Cellular Security Group of Gloucester, MA. If this had been offered as a free catalog containing frequency listings and other incidental data, this would have been highly recommended. However, we are disinclined to suggest that anybody shell out \$15.00 for a catalog in the form of what looked to us like a goose fattened for market.

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LISTENING POST

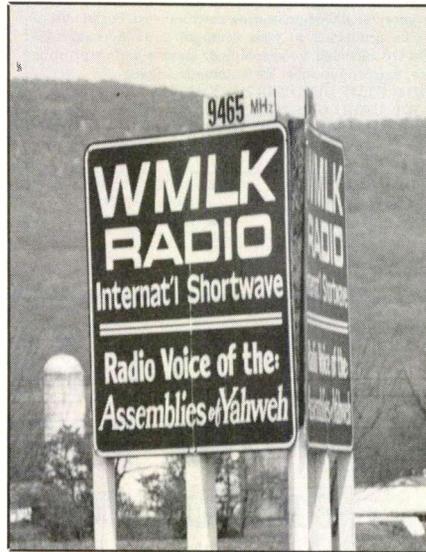
BY GERRY L. DEXTER

WHAT'S HAPPENING: INTERNATIONAL SHORTWAVE BROADCASTING BANDS

You have a better shot, now, at a country which is on the "most wanted" lists of most North American DX'ers. For years, the Bhutan Broadcasting Service tickled the ether with a featherweight 400 watts, which no one in North America could bag. Then, in what was a giant step forward, a new 5 kW transmitter came on the air a couple of years ago and improved the situation—marginally. A few DX'ers managed to log Bhutan on 5023, but it was still a very tough proposition. Now, things have brightened again. BBS has brought a 50 kW transmitter into play, so the coming fall-winter DX season is likely to see a great many more logs of Bhutan by DX'ers here and around the world. The frequency has now been adjusted to the assigned 5025. The (for us) morning schedule of 1100-1500 offers the best opportunity. BBS programming includes English at 1415-1500 but that will be too far into daylight for most of us to get any signal. The downside of all this is that none of those who've logged the station in the past couple of years have been able to talk the station into a QSL! Don't let that stop you from trying, though. If you get a good log on the Bhutan Broadcasting Service send your report to the station at PO Box 101, Thimpu, Bhutan. Include two International Reply Coupons for return postage. And good luck!

It seems there's all kinds of new or planned shortwave activity coming out of Central America and the Caribbean, areas which have been largely dormant on shortwave for many, many years.

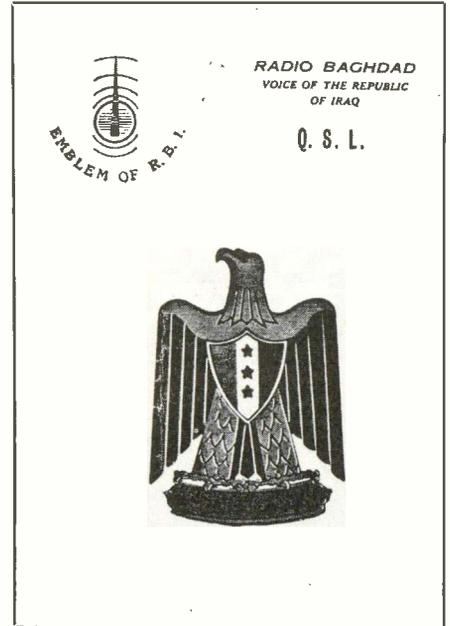
The former Radio Impacto transmitters in Costa Rica have been purchased by Adventist World Radio for use by its Radio Lira (and wouldn't you love to know to whom the check was made out!) Four transmitters are involved: two 20 kW shortwave units



Tom Kneitel snapped this photo of shortwave station WMLK's sign, which stands right by the station's antenna alongside the interstate in Bethel, PA. The religious station is on 9465 kHz.

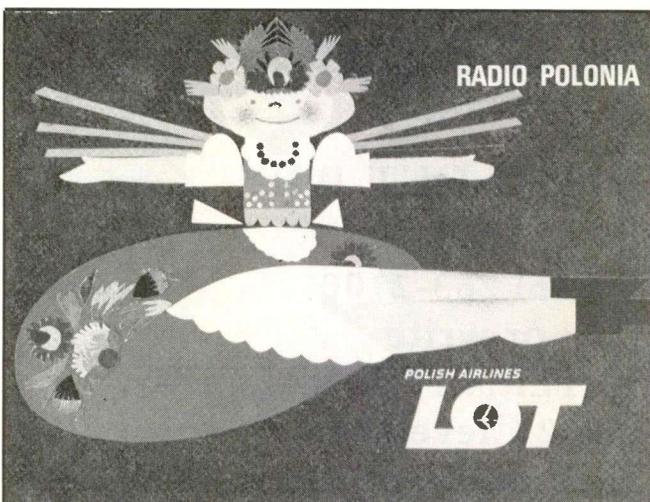
and two 50 kW mediumwavers which will be converted for shortwave use. The first of the ex-Impacto transmitters should be on the air yet this year if they haven't already shown. Watch these frequencies for increased activity by Radio Lira: 5030, 6150, 13750 and 15460, in addition to the currently used 9725 and 11870.

We may have a new country on the air down the road. Rev. Gene Scott, who can be heard evenings on KVOH-9785, says



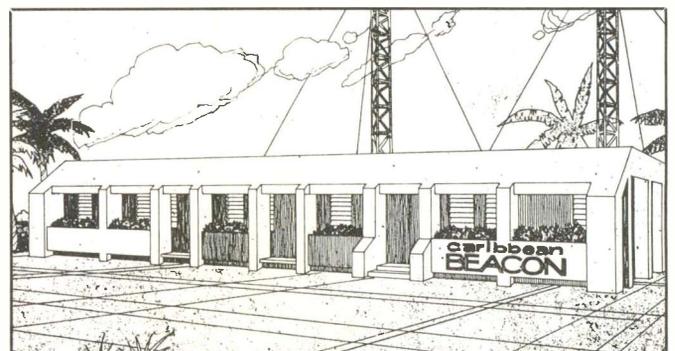
Radio Baghdad is still active on shortwave, using 3980, 4600, 8350 and 15605.

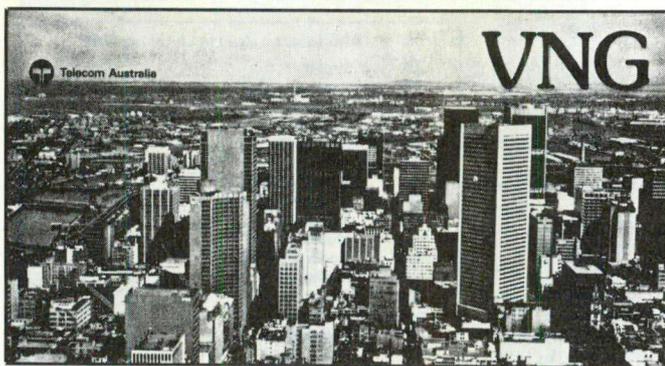
Anguilla's Caribbean Beacon (690 and 1610 mediumwave) has been purchased by the religious organization Westcott Christian Center/University Network, for which he is the main media person, and there are plans to add shortwave to the facility. Still, let's count that as a "maybe" for now and put it a year or two down the road. Thanks to Dan Ferguson's "Listener's Notebook" column in *The Journal* of the North American Shortwave Association. Incidentally,



An attractive card from Radio Polonia. Polish Airlines appears to have paid for the printing!

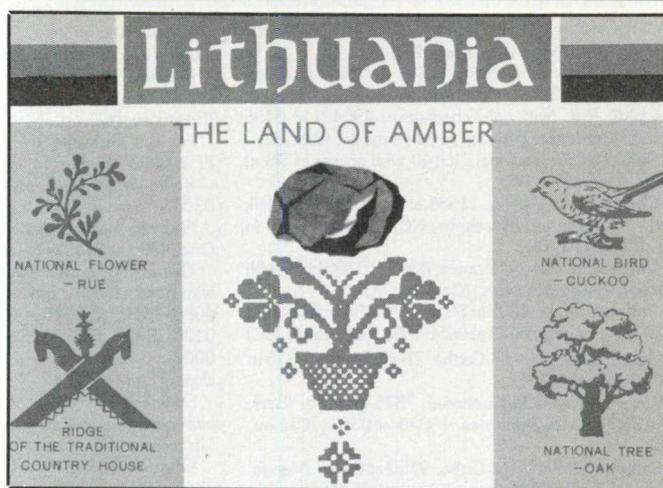
The Caribbean Beacon, Anguilla, has been sold to a religious organization which plans to add shortwave.





Australian time station VNG is now operating on 16000.

Here's a multi-color QSL card recently sent to William Moser by Radio Vilnius, Lithuania.



there are rumors that Scott may have some connection with the reported pending sale of the silent shortwaver KCBI in Dallas.

Look for a new station from the Dominican Republic which may be on the air by now. Radio Olympica International at La Vega plans to use both 4860 and 6205. When 6205 is clear of HCJB this may come in quite well during evening hours. This one follows by less than a year the arrival of "La N-103," Santiago, on 4800 which is relaying a local FM'er. Sometime before that one came on 4930 was occupied by Radio Barahona in Barahona. Prior to that there was seldom more than two stations on from the Dominican Republic at any one time.

HCJB's "DX Party Line" reports that the Guatemalan of Chiquimula may get a shortwave station. The Quaker Theological Seminary there wants to put a station on the air, although things are still in the money raising stage. The station would be named Radio Truth. Guatemalan law restricts shortwave broadcasting to religious and educational stations.

There's also some new activity planned for Honduras. Jeff White (who is hoping to put Radio Miami International on the air) is involved in developing a shortwave station called Radio Copan International.

From Africa, Radio Namibia now has its English service operating on shortwave. It won't blow out your speaker but some digging and careful listening will put this one in on occasion. 3270 airs English weekdays at 1600-1900 (which we in North America will never hear) plus Saturdays 0400-0600, Sundays to 0500. On 7165 at 0600-1500 (1600 weekends). Additionally, the "All Night Service" runs on 3270 at 2200-0400 weekdays, to 0500 Sundays, and the "Channel 2 National Service" is on 3270 at 1900-2000. Reports are appreciated and should be sent to NBC, Box 321, Windhoek 9000, Namibia.

Deutsche Welle—no doubt in response to the loss of RBI and its popular DX Club—

has instituted a DX Club. Not sure yet if this is a club with members and all, such as RBI had, or just the name of a DX show. It's on at approximately 0115 during the English program to North America on the last Sunday of the month on 6155, 9565, 11865, 11890, 13610, 13770, 15105 and 15425. It's probably included in the later broadcasts at 0300 and 0500, too.

The Australian time station VNG—which includes voice IDs in its broadcasts—has moved from 15000, where we had to try for it under WWV, to 16000. VNG also operates on 5000 and 10000, though the latter spot is a temporary one and will be replaced with another frequency sometime in the future. Reception reports are welcome to: VNG Users Consortium, GPO Box 1090, Canberra ACT 2601, Australia. Thanks to Dr. A.M. Peterson of Indianapolis for that info.

William Moser in New Cumberland, Pennsylvania wonders about the current status of Radio Kuwait and Radio Baghdad. Well, Kuwait went off shortwave hours after the Iraqi invasion. The mediumwave returned to the air a month or so after the war ended but, as of this writing, the shortwave had not yet reappeared. Many SWLs are checking Kuwait's frequencies on a regular basis, expecting its return at any time.

Radio Baghdad was active on shortwave throughout the war, although the schedule, the number of frequencies and the signal strength steadily diminished. At present, Baghdad Radio is using 390, 4600, 8350 and 15605 (sometimes 15600). These latter channels jam or shadow the clandestine Voice of the Iraqi Resistance which uses 15600.

So what are you hearing lately? Getting any good QSL's? Have you just purchased a new receiver, put up a new antenna or revamped your shack? Maybe you went to a DX convention or just reached a milestone in your SWL'ing career. Why not write in and tell us? Your comments and questions

are always welcome, too. And we're glad to help promote local and regional clubs, even if they're just in the planning stages or you just want to scout around and see if the interest is there. We're also looking for shack photos, spare QSL's and station photos to use as illustrations. News clippings, station literature and schedules are also very welcome. We look forward to hearing from you as often as possible!

Please remember to arrange your loggings by country and include your last name and state abbreviation after each one. And leave some room between each item so there's room to navigate the scissors!

Here are this month's loggings. Broadcast language is assumed to be English unless indicated otherwise. SS = Spanish, FF = French, AA = Arabic, etc. All times are in UTC.

Albania: Radio Tirana at 0247 on 9500. (Smith, MS)

Antigua: Deutsche Welle relay, 9545 at 0308; 0339. (Moser, PA; Carson, OK)

Argentina: RAE at 0030 in SS on 15345 with soccer. (Bednarski, BC)

Radio Nacional with tangos at 2230 on 6060 in SS. (Bednarski, BC)

Australia: Radio Australia, 6080 at 0800; 9710 at 0835 and 21740 at 0330. (Bednarski, BC) 9580 at 1111 with news. (Moser, PA) 11910 at 1335 with comment. (Carson, OK) 17715 at 0502 with news. (Roseboro, NC) 17795 at 0508. (Gruber, FL)

ABC Brisbane on 4920 at 0915. (Bednarski, BC)

Austria: Radio Austria International on 6015 via Canada at 0640 in SS. (Bednarski, BC) 13730 at 1130 sign on. (Moser, PA)

Belgium: BRT with news at 2330 on 13665. (Smith, MS)

Brazil: Radio Cultera do Para, 5045 at 0820 in PP. (Bednarski, BC)

Super Radio, Roraima, 4875 at 0530 in PP with rock and Latin ballads. (Johnson, IL)

Bulgaria: Radio Sofia, 15330 at 0030. (Bednarski, BC)

Burkina Faso: Radio Burkina, 4815 at 0545 with nice native drum and flute music. (Johnson, IL) (FF, editor)

Cameroon: CRTV, Yaounde, 4850 at 2323 in FF with talks over computer beep sound effects and various animal calls. (Johnson, IL)

Canada: Radio Canada International, 5960 at 0026. (Moser, PA) 17820 at 1836. (Carson, OK)

CFRX, relay CFRB, Toronto, 6070 at 1315 with a call-in garden show. (Roseboro, NC)

CHU Ottawa time station, 7335 at 0004. (Gruber, FL) 14670 at 0211. (Smith, MS)

Chad: Rdf. National Tchadienne, 4904.5 at 0456 with FF announcer between regional music. (Barr, IL)

Chile: Radio Nacional, 15140 with soccer in SS at 0030. (Bednarski, BC)

China: Radio Beijing, 11685 at 0432 with travel talk and cooking show. (Roseboro, NC) 15445 at 0300 in SS. (Bednarski, BC)

Colombia: Caracol Arauca, 4865 at 0700 in SS with Caracol ID and into news. (Carson, OK)

Onadas del Meta, 4885 in SS at 0630. (Bednarski, BC) Caracol Bogota, 6075 at 0650 in SS. (Bednarski, BC)

Costa Rica: Faro del Caribe, TIFC, 5055 at 0315 in SS. (Bednarski, BC)

Radio for Peace International, 7375 at 0430. (Barr, IL) 13630 at 0240 and new 15030 at 0307. (Carson, OK)

Cuba: Radio Havana Cuba, 9750 at 0436. (Vaage, CA) 11820 at 0029 with music to sign off. (Moser, PA) Here at 0213 and 15425 at 2000 in SS with sign on, QRM'd by Deutsche Welle sign on. (Carson, OK) 15385//17835 in SS at 0000. (Bednarski, BC) 21540 at 0329 with IS. (Roseboro, NC)

Czechoslovakia: Radio Prague International, 5930//7345 at 0300. (Carson, OK) 7345 at 0106 with DX program. (Roseboro, NC)

Denmark: Radio Denmark via Radio Norway on 9645 in DD with EE ID at 0330. (Vaage, CA)

Ecuador: HCJB, 9745 in EE at 0600 and 15230 in SS at 0040. (Bednarski, BC) 11740 at 1131. (Moser, PA) 15155 at 0258 with religion. (Gruber, FL) 21455 in SSB mode at 1327 with news, "Morning in the Mountains." (Carson, OK)

HD2IOA, Guayaquil, time station in SS at 7600 with time signal at 0241. (Smith, MS)

Radio Jesus del Gran Poder, 5049.8 in SS at 1045, priest leading prayer, congregation answering. (Barr, IL)

England: BBC, 7325 at 2317; 0429. (Carson, OK; Vaage, CA) 9515 in SS at 0400 and PP and 0712. 15280 in Japanese at 2150. (Bednarski, BC)

Egypt: Radio Cairo, 9475 at 0140 in SS; 9900 at 0130 in AA. (Bednarski, BC)

Finland: Radio Finland International, 15400 at 1359 with IS, frequency announcements, world news, sports. (Roseboro, NC)

French Guiana: RFO Guyane, Cayenne, 5055 in FF at 0900. (Bednarski, BC)

Radio Japan via French Guiana relay on 15325 at 0300 with news. (Johnson, IL)

Gabon: Radio France International via Africa No One, 4890 at 0443 with talks, music, ID. (Barr, IL)

Germany: Deutsche Welle, 6040 via Antigua, 0105 with news. (Smith, MS) 6075//9735 in GG at 0400; 6085//6100 at 0500 in GG. (Bednarski, BC) 6145 at 0126. (Smith, MS) 9605 at 0259. (Vaage, CA) 9070 at 0001 in GG. (Gruber, FL) 21465 in GG at 1417 to 1420 close. (Carson, OK)

Sudwestfunk, Rohrdorf, 7265 in GG at 0530. Lots of commercials and a program of talk. Lots of ham QRM. (Johnson, IL)

Ghana: Ghana Broadcasting Corp, Network 2 on 3366 at 0524 with sign on ID, roster crow, announcer in local language. (Barr, IL)

Guam: KTWR, 11805 at 0827 with IS, ID at 0830. (Roseboro, NC) 11895 at 1329 in Napali with IS, ID, ID in EE and into musical program. (Carson, OK)

Guatemala: Radio Cultural, 3300 at 0330 with "Back to the Bible." (Carson, OK) 0417 in SS with semi-classical and easy listening music. (Roseboro, NC)

Hawaii: WWVH time signals, 10000 at 1020, YL with time, etc. (Moser, PA)

Honduras: La Voz Evangelica, HRVC, 4820 at 0354 with religious programming, sign off 0405 with "The Old Rugged Cross." (Roseboro, NC)

Hungary: Radio Budapest, 9520//9835//11910 at 0031 with news. (Moser, PA) 9835//11910 at 0130. (Carson, OK)

Iceland: INBS, 9268 at 0505 in Icelandic, announcer and songs. Heavy Ute QRM. //6218 which was very weak. (Barr, IL)

Iran: VOIRI, 9022//15084 in SS at 0135 with 9022 weaker. (Bednarski, BC)

Israel: Kol Israel, 7465 at 0104. (Carson, OK)

Abbreviation Used In Listening Post

AA	Arabic
BC	Broadcasting
CC	Chinese
EE	English
FF	French
GG	German
ID	Identification
IS	Interval Signal
JJ	Japanese
mx	Music
NA	North America
nx	News
OM	Male
pgm	Program
PP	Portuguese
RR	Russian
rx	Religion/Ious
SA	South America/n
SS	Spanish
UTC	Coordinated Universal Time (ex-GMT)
v	Frequency varies
w/	With
WX	Weather
YL	Female
//	Parallel frequencies

9435//11605 at 0135 in SS. (Bednarski, BC) 11585 at 2240 with news. (Smith, MS)

Italy: RAI at 0310 in SS on 15245. (Bednarski, BC)

Japan: Radio Japan, 5960 (via Canada) at 0130; 0315. (Smith, MS) 9675 at 0930 in SS; 9745 at 0430, 11875 at 0835 and 15325 at 0240, all in JJ. (Bednarski, BC) 11865 at 1320 in JJ. (Northrup, MO) 15195 at 0307. (Smith, MS) 17825 at 0515. (Vaage, CA)

JJY time station, 5000 at 0237 with time signals in JJ, in between WWV and YVTO (Venezuela). (Smith, MS)

Luxembourg: Radio Luxembourg, 6090 at 0028 with pops. (Moser, PA)

Madagascar: Radio Netherlands relay on 17575 at 1515 with travel tips. (Carson, OK)

Mali: Radio Beijing relay at 0035 on 9770. (Moser, PA)

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CIRCLE 140 ON READER SERVICE CARD

SCORPIO

```
ID[Sta]:GKY6 (PORTISHEAD RADIO) Location: England
Date:02-27-91 Begin Prg:03:17:35 End Prg: Freq:17.220.00
Mode:FSK Signal: Agg/Svc:Coastal (sea) QSL:
Remarks: SITOR traffic <-arg>
Data:23> / / 17.220.00@FSK /Signal() #2082
[Radio]: [PSE] [CLS] Terminal Mode [CHG] [CLD] [Si/F] [Qu/ex]
#LogScan-----Log of John Doe-----[TJ]
```

```
CMD:AL
MODE:NON ALIST
.. THIS IS AN AUTO TELEX MESSAGE SYSTEM
TRAFFIC FOR THE FOLLOWING VESSELS:
USS FREDRICKS
HMS UINC...
```

GA+?

<arg FILE LOADED>

1 Manual 2 Func1 3 Func2 4 Func3 5 Upload 6 TimeON 7 TimeOFF 8 Clear 9 Log 10 Optms

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CIRCLE 141 ON READER SERVICE CARD

Malta: Voice of the Mediterranean, 9765 at 0621 with feature on Beethoven. (Johnson, IL)

Netherlands: Radio Netherlands, 6020 at 0030 with announcements, news. (Moser, PA) 0250 in SS. (Bednarski, BC) 17605 at 1521. (Smith, MS)

Netherlands Antilles: Radio Netherlands Bonaire relay, 6165 at 0109. (Smith, MS)

Trans World Radio, Bonaire, 9535 at 0310. (Moser, PA) 11930 at 0325. (Carson, OK)

New Zealand: Radio New Zealand International, 9700 at 0909 with news, music, reading fiction. (Roseboro, NC) 17680 at 0402. (Smith, MS) 17770 at 0220 with field hockey pre-game show. (Johnson, IL) 0500 with IS and ID, sports scores. (Gruber, FL)

Niger: La Voix du Sahel, 5020 at 0558 in FF. (Barr, IL)

Nigeria: Voice of Nigeria, 7255 at 0504 with "Wednesday Morning Flight," 0530 world news and comment. (Carson, OK)

North Korea: Radio Pyongyang, 9325 and 9345 at 1303 with news, music. (Roseboro, NC) 9977 at 1120 with man and woman announcers with news and music. (Barr, IL) 11700 at 0045 in SS and 0100 in FF; 11710 in FF at 0100. (Bednarski, BC)

Norway: Radio Norway International, 9645 at 0301 in NN with woman, included EE ID. Also 11870 at 0500. (Vaage, CA)

Papua New Guinea: Radio Manus, 3315 at 1120 with some kind of report or news in Pidgin, fade by 1200. (Johnson, IL)

Paraguay: Radio Nacional, 9735 at 0116 in SS. (Bednarski, BC)

Peru: Radio Cora, 4915, with Latin rhythms, Peruvian pops, SS announcer and commercials at 0430. (Johnson, IL)

Radio Maranon, 4835 at 1120 in SS with talk and music, ID 1125. (Barr, IL)

Radio Union, in SS at 0640. (Bednarski, BC)
Radio Atahualpa, 4822 at 0915 in SS, from Cajamarca. (Bednarski, BC)

Philippines: Radio Veritas Asia, 9555 at 1256 with ID, mention of Korean program coming at 1300. (Roseboro, NC)

FEBC, 11685 at 1326. "Good Evening Asia," news, "Faith in Focus." (Carson, OK)

Portugal: Radio Portugal, (probably 9555? editor) at 0237 with news. (Smith, MS)

Romania: Radio Romania International, 9570 at 0159 sign on, into news. 11940 at 0359 sign on with IS, ID, news. (Carson, OK)

Rwanda: Deutsche Welle Relay, 7225 at 0430 with European Journal and African Report. (Barr, IL)

Saipan: KFBS, 11650 at 1145 with religious programs in possible RR. ID at 1200. (Roseboro, NC)

Saudi Arabia: BSKSA, 11935 at 1915 with Holy Quran programs, recitations in AA. (Johnson, IL)

Solomon Islands: SIBC on 5020 at 0905 in EE. (Bednarski, BC) 9545 at 0730 with news, item on Solomon troops training under Australians in Honaria. (Johnson, IL)

South Africa: Radio RSA, 11900 at 1114 with man in EE. (Moser, PA)

Radio Suid Africa in Afrikaans on 4810 at 0422, news, mentions of DeKlerk. (Johnson, IL)

South Korea: Radio Korea, 9750 at 1215 with schedule. (Northrup, MO) 15575 at 1112 with commentary. (Moser, PA)

Spain: Spanish National Radio, 9630 at 0040. (Gruber, FL) 9650 in SS at 0515; 11790 in SS at 0830; 11880 in SS at 0201 and 21595 in AA at 1830. (Bednarski, BC) 9765 at 1220 in SS. (Northrup, MO) 15110 in SS at 1921, ID at 1929. (Roseboro, NC)

Swaziland: Trans World Radio, 5965 at 0358. (Vaage, CA)

Switzerland: International Committee of the Red Cross, monthly broadcast, 9885 at 0311 with summary of ICRC activities for the month. (Barr, IL) 0321 on 12035. (Carson, OK)

Swiss Radio International, 6095 at 0227 with news. (Smith, MS) 12035 at 0035 in SS, 17730 in FF at 0130. (Bednarski, BC) 17830 at 1530 with news. (Smith, MS)

Syria: Radio Damascus, 15095 at 2013 with news, commentary, music, ID 2029. Also on 12085. (Roseboro, NC)

Tahiti: Radio Tahiti, 6135 in FF at 0820 with music. (Bednarski, BC) 11825 at 0716 with news, Polynesian music. (Barr, IL)

United Arab Emirates: UAE Radio, Dubai, 13675

at 0332 discussing problems in Kuwait, "The Beloved Son" drama presentation at 0340. (Carson, OK) 15400 at 0339 with news. (Smith, MS)

United States: Radio Marti, 6030 at 0630 and 9525 at 0400, both in SS. (Bednarski, BC)

Voice of America, Africa service, 11090 with two different programs on upper and lower sideband at 1918. (Vaage, CA)

WYFR with Voice of Free China relay on 5950 at 0700. WYFR and VOFC IDs at 0700, then transmitter problems and only Chinese music—no VOFC program. (Carson, OK)

WSHB, 9495 at 1018 with news about China. (Moser, PA)

WHRI, 7315 at 0429 contemporary Christian music. (Carson, OK)

USSR: Radio Moscow, 9685 at 0044. (Gruber, FL) 11735 at 0032. 15425, Petrovavlosk site, 0508 with news, "Science and Engineering" and rock. (Barr, IL) 15585 at 0300 in SS. (Bednarski, BC) 17665 at 0406; 17890 at 0319; 21480 at 0106; 21680//21690 at 1427 and 21715 at 1250. (Carson, OK)

Vatican: Vatican Radio, 9615 at 0030 in possible Italian. (Gruber, FL) 11620 at 0131 in SS and 21650 at 0500 in EE. (Bednarski, BC) 17710//21650 at 2115, also 17730 to Africa. (Roseboro, NC)

Vietnam: Voice of Vietnam, 9755 at 1017 with woman, classical-sounding music. Better than parallel 12035. (Moser, PA) 15009 at 1230 man and woman with news and music. (Barr, IL)

Venezuela: Radio Tachira, 4830 at 0351 in SS with drama, ID and anthem. (Roseboro, NC)

Radio Rumbos, 4970 at 0511 in SS. (Bednarski, BNC) 0333 with news, lots of IDs, commercials. (Carson, OK)

YVTO Observatorio Naval, time signals in SS on 5000 at 0236; 0506. (Smith, MS; Roseboro, NC)

Yugoslavia: Radio Yugoslavia, 11735 at 0110 with news and political commentaries. Severe QRM from Radio Moscow. (Carson, OK)

Zambia: ZNBC, 4910 at 0404 with native instruments, fish eagle IS til 0405 when news in vernacular. (Johnson, IL)

Raise your glass to the following reporters this month:

William Moser, New Cumberland, PA; Mark R. Northrup, Gladstone, MD; Tim Johnson, Galesburg, IL; Darren Gruber, Palm Bay, FL; David Smith, Brandon, MS; A.E. Bednarski, North Vancouver, British Columbia; John Spencer Carson, Jr., Norman, OK; William Roseboro, Hamlet, NC; Bjorn F. Vaage, Granada Hills, CA and Peter Barr, Des Plaines, IL. Thanks to all of you.

Until month—good listening! ■

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CIRCLE 138 ON READER SERVICE CARD

TELEPHONES ENROUTE

BY TOM KNEITEL, K2AES

WHAT'S HAPPENING WITH CELLULAR, MARINE & MOBILE PHONES

Digital cellular is still moving towards reality. The following manufacturers are presently committed to developing and testing digital cellulars systems and/or mobile units: AT&T, Ericsson, Motorola, Northern Telecom, Audiovox, Hughes, Mitsubishi, NovaTel, OKI Telecom, Sony, and Uniden. Some companies have already tested prototypes, and Uniden tells me that the voice coder test they ran turned out to be successful. At this point, no standards have been established by the cellular industry for the manufacture of systems or car phones.

Some interim standards are being worked with, but nailing down final standards that all manufacturers can agree upon is still a while into the future and can come only after extensive field testing. Interim standards relating to tolerance levels for the power supply and operating frequencies are being used for now, but they aren't yet chiseled in granite. Things like voice quality are still a matter of wide interpretation by the various manufacturers.

All systems and equipment must meet the same exacting standards once things get rolling. Field tests must prove (among other things) that there is interoperability between the systems and equipment of all manufacturers.

Thanks to Uniden's Konrad Roeder, WA4OSH, for keeping us posted on this.

Motorola and PacTel Corporation are field testing and trial marketing Code Division Multiple Access (CDMA) digital cellulars in Southern California. Among the field testing activities is the validation of the Common Air Interface (CAI) spec. If validated, the CAI will allow cellular network equipment and car phone sellers to develop CDMA products.

CDMA technology will permit each individual cellular channel (pair) to simultaneously handle several calls (perhaps three at a time). According to command signals sent out by cell sites, transmissions from car phones synchronize with those of others using the channel so that only one car phone at a time will be transmitting. It takes place so rapidly that the callers won't notice anything strange taking place. Outsiders using scanners to eavesdrop won't be able to overhear any conversations taking place over digital CDMA systems. Scanners (under present technology) can reproduce only analog communications.

When CDMA technology is approved and available to the general public, it will not herald any immediate changeover to the new system from the existing analog system. Otherwise, everybody's present analog cellulars would overnight become useless. The new system will have to be very



The Cobb County (Georgia) mobile command post now is cellular equipped.

slowly phased in over a number of years while the analog system is gradually phased out as existing equipment is removed from service because of its age. During the transition period, systems will start off by offering a few dedicated digital channels. Then, as time goes on, they will slowly increase the digital channels while decreasing the number of analog channels.

Flying High

In-Flight Phone International (IFPI), of Oak Brook, IL is working with SITA, the air transport information services organization, to cooperate in the development and marketing of new types of passenger communications services throughout the world. This gives IFPI access to SITA's global Satellite AIRCOM service.



Employees of Pandrol Jackson, a company that repairs railroad tracks throughout North America, have new cellulars to keep them in touch from remote work sites. In this photo, the phone is at the elbow of the fellow to the right.

In the USA, IFPI will be installing its air/ground digital phones aboard American, Northwest, and USAir planes. These aircraft will benefit from the IFPI US-based terrestrial telephone service and cabin equipment, which now includes global satellite-based communications.

That Was Just Fine With The FCC

The FCC told both the seller and buyer of the non-wireline cellular system in Florida's Panama City that they appear to be jointly liable for a forfeiture of \$50,000 for "a premature transfer of control." The agency decided that Bryan L. O'Neill (seller) and Palmer Cellular Telecommunications Radio Service (buyer) had made a good enough transfer arrangement for the business, but that the seller hadn't (as required by FCC regs) retained "responsibility for the operation and control of the facilities" during the eight months it took for the FCC to process the transfer the actual station license.

Fire When Ready

PacTel has incorporated cellular technology into a Cobb County (GA) Fire and Emergency Services vehicle. Not a fire engine or ambulance, it's a 38-ft Rockwood motor home used as a mobile command center for many types of incidents. The unit is jointly commanded by the Fire and Emergency Services Department, Police Department, Sheriff's Office, and the District Attorney's Office.

The vehicle is ready to be the nerve center at disaster scenes and emergency situations



Lee Trevino is now the spokesman for Motorola cellars. Can you imagine Lee's reaction if that thing began ringing while he was in the middle of a putt?

ranging from major fires to storms and man-hunts. What makes the vehicle state-of-the-art includes PacTel Cellular, Motorola, Apple Computer, and General Electric equipment.

Here's what the vehicle contains: Four fixed cellular phones, two portable cellars, eleven other two-way radios, CAD System Computer, Apple computer, four TV's,

VCR, camcorder, weather station, inter-coms, and surveillance cameras.

Railroaded by Cellars

When you're working in a remote area, life can be difficult. It's not always easy staying in contact with those you need to talk to, nor can they reach you. This was something noticed by Bud Beach, who supervises the repairs of railroad tracks for the Pandrol Jackson Co., of Syracuse, NY. From one to two months at a clip, Bud and his crew of nine are working at remote locations throughout the USA and Canada in the company's twelve specially-built railroad cars called "production grinders."

Their job is to reconstruct damaged rail. This calls for them to live on-site during each project. The nearest town is often several miles away. So, Pandrol Jackson recently had NYNEX cellars installed in each of its railroad repair grinding units. Now, employees can instantly establish contact with the main office, customers, local authorities and vendors, and their families.

In the past, contact was a time-consuming burden that meant locating a pay-phone, and checking or waiting for incoming messages at railroad stations along the right of way.

But, Does He Use it While Driving?

Looks like cellular has hit the big time, and now they have celebs endorsing the phones. Golf legend Lee Trevino is now appearing in print and TV advertising on behalf of Motorola cellars phones.



The Minivox MVX-500 from Audiovox is claimed to be the world's smallest cellular.



This Cellmaster mobile antenna is really tiny. Those are candies next to the antenna!



The offices of tomorrow. On the left, it's *Mobility One* with a Motorola cellular and a Mitsubishi FAX. To the right, a *Mobility Two*, containing a Motorola cellular, a Gridlite XL computer, and a printer. But where do you fit the water cooler and the receptionist?

Motorola sent me a nifty photo of Lee smiling as he uses the handheld from his golf cart. Wonder what Lee's reaction would be if the little devil began ringing while he was in the middle of a putt. Maybe we'd get a chance to see if it still worked after being stomped on and then thrown 100 feet into a sand trap.

It's got to be one of the oddest advertising concepts going. Avid golfers don't mind casual shop talk with other players on the links, but with the exception of medical, police, or firefighting personnel, the very last thing they need or want there is a telephonic link with their office or home.

What next? How about pro baseball players endorsing cellars, then shown placing and receiving calls from second base or the pitcher's mound? Maybe not such a bad idea. Those who once had Roger Maris, Harmon Killebrew, or Roy Sievers (and

maybe even Ted Williams) bats as youngsters are a cinch to dash right out and get Darryl Strawberry, Jose Canseco, or Doc Gooden cellars. I sure would, anyway. C'mon now, wouldn't you, too?

Hardware Department

Audiovox Corp. brought out a handheld cellular dubbed the MVX-500 *Minivox*, and the company tells us flat out that it's the world's smallest portable cellular phone in terms of size, weight, and total volume. In addition to having the standard 0.6 watts portable cellular power, the MVX-500 has more standby (12 hours) and yak-yak time (65 minutes) than other portables. With an optional battery extender, this can be stretched out to 14 hours standby and 100 minutes of talking.

The MVX-500 weighs 10.6 oz., and is less than three-quarters of an inch thick. It

easily fits into a shirt or jacket pocket. It's 6.5 in. tall, 2.2 in. wide.

Features include two one-touch dialing buttons, a battery life indicator, and large send/end controls. Optional accessories include an extended life battery, travel trickle charger, leather carrying case, and a hands-free car kit. The price is in the \$1000 range. A similar unit, also made by Audiovox, sells under the Prestige brand label and is known as the PRT-250.

For further information, contact Audiovox at 150 Marcus Boulevard, Hauppauge, NY 11788.

And speaking of small, Les Wallen USA is marketing a new British import mobile cellular antenna called the *Cellmaster Iso-Range*. This thing is really tiny. The base is about the size of a chocolate candy "kiss," and the whip sticks up only a couple of inches.

The antenna has a low-loss mounting system, broad bandwidth, and comes in several mounting types. It is available for mounting through a quarter-inch hole, or with a self-adhesive backed mount, or with a mag mount. This is suited for use with scanners as well as cellars.

For more information, contact Les Wallen USA, 19 Aero Drive, Amherst, NY 14225.

Tomorrow's Office

How about thinking about the office of the future as being here today? It is! Now busy professionals can make use of time that was formerly unproductive by plugging into the mobile office concept from Cellular One/Genesee Telephone Company, of Rochester, NY. Two different formats, both with interchangeable components, are available.

The *Mobility One* unit features a cellular and a FAX machine in a handy carrying case. *Mobility Two* adds a laptop computer and compact printer to the cellular phone.

These have proven useful for turning vehicles into mobile field offices. Suggested users include attorneys, doctors, builders, real estate agents, public safety officials, private investigators, insurance company personnel, power utility companies, engineers, and any type of sales or business executive who would like the ability to be available while enroute from one place to another, or working in the field, or even while sitting in the dentist's waiting room. The ideal thing for a workaholic to take along on a vacation or a honeymoon. Just wait till you see the expression on the XYL's face when you bring this out of the closet at the hotel!

We are always pleased to hear from our readers regarding cellars, pagers, air/ground phones, marine telephones, or newly emerging personal communications technologies. Send along photos, questions, your opinions, your questions, and clippings of interest. We're also interested in information on new products and services, as well as industry news.

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CIRCLE 125 ON READER SERVICE CARD

Get Into The Action

The parade marches by as a lost child is reunited with her mother. Bike racers speed past a just-fallen colleague as a medical vehicle quickly pulls up to administer aid. A Boy Scout with a twisted ankle is carried to the Jamboree's medical tent after a mishap along the trail. Amateur Radio operators patrolling with hand-held transceivers alerted event officials in the above incidents. If you haven't given this kind of public service operating a try, you're missing out on a lot of fun!

Ensuring Public Safety

Providing communications at public events is an Amateur Radio tradition. Although FCC rules prohibit amateurs from relaying information about race leaders and other information on the progress of an event, hams may assist safety officials at aid stations, operations centers, checkpoints and emergency vehicles.

To get involved, all you need is a hand-held transceiver. Most public service communications are handled on VHF and UHF frequencies because few activities spread out far enough that line-of-sight repeater coverage is not adequate. Two meters is most popular, but other bands are used.

The First Step

If you're a member of a ham radio club, you'll probably be asked to help at public events. If you aren't in a club yet, or if your club hasn't engaged in such activities, ask around on the air and check the local nets. (Drop me a note at the address at the end of the column if you can't locate a local ham club.)

What Ham Radio Can Offer

For event logistics, an organization can contract a commercial two-way radio service. When it comes to safeguarding participants and spectators from accidents, confusion and injuries, however, Amateur Radio provides a corps of experienced, volunteer communications experts—with unique equipment and repeater-coverage capabilities. Amateurs can switch frequencies with more agility than public safety officials or commercial operators. This makes it possible to communicate on several specialized nets simultaneously, on multiple repeaters and on several bands—a plus for any event.

Plan Ahead

The most important element to consider in public service communications is recruiting dependable volunteers. Keep a list of

names, call signs and phone numbers and give the volunteers a copy of the list so they can learn who's who if they don't already know each other. Confirm participation with each person just before the event. Enlist backup operators to fill in for people who cancel at the last minute. Make sure everybody knows what to do if the event is postponed.

Before the operation begins, meet face to face to coordinate your plans. Use simplex if you can. Check to see if your chosen frequencies will interfere with other activities. If you need a repeater, get permission from the repeater group before you use the machine.

To avoid snags on the big day, take your fellow hams and an event representative to the site ahead of time. Walk the route with your radios to check signals and pinpoint dead zones or potential trouble spots (utility substations, power-company transformers, urban "office canyons," behind hills and around noisy vehicles or equipment). Draw a map indicating landmarks, checkpoints and where operators will be stationed and frequencies to be used. Distribute copies to all ham volunteers and event officials.

Be Disciplined

Large events may require nets on different bands. Each net will have one operator to serve as net control station (NCS).

Once the operation begins, the NCS is in charge. He or she generally works from a fixed location: others are deployed at strategic locations; fixed, on foot or mobile. The crew works directly with the event sponsor or municipal authorities, and the hams' task is easy: they simply communicate. They don't make vital decisions, issue commands or furnish aid or advice.

Stick To Your Knitting

Unless you happen to be a trained emergency professional—many police officers, firefighters, EMTs and others are hams—the amateurs' responsibility is to stay out of the way and simply furnish communications. Unless you're briefed and authorized to do so, don't give answers or advice to spectators or participants. There should be event workers stationed where needed, and questions should be referred to them. It's not up to you to tell runners that refreshments are available at the staging point, for example, even if you overhear race officials saying so. Don't second-guess procedures; a ham radio operator shouldn't interpret rules or direct participants to do anything, unless

event officials have requested that you do so for safety reasons.

You're not allowed to provide "news coverage," either. Make it clear to event officials that you can't respond to requests to report race positions, parade progress or descriptions of the action, except as it serves the safety of participants and the public. Make sure your role is understood before you begin.

Be Prepared

Your job is to help safeguard participants and spectators at an event. You'll gain valuable experience in case you're needed in an emergency. You'll also take advantage of an opportunity to showcase Amateur Radio at its best, serving your community with dignity and courtesy. Event organizers, participants, spectators, neighbors, the news media, public safety authorities and others are watching you. Remember the people listening on scanners. Common sense and planning will help you perform admirably.

When you provide communications services for a public event, here are some DOs and DON'Ts to keep in mind:

DO:

- Know your capabilities and limits (equipment and people).

- Present a professional image, in manner and physical appearance.

- Show up on time and ready to work.

- Transmit only when necessary.

- Dress appropriately and carry an umbrella, hat, sunblock, jacket or other necessities to protect yourself and your rig from the elements.

- Set an impeccable example for the Amateur Radio service.

- Have fun!

DON'T

- Be pushy or come across with a know-it-all attitude.

- Promise anything you can't deliver.

- Answer questions unless you have explicit permission to do so.

- Make frivolous or confusing remarks on the air.

- Leave your post unless you notify the NCS and receive acknowledgement.

For more information on special-event operation, the *Special Events Communications Manual* (\$5), the *Public Service Communications Manual* (\$1) and *The FCC Rule Book*, 8th ed., (\$9) are available from the ARRL. Write to me at ARRL, Dept PCN, 225 Main St., Newington, CT 06111. So what are you waiting for? Get out of the shack and into the action! ■

The Benefits (and hazards) Of Telescopic Whips

The little rubber antennas that are packaged with some commercial and amateur radio handheld sets do not provide good performance in weak-signal areas. The rubber antenna on a 45 MHz radio is more than 6 dB down (4 times loss) from the performance of the 56-inch whip on the side of the emergency unit. On the 2-meter and 154 MHz bands, the typical rubber duck antenna may be down more than 3 dB (2 times loss) as compared to an 18-inch telescopic whip. On UHF frequencies, the better flexible rubber antenna is just about equal to a comparable telescopic whip, so little improvement can be made here except going to an external antenna system.

Since most of you operate on the 2-meter or VHF emergency high band frequencies near 154-155 MHz, let's consider the 3 dB, 2 times increase, advantage of the telescopic H.T. whip.

The most popular telescopic whips are found in most amateur radio catalogs, and some of the best units I have tried have been from AEA (Lynnwood, Washington), Kenwood (Carson, California), Smiley (San Diego, California), MFJ (Mississippi State, Mississippi), and Ireland (Miami, Florida). These companies make the whips for either VHF or UHF, and I haven't found any telescopic whips yet that will operate on dual

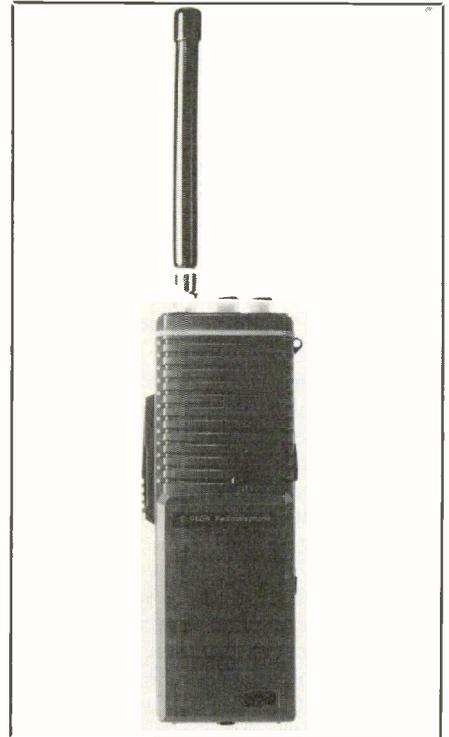
bands (although the supplied rubber duck antenna will work dual-band on twin-band radios).

Operation of the telescopic whip is straight-forward: when you get into an area of poor reception, twist on the telescopic whip, and pull the whip all the way out for maximum transmission and reception. You might be very surprised as to how many additional miles of range you will achieve by switching over to the tele-whip.

SWR Considerations

In checking the transmitting performance of the stock rubber duck antenna over telescopic whip, I was amazed at how poor an SWR most rubber duck antennas exhibit on the handheld. With rubber duck antennas, how you hold the handheld makes a big difference on what happens to SWR. The more ground that you can add to the handheld, the better the SWR.

With the telescopic whip, the SWR varied with the type of matching near the BNC connector on your handheld. The nice, lightweight, skinny whips were simply a quarter wavelength when fully extended, and the other half of the circuit was your body and the metal of the handheld. The simple quarter wave, skinny, tele-whips



This stock rubber duck transceiver antenna had an SWR of 2.5:1!

The telescopic whip pulled in signals in the Everglades we couldn't hear with the rubber duck antenna.

This telescopic whip could boost handheld VHF transmit range by as much as 3dB, a 2 times increase.



sure look nice and feel nice, but they only exhibit low SWR when fully extended and you position the handheld just right for a good ground plane.

The telescopic whips with a fatter base incorporate a DC shunt-fed coil which lets the whip operate as a halfwave antenna. The end-fed halfwave was not sensitive to ground plane changes at all, and we found that the SWR was reasonably low whether the whip was halfway retracted, or all the way out. The range was about the same as the extended quarter wave whip, but our handheld operated cooler because SWR was lower.

A most interesting and unique design was found with the Ireland whip which features a unique design of a tuning adjustment at the base of the voltage-fed whip to bring SWR all the way down to 1:1.1. The tuning ring also allows the telescopic whip to be pre-set to a specific VHF high-band frequency. Turn the ring in one direction, and the unit operates down at 144 MHz. Screw the ring in the other direction, and the unit operates at 155 MHz. Twist it even further, and you can run all the way up to 175 MHz.

I used a grain of wheat bulb with a coil and variable capacitor to look for the RF coming out of the antenna, and the bulb was extremely bright up and down the metal antenna, and would extinguish completely on the case of the handheld transceiver. With other telescopic whips, you could get the little RF sniffer bulb to glow quite brightly when held next to the metal clip on the back of the handheld which means power loss out of the actual transmitting antenna. With the Ireland 39-inch extended tunable antenna, the outside case of the handheld was absolutely "cold" (Ireland tunable technical sheet available by phoning 305/633-8185; Tech Bulletin 159-AB).

However, telescopic whips can create some headaches for you if you aren't careful. Do you run your handheld off of your cigarette lighter plug in your vehicle? If you do, touching the whip to anything metal around your open window could cause a voltage spike to burn out the sensitive receiver section on your handheld. When plugged in, stay off of telescopic whips sticking out the window!

Another problem with telescopic whips is circuit board damage at the base of the BNC handheld connector. Most handhelds use a rigid wire to interconnect on the inside of the BNC antenna post to the circuit board. When you flex the telescopic whip, the BNC post is strained, and this strains the connection point on the printed circuit board. After a few weeks of walking around with an extended telescopic whip, the connection to the board breaks loose, and every time you wiggle your antenna, signals cut in and out. Telescoping whips are also fragile, and easily dent and become bent.

On some handhelds, a broken antenna connection on the inside of the radio is an easy fix; but don't solder that hard wire back

to the board because it's just going to break loose again. Rather, solder on a short section of flexible braid to the circuit board, and the braid will flex without breaking the connection if you should flex the telescopic whip again. But on other handhelds, when you pop the back, you discover that what you need to solder is on the bottom side of the back circuit board and this means a complete disassembly of the entire works. This is an all-day project, and I recommend sending the radio back to the factory where this is probably a regular-type fix—using a flexible wire in place of the rigid wire.

The last drawback of a telescopic whip on your handheld is the added receive capability for incoming signals. You would think that this is normally something good, but if the incoming signals are from nearby paging transmitters, your unit will begin to exhibit the sounds of intermodulation, 2 or 3 signals, all coming out of the speaker at once! We found the tunable Ireland antenna was able to minimize this problem by creating a

narrow pass-band right at the desired operating frequency, with steep rises in signal attenuation 5 MHz up, and 5 MHz down, from the operating frequency. But other telescopic whips simply pulled in everything, and it was too much for our commercial and ham high-band transceivers to handle.

But out in the open, the telescopic whip was able to pull in signals we couldn't even hear on the little stock rubber duck antenna. A test with Ireland engineer Tom Glaze on his airboat out on the Everglades made me a believer of the importance of a telescopic whip: I was hearing signals relatively clear that were absolutely unreadable when we switched from the tele-whip down to the shorter stock rubber duckie antenna. What an improvement!

So, if you operate a handheld and need to extend your range, do consider the telescopic whip, but be sure you don't over-exercise the BNC antenna connector that will put you off the air for good. And be careful with the fragile telescopic whip. ■

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Figuring Out Filters

With the radio bands getting more crowded with each passing year, SWL's are paying more attention to *filters*. Filters are circuits or devices that allow certain parts of a radio signal or audio range to pass while blocking others. Used properly, the various types of filters can let you hear signals that you otherwise can't. Used improperly—and that's done more often than you might expect—filters can hurt reception more than they help!

Many receivers today can be equipped with various optional filters, and several outboard filtering devices are available as accessories. Using the filters that come with your receiver and choosing the right mix of optional filters is no easy task. A filter that is superb for one purpose (such as AM listening) is lousy for another (such as RTTY), and vice-versa. You need to know a little about how filters work before you can effectively use the ones installed in your receiver and decide which types of filters and filtering devices are best for you.

There's a lot of DX out there just waiting to be heard with the right sort of filters, so let's get going!

Basic Filter Types

Filters aren't too mysterious. Think of them as "gates" for radio and audio signals. Like all gates, they let some things in but keep a lot more out. This ability to let some things in while keeping out the rest is known as *selectivity*.

Some filters operate on radio frequencies, such as the common 455 kHz frequency used for intermediate frequency amplification, while others operate at audio frequencies (those from approximately 300 to 20,000 Hz). Regardless of whether they operate at radio or audio frequencies, for radio purposes there are four main types of filters: bandpass, low pass, high pass, and notch or rejection filters.

Figure 1 shows the selectivity curve of a bandpass filter. As you can see, a bandpass filter lets a certain continuous frequency range through but attenuates (that's fancy engineering talk for "greatly weakens") signals above and below the bandpass range. A bandpass filter is what most people think of when they talk about selectivity of a receiver. For example, many receivers have an AM mode bandpass filter rated at 6 kHz. This means the receiver will allow signals over a continuous 6 kHz range (as from 9597 to 9603 kHz) to be heard without attenuation. Since 6 kHz is about the frequency space occupied by a typical AM signal, a

6 kHz filter "fits" AM signal well. The frequency range that a bandpass filter will let pass without attenuation is called as the bandwidth of the filter.

Figure 2 shows the selectivity curve of a low pass filter. This filter lets all frequencies below a certain point, known as the *cut off frequency*, to pass without attenuation. Above the cut off frequency, however, the signal is greatly weakened. Figure 3 shows the curve for a high pass filter. As you can see, it operates in the exact opposite manner of a low pass filter.

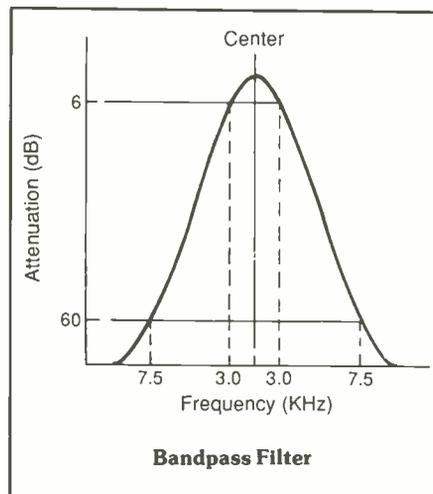
A notch or rejection filter can be thought of as the opposite of a band filter, although the bandwidth is usually very narrow (often a few hundred Hz). Figure 4 shows the selectivity curve for a notch filter. The notch filter is used to take a very narrow slice out of a received signal. For example, let's suppose we're listening to an AM signal using the 6 kHz filter. Reception is fine, except there is a CW signal within the 6 kHz bandwidth causing interference. Like all CW signals, this one only occupies about 200 Hz of frequency space. A notch filter will allow us to remove the CW signal without affecting the rest of the AM signal. The notch filter will degrade the audio quality of the AM signal somewhat, since it will remove all parts of the AM signal located in the same frequency range as the CW signal, but usually the reduced interference is worth the loss in audio fidelity.

A lot of confusion about how filters work can be cleared up if you just remember that all filters found in a shortwave radio—no matter what fancy names are used to describe them—are one of these four basic types or some combination of them!

What Filters Specifications Mean

Okay, what's better: a filter rated 1.8 kHz at -6dB down and 5.0 kHz at -60dB down or one rated at 3.0 kHz at -6dB down and 6.0 kHz at -60dB down? Better yet, what the heck does a term like "1.8 kHz at -6dB down" mean anyway?

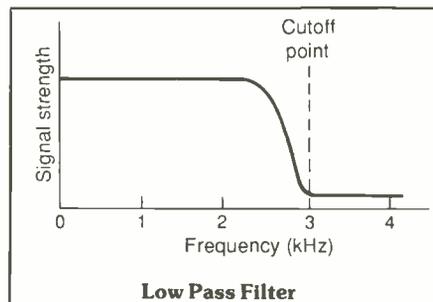
Take another look at the bandpass filter selectivity curve shown in figure 1. Selectivity is defined as how well a receiver can reject frequencies outside a desired range. In figure 1, frequencies located at 3 kHz above and below the center frequency are allowed to pass with little attenuation. This 6 kHz bandwidth corresponds to the bandwidth of the AM filter in many contemporary receivers. Note what happens once we get be-



yond 3 kHz above or below the center frequency—the attenuation increases rapidly, and increases as we get further beyond the center frequency.

To indicate how far an interfering signal will be from the center frequency before being attenuated by a certain amount, a receiver's selectivity is measured at the "-6dB down" and "-60 dB down" points. "dB" stands for *decibels*, which is a way to measure how the apparent loudness of a signal varies. When we say a receiver has selectivity of "6 dB down at 6 kHz," this means all signals located outside 3 kHz above or below the center frequency (in other words, outside the 6 kHz bandwidth) will be reduced in strength at least 6 dB. A signal strength reduction of 6 dB is equal to a signal only being one-fourth as strong as before.

Now our filter rated a -6 dB down at 6 kHz might also be rated at -60 dB down at 15 kHz. This means that all signals 7.5 kHz above and below the center frequency are reduced by 60 dB. Since the decibel is a logarithmic scale, a 60 dB reduction is equal



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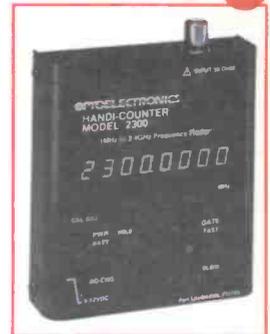
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POP'COMM's World Band Tuning Tips

September - 1991

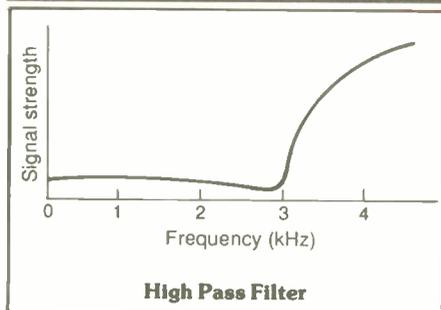
This PopComm feature is designed to help you hear more shortwave stations. Each month this handy pull-out guide shows you when and where to tune to hear a wide variety of local and international broadcasters on shortwave.

This list includes broadcasts in many languages besides English. Most of the transmissions are not beamed to North America. Keep in mind that stations make frequent changes in their broadcast times and frequencies. Changes in propagation conditions may also make some stations difficult or impossible to receive. Your own equipment and receiving location will also have a bearing on what stations you are able to hear.

Note: EE, FF, SS, etc. are abbreviations for English, French, Spanish and so on. Some frequencies may vary slightly. All times are in UTC.

Freq.	Station/Country	UTC	Notes	Freq.	Station/Country	UTC	Notes
2420	Radio Enga, Papua Guinea	1130	Pidgin	5035	RTV Centrafricaine, Cent Af. Rep.	0600	FF
3270	Ecos del Oriente, Ecuador	0300	SS	5045	R. Cultura do Para, Brazil	0300	PP
3270	Radio Namibia	0445		5047	RTV Togolaise, Togo	0600	FF
3295	INBS, Iceland	0400	Icelandic	5055	Faro del Caribe, Costa Rica	0300	
3300	R. Cultural, Guatemala	0400		5660	La Voz de Cutervo, Peru	0200	SS
3366	GBC-2, Ghana	0530	EE	5915	R. Alma Ata, Kazakistan	0130	
3380	R. Chortis, Guatemala	0100	SS	5930	R. Japan	0300	via Canada
3395	R. Zaracay, Ecuador	0300	SS	5965	Radio Havana Cuba	0400	SSB tests
3925	R. Tanpa, Japan	0900	JJ	5995	RTV Malienne, Mali	0600	FF
4600	R. of the Iraqi Republic	0230	AA	6010	R. Mil, Mexico	1130	SS
4600	R. Continental, Argentina	0000	SS, feeder	6040	Deutsche Welle, Germany	0100	via Antigua
4600	R. Perla del Acre, Bolivia	0000	SS	6075	Caracol Bogota, Colombia	0700	SS
4750	R. Bertoua, Cameroon	0500		6115	R. Union, Peru	0600	SS
4755	R. Educacao Rural, Brazil	0100	PP	6120	R. Tirana, Albania	2200	
4760	R. Frontera, Venezuela	0300	SS	6135	Swiss Radio Int'l	0200	
4770	R. Nigeria, Kaduna	0500		6135	R. Santa Cruz, Bolivia	1000	sign on, SS
4785	Ecos del Combeima, Colombia	0200	SS	6150	Caracol Bogota, Colombia	0500	SS
4800	LNBS, Lesotho	0400		6165	R. Netherlands	0030	
4800	La "N"/"N-103," Dom. Republic	0300	SS	6180	R. Nacional Amazonia, Brazil	2230	PP
4805	Rdf. Amazonas, Brazil	0030	PP	6210	European Christian Radio, Italy	0800	Sundays
4815	RTV Burkina, Burkina Faso	0600	FF	6250	R. Nacional, Eq. Guinea	0500	SS
4820	LV Evangelica, Honduras	0300	SS	6576	Radio Pyongyang, N. Korea	1130	
4830	R. Tachira, Venezual	0300	SS	6873	VOA, USA	0400	SSB, feeder
4840	Voice of the Strait, China	1300	CC	7115	R. Sofia, Bulgaria	0400	
4845	CRTV, Cameroon	0500		7180	BBC	1300	via Hong Kong
4865	Caracol Aruca, Colombia	0600	SS	7190	R. Africa, Eq. Guinea	2230	
4870	ORTB, Benin	0600	FF	7280v	LV du Zaire	0357	sign on
4870	R. Rio Amazonas, Ecuador	0330	SS	7255	R. Botswana	0300	local
4875	Super Radio, Brazil	0000	PP	7260	R. Vanuatu	0700	EE/local
4875	V of Jinling, China	1200	CC	7270	R. RSA, S. Africa	0400	
4890	ORTS, Senegal	0600	FF	7275	ELBC, Liberia	0700	
4890	R. Centinela del Sur, Ecuador	1100	SS	7285	RTM, Mali	0700	FF
4904	RN Tchadienne, Chad	0500	FF	7315	WHRI, Indiana	0430	
4915	R. Cora, Peru	1000	SS	7345	R. Prague Int'l, Czechoslovakia	0300	
4915	GBC-1, Ghana	0600		7355	WRNO, Louisiana	0130	
4920	ABC, Australia	0930		7375	R. For Peace Int'l, Costa Rica	0200	
4928v	R. Rica, Nicaragua	0100	SS	7400	R. Kiev, Ukraine	0030	
4935	Kenya Broadcasting Corp.	0200		7412	All India Radio	1215	sign on
4940	R. Continental, Venezuela	0400	SS	7465	Kol Israel	0130	SS
4960	R. Federacion, Ecuador	0030	SS & local	7475	RTT Tunisia	2300	AA
4965	R. Santa Fe, Colombia	1030	SS	7510	KTBN, Utah	0200	
4965	R. Alvorada, Brazil	0900	sign on, PP	7516	CPBS-2, China	1400	CC
4990	R. Nigeria	0500		7520	WWCR, Tennessee	0400	
5020	SIBC, Solomon Islands	0745		8000	JJY, Japan	1000	time station
5020	LV du Sahel, Niger	0600	FF	9345	R. Pyongyang, N. Korea	1100	KK
5025	R. Rebelde, Cuba	0200	SS	9360	REE, Spain	0100	
				9410	BBC, England	0400	

Freq.	Station/Country	UTC	Notes	Freq.	Station/Country	UTC	Notes
9420	Voice of Greece	0200	Greek	11990	R. Prague Int'l, Czechoslovakia	0000	
9445	WMLK, Pennsylvania	1930		12005	RTT Tunisia	0530	AA
9475	R. Cairo, Egypt	0200		12010	R. Austria Int'l	1830	FF
9480	Trans World Radio, Monaco	0756	sign on	12035	Swiss Radio Int'l	0200	
9480	R. Tirana, Albania	0430		12055	R. Moscow	0100	
9505	R. Record, Brazil	0030	PP	12085	R. Damascus, Syria	2030	
9505	R. Tacna, Peru	1000	SS	13605	Radio Australia	1600	
9530	Voice of America	0730		13610	Deutsche Welle	2000	GG
9540	R. Nacional, Venezuela	0300	SS	13625	KHBI, Saipan	2200	
9545	Deutsche Welle, Germany	0300	via Antigua	13630	R. For Peace Int'l, Costa Rica	0230	
9555	R. Portugal	2200	PP, weekends	13660	BBC	1500	AA
9560	R. Finland Int'l	0630	Finnish	13675	BRT, Belgium	0050	FF
9560	Voice of Ethiopia	1500		13675	UAE Radio, UAE	0330	
9560	RAI, Italy	0100		13700	Radio Netherlands	2100	
9580	Africa No. One, Gabon	0600	FF	13720	AWR, Guam	1000	RR
9580	Radio Australia	1100		13760	R. Pyongyang, N. Korea	0000	
9580	Radio Tirana, Albania	0330		13855	INBS, Iceland	1915	Icelandic
9600	R. Tashkent, Uzbekistan	1200		15010	Voice of Vietnam	2030	
9615	Vatican Radio	0250		15020	All India Radio	1300	unid lang.
9620	Radio Havana Cuba	2330	SS	15030	R. For Peace Int'l, Costa Rica	2230	
9630	REE, Spain	0230	FF	15084	VOIRI, Iran	2200	Farsi
9660	R. Rumbos, Venezuela	1030	SS	15095	FEBC, Philippines	0430	CC
9660	ABC, Australia	0900		15105	Deutsche Welle, Germany	1000	GG, via Antigua
9675	R. Vilnius, Lithuania	2230		15110	All India Radio	0100	
9685	Radio Japan	2200	JJ, via Fr. Guiana	15140	R. Nacional, Chile	0100	SS
9690	Radio Beijing	0300	via Spain	15140	R. Veritas, Philippines	1515	Tagalog
9695	Radio Sweden	0330		15155	HCJB, Ecuador	0245	
9700	Radio New Zealand	1130		15170	R. Korea, S. Korea	0600	
9705	R. Mexico Int'l	0200	SS	15170	Radio Tahiti	0600	FF/TT
9706	Voice of Ethiopia	0330	Amharic	15200	Radio France Int'l	2200	PP
9735	Radio Beijing	2200	via USSR	15250	Radio Portugal	2100	
9750	Qatar Broadcasting System	2200	AA	15265	All India Radio	2200	
9765	V of Mediterranean, Malta	0600	sign on	15295	WINB, Pennsylvania	1530	
9800	FEBC, Philippines	0930		15315	Voice of the UAE, UAE	2000	AA
9800	Radio France Int'l	2200	FF	15330	R. Sofia, Bulgaria	2300	EE
9810	Radio Russi, Russia	1100	RR	15335	All India Radio	1330	
9835	R. Budapest, Hungary	0130		15345	RAE, Argentina	0000	SS
9840	Voice of Vietnam	1230	VV	15350	Radio Luxembourg	0300	
9845	Radio Moscow	1100	CC	15360	Radio Norway	0100	NN
9870	Radio Austria Int'l	0130		15375	REE, Spain	1930	
9870	KNLS, Alaska	1100	CC	15400	BBC	1700	via Ascension
9885	Swiss Radio Int'l	0200		15410	R. Finland Int'l	1400	
9910	BBC	2230		15420	R. Portugal	1600	M-F
9925	BRT, Belgium	2200		15440	R. Afghanistan	1900	via USSR
9950	R. Damascus, Syria	2200		15445	Voice of America	2200	via Philippines
11040	CPBS-2, China	0900	CC	15450	RTT Tunisia	1700	AA
11335	R. Pyongyang, N. Korea	0930	RR	15470	R. Tashkent, Uzbekistan	1330	
11550	WYFR, Florida	1300	via Taiwan	15475	Radio Moscow	2030	
11588	Kol Israel	2230		15485	Voice of Turkey	0500	TT
11620	Vatican Radio	0500		15525	Swiss Radio Int'l	2100	
11650	KTWR, Guam	1530		15560	Radio Netherlands	0030	in SSB
11660	R. Sofia, Bulgaria	1930		15575	Radio Korea, So. Korea	0045	KK
11680	R. Sofia, Bulgaria	2300		15585	Radio Moscow	2030	
11710	RAE, Argentina	0200		15610	WCSN, Maine	1400	
11715	R. Beijing	0300	via Mali	15610	Kol Israel	0100	
11720	BBC	0400	AA, via Cyprus	15647	Radio Bangladesh	1230	
11735	Radio Yugoslavia	0100		15670	British Forces Broadcasting	2300	via BBC Cyprus
11745	Vatican Radio	1345		17525	Voice of Greece	1230	Greece
11770	Radio Kiev, Ukraine	0000		17545	Kol Israel	1200	Hebrew
11770	Radio Riga, Latvia	2300		17555	WSHB, So. Carolina	2230	
11780	R. Nacional Amazonia, Brazil	2230	PP	17555	Radio Pakistan	1530	
11790	Radio Norway	0000	NN	17595	RTM, Morocco	1530	
11800	RAI, Italy	0100		17705	Radio Havana Cuba	2000	
11805	R. Globo, Brazil	2300	PP	17720	Radio Vilnius, Latvia	2300	
11810	R. Korea, S. Korea	0600		17725	V of the Great Arab Homeland, Libya	1700	AA
11820	Radio Havana Cuba	0400		17745	Radio Algiers, Algeria	1900	FF
11825	R. Tirana, Albania	0230		17745	Radio Romania Int'l	0530	sign on
11835	R. El Espectador, Uruguay	2230	SS	17770	Radio New Zealand Int'l	0430	
11840	Radio Japan	0200	EE/JJ via Sri Lanka	17795	Qatar Broadcasting System	1600	sign on, AA
11840	R. Moscow	2100	via Cuba	17855	Voice of the UAE	1900	AA
11865	Radio Norway	0400	NN	21465	Deutsche Welle, Germany	0400	GG
11865	R. Denmark	0430	via Norway	21490	Radio Austria Int'l	0830	
11865	KWTR, Guam	1330		21500	Radio Sweden	1530	
11870	AWR Latin America, Costa Rica	1200	EE	21505	BSKSA	1200	AA
11890	R. Oman	1800	AA	21510	Radio Free Afghanistan	1300	Pashtu, via RF/RL
11910	R. Australia	1330		21570	REE, Spain	1700	SS
11915	R. Gaucha, Brazil	0030	PP	21645	Radio France Int'l	0030	
11920	Radio RSA, S. Africa	0400		21715	Radio Yugoslavia	1300	
11930	TWR, Bonaire	0300		21750	Radio Beijing	1600	AA
11930	Radio Australia	1130		21770	Radio France Int'l	1400	
11935	Radio Liberty, Germany	0630	Ukrainian	21780	WCSN, Maine	1430	
11940	R. Romania Int'l	0358	sign on	21850	RAI, Italy	1230	Italian
11960	RTM Mali	1600	FF	25740	Deutsche Welle, Germany	1200	GG
11980	R. Cairo, Egypt	1900	AA	25950	HCJB, Ecuador	1700	



to reducing an interfering signal to only 0.0000001% of its original strength!

The ratio between the selectivity at the -6 dB and -60 dB points is known as the *shape factor* of a filter, and the best filters have shape factors of 2:1 or less. For example, a filter measuring -6 dB at 6 kHz and -60 dB at 15 kHz could still let in heavy interference from a station located 5 kHz away from the one you want to hear. However, a filter rated at -6 dB at 6 kHz and 10 kHz at -60 dB down would do a much better job of rejecting such interference.

So Which One Is Better?

I never answered the question I posed at the start of the previous section: which is better, a filter rated at 1.8 kHz at -6 dB down and 5.0 kHz at -60 dB down or one rated at 3.0 kHz at -6 dB down and 6.0 kHz at -60 dB down?

Well, it depends.

Suppose we want to listen to AM signals under conditions of heavy interference. In that case, the 3.0 kHz at -6 dB down filter is the best choice. But if we want to listen to RTTY or SSB signals in heavy interference, then the 1.8 kHz at -6 dB down filter is the best choice.

A filter's bandwidth is "good" or "bad" depending on the mode of the signal we're trying to hear. The 3 kHz filter will let us receive the carrier and one sideband of an AM signal and let us hear the signal with reasonable fidelity. However, the 1.8 kHz filter will "clip" the sideband too much, resulting in a signal so reduced in fidelity that it won't be very intelligible. By contrast, the 1.8 kHz filter will work fine with RTTY signals. The 3 kHz filter 3 kHz filter would also work with RTTY filters, but is wider than necessary and is more likely to let interference through.

Here's a few rules of thumb as to desired receiver bandwidths for different modes rated at the -6 dB points. For AM signals, a bandwidth with 4 to 6 kHz is good for general listening. Bandwidths as narrow as 2.5 to 3 kHz can be used for DX'ing in the AM mode; audio fidelity will be reduced but such bandwidths can let you hear signals otherwise lost in interference. For SSB reception, bandwidths in the range of 2 to 2.7 kHz are good choices. Most SSB filters will also work fine for RTTY work, although a filter of about 1.8 kHz is usually best for RTTY. And a really narrow bandpass under

1 kHz, such as 500 Hz, is recommended for CW. For all of these, the best filters will have a shape factor of less than 2:1.

Crystal, Mechanical and Ceramic

If you look at the specifications and ads for new receivers, you'll often see them described as having crystal, mechanical, or ceramic filters. What's the difference between them?

All three make use of the *piezoelectric effect*. This is the ability of certain materials to convert electrical energy to mechanical vibrations and vice-versa. (The crystal in old crystal-controlled scanners and radio transceivers made use of the piezoelectric effect.) The theory behind this gets complicated, but a crystal or mechanical or ceramic element is cut to vibrate at a certain frequency and reject others, making it a bandpass filter.

Crystal and mechanical filters are great ways to get terrific selectivity. In particular, the shape factor of such filters is usually outstanding—sometimes 1.5:1 or better! Tuning a receiver with a good crystal or mechanical filter is a real treat, as signals will seem to "pop" out of nowhere as you tune across a frequency range. Crystal filters tend to be used with newer solid-state radios, while mechanical filters were mainly used with older tube-type radios. In terms of what you can hear, there's not really much to choose from between them.

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Multi-Function Five Inch CRT. Displays frequencies, modes, memory contents,

operator-entered notes and function menus. Features a subdisplay area for printed modes such as RTTY, SITOR and PACKET (external T.U. required).

Spectrum Scope. Indicates all signal activities within a +/-25, 50 or 100kHz range of your tuned frequency. It's ideal for spotting random signals that pass unnoticed with ordinary monitoring receivers.

1000 Multi-Function Memories. Store frequencies, modes, and tuning steps. Includes an editor for moving contents between memories, plus an on-screen notepad for all memory locations.

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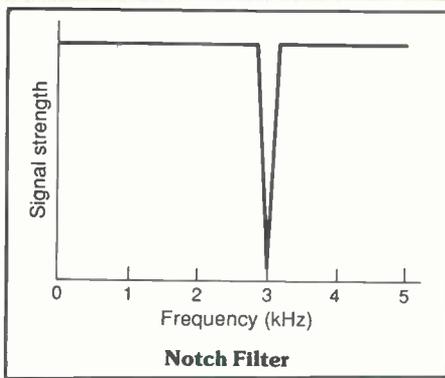
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Ceramic filters are clearly inferior to crystal and mechanical filters, with much poorer shape factors. In fact, ceramic filters are mainly used to replace tuned circuits in the intermediate frequency sections of receivers, and are used by receiver design engineers to simplify circuit design rather than to increase performance. While ceramic filters aren't bad, they're nothing to get excited over either.

Using Notch Filters

Notch filters are really handy devices once you learn how to use them. Unfortunately, most SWLs don't.

Notch filters come in two varieties: the so-called *IF notch* filters and the *audio notch* filter. The IF notch works in a receiver's intermediate frequency amplifier stage and actually removes some of the frequencies in the receiver's bandpass. By contrast, the audio notch filter works by removing a slice of frequencies in the receiver's audio output. Both are mainly useful for removing heterodynes (i.e., whistles) caused when two AM mode stations are close together in frequency or for removing a narrow bandwidth signal (such as CW) found in a receiver's bandpass. As a general rule, an IF notch filter is more effective than an audio one.

Since notch filters affect such a narrow range of frequencies (usually only a few hundred Hertz or less), they must be carefully tuned to have an impact on what you hear. This means you have to tune slowly, carefully and critically. A very minor adjustment of a notch filter can make all the difference in removing a heterodyne or interfering signal. Many SWLs turn their notch filter control knob as rapidly as they do the volume control, and that's a mistake; they tune right past the point where the notch filter is effective without realizing it!

So if you have a notch filter, remember: *easy does it!*

Audio Filters

Audio filters work on the audio output on your receiver. Like other filters, these come in bandpass, low pass, high pass, and notch varieties.

While notch filters are very useful, they aren't a substitute for good selectivity in the radio frequency sections of your receiver. A

good crystal or mechanical filter will *always*—no ifs, ands, buts, maybes, or manufacturer hype to the contrary—outperform an audio filter when it comes to separating stations that are close together in frequency. The only case where an audio filter's performance can even approach that of a crystal or mechanical filter is with CW signals, which are normally a single tone.

However, a good audio filter in conjunction with a crystal or mechanical filter is a terrific combination for serious DX'ing. Audio filters are particularly good for removing noise and "crud" from a signal, making the audio far more intelligible. An audio filter with a high pass function is valuable when using a narrow bandpass filter. The audio from such filters can have too much bass for clarity, and a high pass filter can make the audio sound more natural. And everyone's hearing varies; an audio filter will let you tweak the audio until it sounds "right" to you.

Finally, don't become so enamored of selectivity that you find yourself using every selectivity device and the narrowest bandwidth you can of a signal, regardless of its strength or the level of interference. Use only enough selectivity to let you hear the signal you want to clearly. About 90% of my listening is done with my widest bandpass and no other selectivity device, and I'll bet you will find the same will be true for you.

Editor's Note: Harry Helms is the editor of the Umbra et Lux newsletter, c/o DX/SWL Press, 10606-8 Camino Ruiz #174, San Diego, CA 92126.

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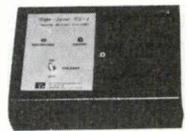
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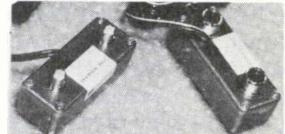
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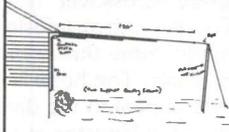
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CIRCLE 61 ON READER SERVICE CARD

Winkin', Blinkin', & Nod: Some residents of Hampstead, MD are in a snit because WGRX-FM has strobe lights on its 700 ft. antenna tower. Well, they've been complaining about the strobes for about six years because they are "an annoyance." Folks say they create a disco-like effect on the otherwise tranquil surroundings of the community. They don't mind the strobes during the daylight hours, but at night they'd like continuous red lights on the tower.

The strobes provide maximum visibility for aircraft, especially at night and in poor weather. The red lights would be within FAA regulations, however, and that's why a change in the lighting method is being pursued. When the residents first began complaining, the station did cut the intensity of the strobes in a gesture of good faith. The residents said that wasn't good enough. The station management contends that the strobes should be continued as a safety factor because of the height of the WGRX-FM tower.

Thanks to Ron Bruckman, Registered Monitor KMD3GJ, of Hampstead, MD for passing along this tidbit.

Sunny Times: New stations affiliating with the Sun Radio Network include: WVOC in Clayton, SC; KCKY in Coolidge, AZ; WMAZ in Macon, GA; WLIQ-FM in Harriman, TN; WBBK in Blakely, GA; and WNRE in Circleville, OH.

Change in Houston: Listeners in Houston, TX were witness to a major change in local broadcasting. Longtime oldies and classic hits station KFMK/97.9 was removed from the dial and replaced with a new format, plus new call letters (KBXX) to go along with its changed image. The decision to make the change was done to beef up the station's share of the audience in the Houston market. For the past two years, KFMK's Arbitron ratings had gone into a continual slide.

As KBXX, the station will be running a so-called Contemporary Crossover format, which is a mix of Top 40, with an infusion of dance-oriented music from the areas of Latin and soft jazz music. The hope is that this will have a wide appeal to the diverse ethnic components of the Houston area.

Thanks to Larry Loper, Sugarland, TX for keeping us posted on this change.

Another Big Change: Los Angeles/Santa Monica station KDAY/1580 metamorphosed from rap music into all business-news station KBLA. The station is also running some general news, plus weather and traffic reports, and some sports scores.

KBLA's owners note that the call letters represent K-Business-Los Angeles. Old timers in the area, though, perked up at the

KPBS Radio FM 89

SAN DIEGO PUBLIC RADIO

FM89 in San Diego is none other than KPBS, an affiliate of National Public Radio. This bumper sticker was sent to us by John Kershaw, who works at KPBS on Saturday nights.

KBLA callsign because they used to be used locally (Burbank/Glendale) by a popular late-1960's "Boss Top 40" rocker on 1500 kHz. That station went off the air in September of 1972 when it became KROQ. The old KBLA was the home of Humble Harv and Emperor Hudson, among well-remembered screamers.

George Schwenk, of San Pedro, CA tells us that the new KBLA/1580 (ex-KDAY), was originally known as KOWL when it first began operations in 1947. Thanks to George, and also to Michael Carland, of Valencia, CA for bringing us up to date on KBLA.

North/South of The Border: Mike Hawk, KB0GXE, of Omaha advises that CJFT/530 will probably have switched over to FM-only by the time you read this. Their 530 spot on the AM dial was filled by CIAO, leaving 790 kHz. CIAO/530 is 250 watts

day/night into an omni-directional antenna.

Mike also tells us that he is planning on bringing out a complete, highly detailed, and accurate Mexican logbook because of the lack of such information available to DX'ers. We assume this is AM only, although Mike didn't specifically say. At press time, the logbook wasn't finished, so no price had been firmly established. Mike said he'd send us a copy, and he estimated that the price would come in somewhere between \$5 and \$7 per copy. If you can't wait, you can check directly with him at: Mike Hawk, KB0GXE, 10212 P Street, Omaha, NE 68127-2130. Sounds like a useful book.

FCC Stuff: A few issues back we mentioned that a deejay at St. Louis FM'er KSHE interrupted its regular programming to broadcast a false emergency alert that claimed the nation was under nuclear attack. This broadcast took place during the

New FM Call Letters Assigned

KASM-FM	Albany, MN	WFUA	Oak Harbor, OH
KBHR	Bear City, CA	WFUB	Orange, MA
KCHP	Sutter Creek, CA	WFUC	Lafayette, IN
KFTC	Great Falls, MT	WFUD	Honeoye Falls, NY
KFTE	Breaux Bridge, LA	WGGY	State College, PA
KFTG	Santa Fe, TX	WGOG-FM	Walhalla, SC
KFTN	Sun Valley, CA	WHMU	Covington, PA
KNSQ	Mt. Shasta, CA	WISQ	Neillsville, WI
KOSE-FM	Wilson, AR	WJZX	Scranton, SC
KVCV	Kirkville, MO	WKBK-FM	Winchester, NH
KVNB	Roswell, NM	WMJL	Marion, KY
KVNG	Spring Valley, MN	WMPA	Mansfield, PA
KVNM	Oro Valley, AZ	WMUF-FM	Paris, TN
KVNR	Alva, OK	WNJT-FM	Trenton, NJ
KVNV	Norton, KS	WONO	Walterboro, SC
KVNW	Duluth, MN	WVCO	Loris, SC
KYNI	Buckeye, AZ	WVCQ	Brockway, PA
KZPN	Bayside, CA	WVCU	Yarmouth, MA
KZPO	Lindsay, CA	WVCV	Boalsburg, PA
WAFR	Tupelo, MS	WVCW	Barrackville, WV
WAWC-FM	Syracuse, IN	WVCZ	Harrison, OH
WAYM	Columbia, TN	WVRC-FM	Spencer, WV
WBJI	Blackduck, MN	WYFZ	Evans, GA
WCYO	Irvine, KY	WZKM	Montgomery, WV
WFSP-FM	Kingwood, WV		

war in the Persian Gulf, and was accompanied by warning tones that sounded much like those associated with the Emergency Broadcast System (EBS), and also the sounds of explosions. It seems the broadcast was intended by the deejay to make

some political statement about the horrors of war, and was made without the prior knowledge or consent of KSHE's management.

Two hours later, the announcer explained that the alert was false. Almost four and a

half hours later, KSHE's management ran a tape recorded official apology and explanation that the alarm was false. This announcement was repeated throughout the day. The following day, the person responsible further apologized and explained his actions.

Requests For Changed AM Call Letters

Now	Seeks	
KSIR	KRKI	Estes Park, CO
KSNO	KRKE	Aspen, CO
KVOG	KPBI	Greenwood, AR
WBCM	WUNI	Bay City, MI
WDXB	WJOC	Chattanooga, TN
WQPN	WZAO	Moundsville, WV
WSMD	WMOM	LaPlata, MD

Approved AM Callsign Changes

New	Was	
KBLA	KDAY	Santa Monica, CA
KEIO	KWVG	Hamby, TX
KKMJ	KFON	Rollingwood, TX
KQHN	KDVE	Nederland, TX
KRQC	KDON	Salinas, CA
KVDL	KIXC	Quanah, TX
WAZX	WRAF	Alpharetta, GA
WBGS	WTSR	Point Pleasant, WV
WBIZ	WEUZ	Eau Claire, WI
WBNN	WBYG	Union City, TN
WDTL	WRDC	Cleveland, MS
WGBB	WBAB	Freeport, NY
WJNX	WDKC	Fort Pierce, FL
WJUB	WPLY	Plymouth, MI
WONZ	WTYO	Hammonton, NJ
WRQQ	WOJY	Farrell, PA
WTKT	WZXU	Georgetown, KY
WWHL	WLRQ	Cocoa, FL

New AM Call Letters Assigned

WTOR	Youngstown, NY
------	----------------

Changed Shortwave Call Letters

Now	Was	
KTBN	KUSW	Salt Lake City, UT

Requests For Changed FM Call Letters

Now	Seeks	
KHUK	KSLD	Soldotna, AK
KOPY	KQNN	Alice, TX
KUNB-FM	KMMS	Bozeman, MT
WYFR	WWBZ	Chicago, IL
WLHN	WXXP	Anderson, IN
WSCG	WZZM-FM	Corinth, NY
WXSJ	WZZR	Bicknell, IN

Request Withdrawn For Changed FM Call Letters

Now	Sought	
WCCN-FM	WZZN	Neillsville, WI

Changed FM Call Letters Approved

Now	Was	
KAMX-FM	KFMG	Albuquerque, NM
KBXX	KFMK	Houston, TX
KDKS	KWQI	Alexandria, LA
KGTR	KURO	Huron, SD
KHII	KBZE	Security, CO
KHTX	KPIG	Freedom, CA
KHWY	KHIW	Essex, CA
KIKX	KIXS	Canton, SD
KIXS	KZEU	Victoria, TX
KJMS	KRNB	Memphis, TN
KKMJ-FM	KKMJ	Austin, TX
KMAT	KCHP	Sutter Creek, CA
KMMA	KZZF	Hanford, CA
KMTT	KBRD	Tacoma, WA
KMUZ	KWQM	Camas, WA
KNWR	KZUC	Ellensburg, WA
KOTD-FM	KZPG	Plattsmouth, NE
KPHR	KMSD-FM	Milbank, SD
KQLW	KWMB-FM	Wabasha, MN
KRIO-FM	KWCB	Floresville, TX
KSKS	KFYE	Fresno, CA
KTKX	KTJB	New Boston, TX
KVRQ	KVRK	Atwater, CA
KVTY	KITM	Mission, TX
KWMX	KSEA	Seattle, WA
KWWV	KWVD	Morro Bay, CA
KXTN	KZVE	San Antonio, TX
WAXF	WOJY-FM	Sharpsville, PA
WBGS	WTGR	Point Pleasant, WV
WBHY-FM	WAYF	Mobile, AL
WBIZ-FM	WBIZ	Eau Claire, WI
WBMX	WBMX-FM	Boston, MA
WBSY	WZYJ	Rose Hill, ND
WBYG	WZYI	Point Pleasant, WV
WDTL-FM	WQAZ	Cleveland, MS
WESK	WJDG	Loudon, KY
WFGY	WFHG-FM	Altoona, PA
WGNB	WXYB	Zeeland, MI
WHBX	WTMG	Tallahassee, FL
WHPS	WHVY	Baltimore, MD
WHVK	WKQD-FM	Tulahoma, TN
WHVY	WBEG	Grasonville, MD
WINL	WDAL	Linden, AL
WJPC-FM	WLNR	Lansing, IL
WKDZ-FM	WBZD	Cadiz, KY
WKIP-FM	WEXT	Arlington, NY
WKME	WVCN	Kennebunk, ME
WKSJ	WMXS	Cape Charles, VA
WLYY	WKKP	Lansing, MI
WLZZ	WYDF	Montpelier, OH
WMTE-FM	WRRK	Manistee, MI
WRAF	WRAF-FM	Toccoa Falls, GA
WTGR	WBNN	Union City, OH
WTKT-FM	WTKT	Georgetown, KY
WYOS	WEAY	Nanticoke, PA
WYOY	WHWB-FM	Rutland, VT
WWLF-FM	WZQC	Copenhagen, NY
WXPS	WZFM	Briarcliff Manor, NY

FM Construction Permits Forfeited & Cancelled; Call Letters Deleted

K___	Woodward, OK	95.9 MHz
KBFT	Browning, MT	88.7 MHz
KCOO	Coos Bay, OR	89.3 MHz
KDEV	Anchorage, AK	100.7 MHz
KEAA	Kearney, NE	89.9 MHz
KFDU	Slayton, MN	103.1 MHz
KFLN-FM	Baker, MT	100.5 MHz
KICZ	Elk City, OK	94.3 MHz
KJBS	Julesburg, CO	96.5 MHz
KKGG-FM	Waimea, HI	99.1 MHz
KLFO	Junction, TX	93.5 MHz
KMBB	Helena, MT	91.3 MHz
KMYB	Pawhuska, OK	104.9 MHz
KREH	Sisseton, SD	99.3 MHz
KSRG	Sac City, IA	105.1 MHz
KSRL	Sutherlin, OR	101.1 MHz
KTTR	Lebanon, MO	99.1 MHz
KVFC	Silverton, CO	99.3 MHz
KWSF	Ft. Bragg, CA	91.5 MHz
KWYL	Williston, ND	98.5 MHz
KZIX	Hummock, AR	101.7 MHz
WAYW	Worcester, MA	91.9 MHz
WFAJ	Mich. City, IN	89.5 MHz
WFNY	Syracuse, NY	90.3 MHz
WGIN	Calhoun City, MS	102.3 MHz
WICN	Worcester, MA	90.5 MHz
WOTR	Statesboro, GA	90.3 MHz
WSHX	Danville, VT	95.7 MHz

FM Frequency Changes Requested

KNOD	Harlan, IA	105.5 MHz Move to 105.3 MHz, 25 kW
KOCD	Columbus, KS	98.3 MHz Move to 105.3 MHz
KOCN	Pacif. Grove, CA	104.9 MHz Move to 105.1 MHz
KSTG	Sikeston, MO	97.7 MHz Move to 97.9 MHz
KWFX	Woodward, OK	93.5 MHz Move to 100.1 MHz

FM Frequency Changes Approved

KHOX	Hoxie, AR	100.5 MHz Move to 105.3 MHz
KQWC	Webster City, IA	95.9 MHz Move to 95.7 MHz
KXLV	Cambridge, MN	105.5 MHz Move to 105.3 MHz
WMTR-FM	Archibold, OH	95.9 MHz Move to 96.1 MHz
WPLH	Tifton, GA	107.5 MHz Move to 104.9 MHz
WYMG	Tallahassee, FL	95.9 MHz Move to 96.1 MHz

New AM Permit Granted

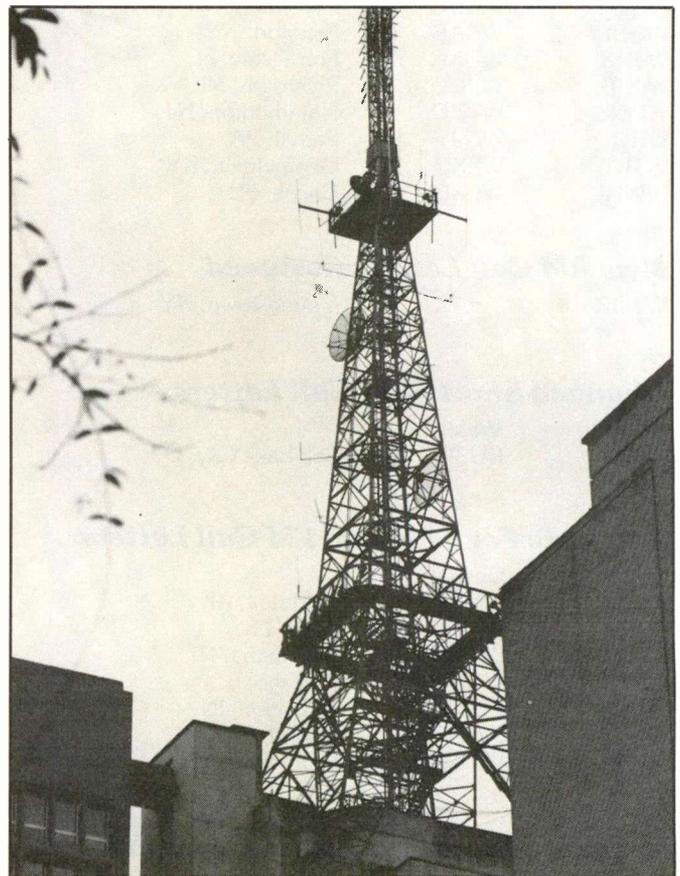
LA	Tioga	680 kHz, 800 watts
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AM Facilities Changes Approved

KNTA	Santa Clara, CA	1430 kHz Drop to 1 kW at night
KQCV	Okla. City, OK	800 kHz Run 2.5 kW days, 500 watts nights.
KSAZ	Tucson, AZ	580 kHz Move to Marana, AZ, use 1 kW at night.
KTCJ	Minneapolis, MN	690 kHz Run 1.5 kW days, 500 watts nights



Two broadcast towers on the main drag in Sao Paulo, Brazil. The first tower is used by TV Channels 5 and 11. The second tower is used by TV Channel 16. Thanks to Helio Soares, Sao Paulo, Brazil, for the photo.



This is the Sao Paulo TV Channel 7 tower, which piggybacks many other antennas, including one for ham TV. (Courtesy Helio Soares, Brazil.)



This exotic building in the Brazilian resort town of Buzios houses FM 102.5 and also a UHF-TV station. (Courtesy Helio Soares, Brazil.)

He was later suspended for a week, without pay. Also, the station implemented a specific policy to avoid any similar occurrences in the future.

Nevertheless, despite these corrective measures, the FCC declared that broadcasting false or deceptive emergency warnings is a serious violation of a station's fundamental obligation to serve the public's interest, and was a violation of Section 325(a)

of the Communications Act. Also, the FCC said that KSHE's use of warning tones similar to those employed by the EBS undermined the integrity of the EBS. As a result, the FCC told KSHE's licensee that it is apparently liable for a forfeiture of \$25,000.

The Galesburg Broadcasting Company (GBC), which is the licensee of WGIL/WAAG in Galesburg, IL, and KMCD/KIHK-FM in Fairfield, IA incurred an apparent li-

ability of \$25,000 for what the FCC claims was "unauthorized transfer of control."

The problem looks to have arisen when, in September of 1989, about 53 percent of Galesburg Printing and Publishing (GPP), owners of the *Register-Mail* and other interests, was sold. GPP held 75 percent of the voting shares of the GBC. As a result of litigation involving the sale of GPP's newspaper operations, the co-trustees appointed Harris Trust and Savings Bank as the Trust's sole successor trustee. Harris is a wholly-owned subsidiary of the Bank of Montreal, a Canadian concern.

GBC explained that they had been unaware that their actions were contrary to restrictions on alien ownership of U.S. broadcast media, but in March of '90, as soon as they became aware of the violation, an American entity was sought to buy the shares from Harris. In May a replacement for Harris was found, and in June and July of '90, Harris' interest in GBC was transferred to First Illinois Bank, an American company. The sale was approved by the FCC in September of 1990.

But the FCC was not pleased about the earlier transfer of the majority of voting shares to Harris, which was done without seeking FCC approval and denied the agency the opportunity to pass on the propriety of alien ownership of a licensee's parent company. The FCC suggested that had the original transfer been submitted for approval, it probably would not have been sanctioned. Therefore, the FCC felt that a \$25,000 forfeiture was appropriate, even though the unauthorized transfer had been inadvertent, and also corrected by the licensee as soon as it had been realized.

Applications For New FM Stations

AR	Sherwood	102.1 MHz	
CA	Dunsmuir	100.1 MHz	3kW
FL	St. Augustine	88.5 MHz	6kW
IA	Grinnell	106.7 MHz	50 kW
IL	Morris	103.1 MHz	3 kW
IN	Howe	91.9 MHz	3kW
KY	Flemingsburg	106.3 MHz	1.5 kW
KY	Hardinsburg	104.3 MHz	3 kW
MI	Pickford	105.5 MHz	6kW
MO	Otterville	107.7 MHz	6kW
MS	Pearl	93.9 MHz	
NC	Hatteras	94.3 MHz	6 kW
NC	Mt. Airy	89.7 MHz	7.5 kW
NE	Lincoln	88.5 MHz	5 kW
NH	Manchester	90.7 MHz	Low power
NJ	Sussex	88.5 MHz	500 watts
NM	Texico	96.5 MHz	4 kW
OH	Rio Grande	90.9 MHz	4 kW
TN	Cookeville	90.9 MHz	
VA	Marion	103.5 MHz	6 kW
WY	Casper	90.3 MHz	100 kW

Permits Granted For New FM Stations

AL	Northport	100.7 MHz	3 kW
AR	Wilson	103.7 MHz	6 kW

AZ	Colorado City	107.1 MHz	64 kW
CA	Healdsburg	95.9 MHz	3 kW
DE	Shelbyville	97.7 MHz	3 kW
GA	Macon	92.3 MHz	3 kW
KS	Augusta	96.3 MHz	3 kW
KY	Williamstown	106.5 MHz	3 kW
MO	East Prairie	105.3 MHz	3 kW
MO	Savannah	92.7 MHz	50 kW
MS	Ebenezer	103.9 MHz	3 kW
MS	Richton	96.5 MHz	6 kW
MT	Bozeman	102.1 MHz	20 kW
NV	Indian Springs	99.3 MHz	6 kW
NY	Canton	101.5 MHz	2.4 kW
OK	Bixby	1-5.3 MHz	3 kW
OR	Sisters	104.1 MHz	1 kW
PA	Spangler	97.3 MHz	1.5 kW
PA	State College	94.5 MHz	813 watts
SC	Walhalla	96.3 MHz	6 kW
SC	Walterboro	105.3 MHz	3 kW
TN	Paris	94.1 MHz	3 kW
TX	Hallettsville	99.9 MHz	3 kW
TX	McAllen	88.1 MHz	2 kW
TX	Pearsall	94.1 MHz	3 kW
WI	Neillsville	92.7 MHz	3 kW
WI	Plymouth	104.5 MHz	3 kW
WV	Fisher	103.7 MHz	6 kW
WV	Kingwood	107.7 MHz	1.6 kW

The FCC opened an inquiry into the matter of whether they would consider there to be any problems involved in the event the broadcast media interests of a person should be presumptively attributed to the other spouse in applying for ownership and cross-ownership rules for broadcast stations.

The FCC observed that many married couples have dual careers, and it was therefore seeking to clarify situations where one spouse's media interests might be wrongly tied to the independent media interests of the other spouse. The FCC is looking towards the establishment of formal standards and guidelines defining this in order to avoid any possible future confusion and problems.

There has been an increasing concern relating to obscenity complaints relating to various media. These problems haven't always been addressed as quickly or efficiently as possible because both the Department of Justice (DJ) and the FCC both share jurisdiction. Delineating and coordinating the efforts of both agencies in these matters has not always been easy, nor did it take place with any great haste.

The two agencies have now established a set of guidelines that will help in facilitating the resolution of complaints involving the dissemination of allegedly indecent or obscene materials by communications service providers.

Under these guidelines, the FCC and DJ will share responsibility for handling complaints involving broadcasters, based upon possible FCC rule violations, and/or possible violations of sections of the U.S. Criminal Code. DJ will handle complaints relating to cable TV, subscription TV, and radio

common carriers. Dial-a-porn complaints will be handled by whichever agency receives the complaint.

More Stations to be Allowed? Present FCC regulations limit ownership of radio stations to twelve AM and 12 FM to a single licensee. The FCC is weighing the possibilities of eliminating, or at least greatly easing up on, those limits. The time could even come when one licensee could own more than one AM or more than one FM outlet in a single audience market. This is not presently allowed. It's all still in the thinking and talking stages.

All this is due to major changes taking place throughout the broadcasting industry. Among these changes is in the increasing use of "time brokerage" by radio stations to prop up their incomes. Time brokerage, basically, is when a station leases out large blocks of its air time to one or more program providers who then fill that time with whatever they want, including commercials for their own or other products. Sometimes these brokerage arrangements are with independent programmers, or they can be with other broadcast stations.

A typical recently arranged time broker arrangement, for instance, was made in Jackson, MS. Jackson's AM station WKXI/1300 has leased air time on FM'er WMJW/107.5, located in nearby Magee. WMJW will then broadcast WKXI's programming during the leased hours. Another typical brokerage agreement example is Radio Newyork International's four hours of programming every Sunday night over shortwave WWCW/7520 in Nashville, TN.

Two Stations Facing Indecency Fines:

Station KCNA, an FM'er in Cave Junction, OR was told by the FCC that they're liable for a \$4,000 fine for two alleged indecency statute violations. One was a Liberate joke, the other was because of the claimed use of a taboo four-letter word uttered to a phone-in caller who became nasty with the morning deejay.

East Lansing, MI station WVIC-FM was told by the FCC about a \$2,000 forfeiture. The agency claimed that a segment of one call-in show contained a feature where listeners were requested to suggest alternate headlines for a tabloid news story about a fellow who suffered a rather embarrassing, unfortunate, and probably painful misfortune while on his honeymoon. Readers called in the comical headlines, but the FCC thought that a couple of them were unsuitable for broadcast.

Tower Topple: The 500-ft. broadcast tower of WJMX-FM/103.3, in Cheraw, SC was toppled by one or more vandals who cut the supporting guy wires. The station returned to the air two days after the incident, but via the tower facilities of a cable TV system in Darlington, SC. WJMX-FM's manager said that the damage was done by a person (or persons) who obviously knew how to accomplish the task. They knew just which wires to cut into, and how to escape being injured by the flying cables, each of which was carrying 2,500 lbs. of pressure. The FBI and other agencies were investigating. The station offered a \$5,000 reward for information leading to the arrest of the culprit(s).

Government Ownership of a Broadcaster: Because of an unusual set of circumstances, UHF-TV station WCVX/58, Vineyard Haven, MA ended up owned by the U.S. Government's Resolution Trust Corp. The station had been the property of an S&L, but that institution failed. When S&L's fail, their assets are turned over to the RTC, which acts as the receiver. Therefore, Uncle Sam ended up owning a domestic TV station. This seems to be a first. A buyer was being sought.

Non-Commercial Commercials? Non-commercial FM'er KYQX, of Weatherford, TX was hit with a \$3,000 FCC fine because the agency claimed the station had overstepped its bounds as a non-commercial licensee. KYQX was alleged to have given sports scores, and told listeners that the information was brought to them via the support of a local pizzeria. This was followed by a list of many of the culinary delights available at the eatery, the day of the lunch special, and the hope that listeners would mention the station when they went there.

Bottom of the Hour: I see by the clock on the studio wall that we are at the end of our time for now. Please send us any station photos, bumper sticklers, recent AM/FM QSL's, news clippings about broadcasters and broadcast stations, format changes, new station data, dark station obituaries, etc.

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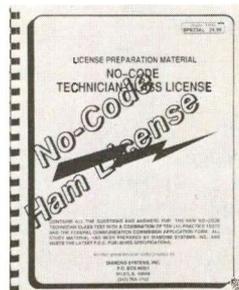
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CIRCLE 124 ON READER SERVICE CARD

NEW PRODUCTS

REVIEW OF NEW AND INTERESTING PRODUCTS

Realistic PRO-35 100-Channel Handheld Scanner Now Available At Radio Shack

The Realistic® PRO-35 handheld direct entry programmable scanner with 100-channel coverage is now available at Radio Shack® technology stores nationwide (Cat. no. 20-136).

The unit's custom designed microprocessor offers scanner enthusiasts direct access to over 20,000 frequencies that include police and fire departments, amateur radio, transportation services and aircraft frequencies. (Coverage: 29-29.7 MHz 10m FM Ham; 29.7-50 MHz VHF-Lo; 50-54 MHz 6m Ham; 108-136.975 AM Air; 137-144 MHz Gov't; 144-148 MHz 2m Ham; 148-174 MHz VHF-Hi; 406-450 MHz 70cm Ham/Gov't; 450-470 UHF-Lo; 470-512 MHz UHF-Hi.)

Channels on the PRO-35 can be stored in 10 banks for easy identification by the user. A weather band key provides instant reception of local weather frequencies. The search mode makes it easy to locate new or unpublished frequencies and the monitor band



allows the user to quickly store channels found during the search.

Other features include a selectable 2-second scan delay to prevent loss of replies on a

channel being scanned; channel lock-out function for skipping over specified channels; automatic shift to a preset priority channel whenever it is active; a switchable, backlit LCD display and a memory back-up which retains stored channels for up to one hour without the battery.

The PRO-35 comes with a detachable, flexible antenna, BNC antenna jack, ear-phone jack, belt clip, rechargeable nickel-cadmium battery pack and AC adapter/charger.

Also available as an option is the new Realistic® Amplified Communications Extension Speaker (Cat. no. 21-541) designed for use with scanners and other mobile communications equipment. This compact unit has a powerful 7.5-watt amplifier and heavy-duty 4-inch speaker to provide the extra volume often needed in a mobile environment. It comes with an adjustable mounting bracket that allows the user to properly position and aim the speaker. The Realistic Amplified Extension Speaker sells for \$23.95.

The Realistic PRO-35 retails for \$229.95 and is available along with the optional speaker at over 7000 Radio Shack and participating dealer stores nationwide.

WEFAX To The Max



PC GOES/WEFAX 3.0 \$250

PC GOES/WEFAX 3.0 is a professional wefax image reception and analysis system for the IBM PC and compatibles. The product includes a demodulator that handles both AM and FM fax signals, advanced signal processing software, tutorial cassette, and complete 325 page reference manual. The software includes the following advance features:

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- Tuning Oscilloscope
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- Pixel Photometry and Histograms
- Image Zoom, Scroll, Pan, Rotation

- CGA, HGA, EGA, VGA & Super VGA
- Orbital Prediction and Display
- Time Lapse Frame Looping
- Slide Shows
- Export to PCX & GIF Files
- Grayscale on all Popular Printers
- Programmable IOC & Line Rates
- Infrared Thermal Analysis
- APT Latitude & Longitude Grids

PC HF FACSIMILE 5.0 \$99

PC HF Facsimile 5.0 is a complete reception system for shortwave FSK facsimile on the IBM PC and compatibles. The product includes an FSK demodulator, tutorial audio cassette, 250 page manual and signal processing software. The product includes many of the advanced features of PC GOES/WEFAX 3.0 but at a fraction of the price. Call or write for a complete catalog of products.

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CIRCLE 155 ON READER SERVICE CARD

THE MONITORING MAGAZINE

Computer Aided Scanning

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Now you can enhance your ICOM communications receiver through a powerful computer controlled system by Datametrics, the leader in Computer Aided Scanning. The system is as significant as the digital scanner was five years ago and is changing the way people think about radio communications.

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- Extends ICOM capabilities including autolog recording facilities, 1000 channel capacity per file, and much more.
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R7000 system \$349
R71A system \$349
Manual and demo disk \$15

Requires ICOM receiver and IBM PC with 512K and serial port. The R71A version also requires an ICOM UX-14.

Send check or money order to Datametrics, Inc, 2575 South Bayshore Dr, Suite 8A, Coconut Grove, FL 33133. 30 return privileges apply.

CIRCLE 163 ON READER SERVICE CARD

September 1991 / POPULAR COMMUNICATIONS / 49

WASHINGTON PULSE

FCC ACTIONS AFFECTING COMMUNICATIONS

FCC Shuts Down Pirate Broadcast Stations

As part of a continuing enforcement effort, the Federal Communications Commission announced that it has shut down two illegal pirate radio stations.

Over the past several months the FCC's long range direction finding network pinpointed the location of a shortwave pirate broadcast station identified as "The Voice Of Oz." The signal was originating from Unionville, Pennsylvania. Staff from the FCC's Philadelphia Office traced the source of the signal to the home of William Taylor. The station was inspected and Mr. Taylor has been issued a fine of \$1,000 because of his illegal operation.

At the same time as the Voice of Oz investigation was underway, the FCC's long range monitoring network located a station called WLAR in the vicinity of Arlington, Massachusetts. Staff from the FCC's Boston Office traced the source of the illegal signals to the residence of a seventeen-year-old amateur radio operator. The operator is being issued a fine of \$1,000. The operator's name is being withheld because of his age.

Unlicensed operation of a radio transmitter is a violation of Section 301 of the Communications Act of 1934, as amended. Sanctions may include administrative fines of up to \$10,000 and/or criminal penalties of up to \$100,000 and/or imprisonment for up to one year. Such misuse of radio frequencies is a serious offense because of its potential for interfering with safety-of-life services such as aviation, marine and law enforcement.

Amateur Service Reciprocal Operating Arrangements

The United States has made arrangements with the following countries to grant a reciprocal operating permit (FCC Form 610-AL) to their citizens who hold amateur service licenses issued by the country of citizenship: Antigua and Barbuda, Argentina, Australia, Austria, The Bahamas, Barbados, Belgium, Belize, Bolivia, Botswana, Brazil, Canada (Canadian amateur service stations do not need a reciprocal operating permit while operating in the United States), Chile, Colombia, Costa Rica, Cyprus, Denmark (including Greenland), Dominica, Dominican Republic, Ecuador, El Salvador, Federated States of Micronesia, Fiji, Finland, France (including French Guiana, French Polynesia, Gambier, Marquesas, Society, and Tubuai Islands and Tuamotu Archipelago), Guadeloupe, Ile Amsterdam, Ile Saint-Paul, Iles Crozet, Iles Kerguelen, Martinique, New Caledonia, Reunion, Saint Pierre and Miquelon, and Wallis

and Futuna Islands), Federal Republic of Germany, Greece, Grenada, Guatemala, Guyana, Haiti, Honduras, Hong Kong, Iceland, India, Indonesia, Republic of Ireland, Israel, Italy, Jamaica, Japan, Jordan, Kiribati, Kuwait, Liberia, Luxembourg, Monaco Netherlands, Netherlands Antilles, New Zealand, Nicaragua, Norway, Panama, Paraguay, Papua New Guinea, Peru, Philippines, Portugal, Seychelles, Sierra Leone, Solomon Islands, Republic of South Africa, Spain, St. Lucia, St. Vincent and Grenadines, Surinam, Sweden, Switzerland, Thailand, Trinidad and Tobago, Tuvalu, United Kingdom (including Bermuda, British Virgin Islands, Cayman Islands, Falkland Islands, Gibraltar, Montserrat, Saint Helena and Turks and Caicos Islands), Uruguay, Venezuela, and Yugoslavia.

An alien may apply for a reciprocal operating permit by completing FCC Form 610-A, available from the Consumer Assistance Branch, Federal Communications Commission, 1270 Fairchild Road, Gettysburg, PA 17326, U.S.A. or, in some cases, from the United States missions abroad. The permit is valid for one year or until the expiration date on the alien's amateur service license, whichever comes first. The application and a photocopy of the alien's license must be sent to FCC, PO Box 1020, Gettysburg, PA 17326, U.S.A.

A reciprocal operating permittee is authorized to operate an amateur station in areas where the amateur service is regulated by the FCC. Such operation must comply with Part 97 of the FCC's Rules and the International Telecommunication Union *Radio Regulations*. Operator privileges are those authorized by the alien permittee's own government, but do not exceed those of the FCC Amateur Extra Class operator.

The callsign transmitted in the station identification procedure is that issued by the licensing country, preceded by an appropriate letter-numeral indicator, separated by the slant mark (/) or any suitable word that denotes the slant mark. (Canadian amateur stations must transmit the indicator *after* its callsign.) At least once during each intercommunication, the alien amateur station must include, in the English language, the geographical location as nearly as possible by city and state, commonwealth or possession.

The station location letter-numeral indicators are: Alabama - W4; Alaska - KL7; American Samoa - KH8; Arizona - W7; Arkansas - W5; Baker Island - KH1; California - W6; Colorado - W0; Commonwealth of Northern Mariana Islands - KH0; Commonwealth of Puerto Rico - KP4; Connecticut - W1; Delaware - W3; Desecheo Island, PR -

KP5; District of Columbia - W3; Florida - W4; Georgia - W4; Guam - KH2; Hawaii - KH6; Howland Island - KH1; Idaho - W7; Illinois - W9; Indiana - W9; Iowa - W0; Jarvis Island - KH5; Johnston Island - KH3; Kansas - W0; Kentucky - W4; Kingman Reef - KH5K; Kure Island, HI - KH7; Louisiana - W5; Maine - W1; Maryland - W3; Massachusetts - W1; Michigan - W8; Midway Island - KH4; Minnesota - W0; Mississippi - W5; Missouri - W0; Montana - W7; Navassa Island - KP1; Nebraska - W0; Nevada - W7; New Hampshire - W1; New Jersey - W2; New Mexico - W5; New York - W2; North Carolina - W4; North Dakota - W0; Ohio - W8; Oklahoma - W5; Oregon - W7; Palmyra Island - KH5; Peale Island - KH9; Pennsylvania - W3; Rhode Island - W1; South Carolina - W4; South Dakota - W0; Tennessee - W4; Texas - W5; Utah - W7; Vermont - W1; Virgin Islands - KP2; Virginia - W4; Wake Island - KH9; Washington - W7; West Virginia - W8; Wilkes Island - KH9; Wisconsin - W9; Wyoming - W7.

No United States citizen, regardless of any other citizenship also held, is eligible for an FCC-issued reciprocal operating permit. Any person, however, except a representative of a foreign government, may apply for an FCC amateur service license upon passing the qualifying examinations. Alien amateur operators who will be in the United States for extended periods of time are encouraged to obtain an FCC amateur service license. An alien holding an FCC amateur service license is not eligible for a reciprocal operating permit. When an alien obtains an FCC license, it supersedes any FCC-issued reciprocal operating permit held.

Contact: Personal Radio Branch/ssd/prb, Room 5322, (202) 632-4964.

220-222 MHz Band Removed From Amateur Services

On March 14, 1991, the Commission adopted a *Report and Order* in PR Docket No. 89-552 to adopt service rules for land mobile use in the 220-222 MHz frequency band. The rules adopted also remove the 220-222 MHz band from the amateur services. These rules become effective May 29, 1991. The Part 97 rules governing the amateur services, however, were waived to permit continued amateur station operation on the 220-222 MHz band in accordance with the former rules that governed operation on that band for a period of ninety (90) days from the effective date of the rules removing that band from the amateur services.

Now that the effective date of these rules changes has become certain, amateur operators are hereby placed on notice that ama-

teur stations were not permitted to transmit in the frequency band 220.000 to 222.000 MHz after 0000 hours UTC, August 28, 1991.

Land mobile applications for this band are currently being accepted for filing. Part 90 licenses will be granted as soon as type accepted equipment is available for land mobile operation in this band. For this reason, requests for waiver of the rules to permit continued amateur station operation in this band will generally not be viewed favorably. Amateur operators were placed on notice September 6, 1988, that they should provide for an orderly transition from this band. When it initiated PR Docket No. 89-552, the Commission warned amateur operators that if the rules proposed to establish private land mobile radio systems in the 220-222 MHz band were adopted, amateur stations would be required to terminate operations at the end of that proceeding. At that time the Commission again encouraged amateur operators to arrange for orderly transition from the 220-222 MHz band to avoid abrupt termination of amateur station operations.

Any requests for continued amateur station operation in the 220-222 MHz frequency band, whether couched as requests for waiver, requests for special temporary authority, requests for experimental or developmental licenses, or in any form, will be strictly scrutinized in light of the Commission's actions in General Docket No. 87-14 and PR Docket No. 89-552. Any such request must overcome the heavy burden of demonstrating that the arguments made in support thereof are substantially different from those that have been carefully considered in both rule making proceedings. Any such request must include acceptable justification for failing to provide for an orderly transition from the band over the past three years, notwithstanding the Commission's repeated notifications to amateur operators that failure to provide for such a transition could result in abrupt termination of operation.

New Edition Of Application For Commercial Radio Operator License (Form 756) Available

FCC Form 756, *Application for Commercial Radio Operator License*, has been revised effective March 1991 and is now available. Persons using the March 1991 edition of this form will no longer need to submit completed copies of FCC Form 255 with their applications.

When requesting Form 756 from the Commission, commercial radio operator applicants should also request a copy of the current *Field Operations Bureau Fee Filing Guide*. The guide contains important supplementary instructions for mailing applications and paying the fees that must accompany all applications.

The new form is available from the FCC's Forms Distribution Center, 2803 52nd Avenue, Hyattsville, Maryland 20781 and from all FCC field offices.

For additional information about commercial radio operator licenses and applications, contact Claudette Jefferson or Gabriel Collazo at (202) 632-7240. For information about fees and fee payments, call (202) 632-3337.

Revision of FCC Form 703 and FCC Form 406

The Commission revised FCC 703-Application for Consent to Transfer Control of Corporation Holding Station License, and FCC 406-Application for Ground Station Authorization in the Aviation Services, to include current fee collection information and eliminate the requirement to submit FCC 155-Fee Processing Form.

Applicants filing the *February 1991* edition of FCC 703, or the *May 1991* edition of FCC 406 should not submit FCC 155 with their application. Previous editions of FCC 703 and FCC 406 are still acceptable for processing, but must be accompanied by FCC 155.

For further information contact the Private Radio Bureau's Consumer Assistance Branch, telephone (717) 337-1212.

FCC Proposes Changes For The Fire Radio Service

The Commission proposed to increase the maximum output power for transmitters authorized to operate on Fire Radio Service frequency 153.83 MHz from 10 watts to 1000 watts, while maintaining the use of that frequency for on-the-scene fire-fighting communications.

The Commission stated that this increase will improve communications between on-the-scene fire-fighting personnel using the fire radio frequencies, thus resulting in safer and more effective fire-fighting efforts.

The Fire Radio Service frequency 153.83 MHz is intended for use in on-the-scene fire-fighting communications. Currently, available power on this frequency is limited to 10 watts which effectively restricts the use of this frequency to its intended purpose.

Initiating this proceeding, the International Association of Fire Chiefs and the International Municipal Signal Association asked the Commission to increase the available power on 153.83 MHz from 10 watts to 100 watts. In their petition, they stated that this frequency is dedicated to fire-fighting personnel. They claimed that because many of the vehicular radio units operate with 100 watts output power, the 10 watt power limitation precluded necessary communications on the 153.83 MHz frequency between these vehicular units and fire-fighting personnel using lower power handheld radio units. As a result, critical communications links are lost and fire-fighting efficiency is deteriorated.

FCC Shuts Down Cable TV System For Exclusive Leakage

The FCC's Los Angeles Office issued a cease operations order to Falcon Cable Television of Mojave, California. Falcon was ordered to shut down its system because the results of an FCC inspection showed numerous signal leaks on the aviation frequencies. The leaks were in excess of the 20 microvolt limit and far exceeded the cumulative leakage index (CLI) of 64.

The CLI standard, as defined in Section 76.611 of the Commission's Rules, was designed to prevent harmful interference to aeronautical communications in the frequency bands 108-137 and 225-400 MHz. Violation of the Commission's CLI standard presents a threat to public safety. In addition to shut-down orders, possible penalties for violations of signal leakage rules include assessment of monetary forfeitures. Because of the safety-of-life concerns associated with excessive leakage from cable television systems, the Commission will continue to inspect and vigorously enforce its regulations in this area.

Information About Application Procedures For The 220-222 MHz Frequency Band

This information is issued to supplement the FCC's Public Notice No. 12666:

This is to remind applicants that the procedure which allows applicants to submit an unofficial "back-up" copy of their application at the Secretary's Office in Washington as evidence of timely submission, does not apply to this filing. The back-up procedure is intended only to apply to those applications that traditionally had been filed in Washington, DC. Thus, the back-up procedures do not apply. See 55 Fed. Reg. 19148 (May 8, 1990) at Para. 14. **DO NOT SUBMIT OFFICIAL "BACK-UP" COPIES TO THE SECRETARY'S OFFICE.** Applicants will only be accepted at the address(es) designated in the Public Notice No. 12666 of April 17, 1991.

The requirement to use FCC Form 155 in connection with a nationwide application (FCC Form 574) that is *not site-specific* is a change from our existing procedure and existing agreement with the Office of Management and Budget (OMB). OMB has been advised of this modification to our previous agreement that the use of the FCC Form 574 would not require a FCC Form 155 and concurs in the procedural change for this filing only.

The purpose of this change was to add the FCC Form 155 for the convenience of the applicant. It allows the applicant to submit "one check" to accompany the nationwide non-site-specific application; provided, therefore, that the fee is at least the mini-

mum and is a multiple of \$35. It eliminates the need to submit a separate check for each nationwide channel for "non-site-specific" geographic location application.

Rules Governing Importation Of RF Devices Capable Of Causing Harmful Interference Amended; Electronic Filing To Be Implemented (Gen. Docket 89-349)

The Commission has amended Part 2 of its rules governing the importation of radio frequency (RF) devices capable of causing harmful interference and eliminated bur-

densome and duplicative government information filing requirements.

The changes will facilitate the U.S. Customs Service initiative to implement an automated, paperless entry system and more closely match the FCC's rules with the separate requirement of the Telecommunications Trade Act of 1988.

The rules pertaining to the importations of RF devices were established in 1975 in cooperation with Customs. These rules are intended to keep imported devices which do not comply with FCC technical requirements from being distributed within the United States, thereby reducing the potential for harmful interference to authorized radio communications users. Control of imported RF devices requires the completion

of the Form 740 by the importer or consignee to declare that the devices imported are in compliance with FCC technical requirements.

By replacing the paper FCC Form 740 with an electronic filing system, the Commission will be cooperating with Customs' desire to automate its importation entry process with a goal of elimination of unnecessary paperwork to the greatest extent possible. In this effort Customs has requested that the Commission facilitate the filing in Form 740 electronically. In return, Customs will gather FCC specified information and make this information available to the Commission.

Because a date for full implementation of the Customs system has not been established, the Commission is structuring its rules to accommodate both existing paper system and the future electronic filing system.

In addition, the Commission has deleted the requirement to file 740 information for imported subassemblies. These subassemblies cannot be operated without further manufacture, completion or installation and the completed product is subject to rules governing domestically built RF devices.

The Commission declined requests to allow the import of RF devices when the equipment authorization application has been filed but not yet acted upon by the Commission.

Action by the Commission May 1, 1991, by Report and Order (FCC 91-145). Commissioners Sikes (Chairman), Quello, Marshall, Barrett and Duggan.

News Media contact: Rosemary Kimball at (202) 632-5050.

U.S. and Canada Announce Private Land Mobile Cross-Border Agreement

Agreement has been reached between the Canadian Department of Communications and the United States Federal Communications Commission on new administrative procedures under the 1952 Convention between Canada and the United States concerning operation by citizens of either country of certain radio equipment or stations in the other country. These new procedures will facilitate the use of private land mobile radio transmitters licensed by one country within the other country. Under the new administrative procedures, the registration or examination of users and the issuance of permits, permitted but not required under the 1952 Convention, will no longer be required. All private land mobile terrestrial stations properly licensed in either country will be able to operate in the other country so long as they are under the control of a properly licensed terrestrial station in the country of operation. As this is merely an exercise of discretion permitted within the 1952 Convention, the new operating procedures are effective immediately.

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CLANDESTINE COMMUNIQUE

WHAT'S NEW WITH THE CLANDESTINES

Like that battery commercial says - "Still going!" The main anti-Iraq clandestine station, *The Voice of Free Iraq*, continues to operate, although it has undergone a name change and is now called *The Voice of the Iraqi Resistance* (or Opposition, depending on how its translated from Arabic). In tune with the name change it has added transmissions in Kurdish and Turkmen to the usual Arabic. The station is currently scheduled from 1900-2315, using 9570, 9995, 15600 (or 15605) and 17960. Hans Johnson of Maryland notes that the 15600 frequency is often jammed or shadowed by Radio Baghdad, causing the clandestine to move to 15605. At other times, says Johnson, Baghdad will run its general service on 15605, next to the resistance station on 15600. He notes that most listeners in the middle east have radios which lack digital readout, making it easy to mix up the two stations when they're so close together. Which, of course, is why Baghdad is using the shadowing technique.

Reports in the news media say the station has aired broadcasts by Kurdish ex-patriots, calling for a Kurdish uprising. The station is said to be a CIA creation.

Meantime, Baghdad has resumed airing one of its quasi-clandestine broadcasts—the *Voice of Egypt of Arabism* (or Voice of Arab Egypt) now reported scheduled at 2030-2100 on 3980, 4600 and 8350. These, along with 15600/15605 are the only frequencies currently in use by Baghdad.

As for the Kurds, there have been several Kurdish clandestines on the air over the years, although logging these in North America is a trick beyond the abilities of most of us. *The Voice of Iraqi Kurdistan* has a schedule which runs from 1500-1930 on a frequency between 5500-5900 (recently 5684). *The Voice of the People of Kurdistan* operates at around 1900 on 3960 and 7030. *The Voice of the Struggle of Iranian Kordestan* airs on 7435 at 0930-1035 and 1430-1530 and *The Voice of Iranian Kurdistan* is active at 0325-0430 and 0855-1030 on 3875, 4065 and 4550; also 1425-1530 on 3875, 4550 and 1625-1800 on 4065.

Longtime Iranian clandestine *Radio Iran Toilers* is reported to have closed down last March, citing "international trends" as its reason. This one was operated by the Iranian Tudeh (communist) Party.

One leaves, another arrives. New is *The Voice of the Sarbedaran* which says it presents the view of the Union of Iranian Communists—the Sarbedaran. It claims to be the "sole standard bearer of Marxism-Leninism-Maoism in Iran." The station is said to

Dear Gerry,
Thank you for your letter informing us that you received broadcasts of Voz Popular, 6950, the radio station of the U R N G.
I understand that you picked up broadcasts on several dates, including June 20th.

We're pleased to know that you were able to hear it.

I am enclosing a period copy of the notice we received from Guatemala Publications in New York. Hopefully, you are able

to pick up each Friday program.

Sincerely,
Rita Studer

Confirmation letter on behalf of Guatemalan clandestine "Voz Popular" when it was active in 1987.

be operating in the 4200 frequency area around 1730.

Last month we mentioned a new anti-Castro program being aired on WWCR. It seems that there is more than one such effort. *La Voz de la Junta Patriotica Cubana* airs at 2230-2300 and has a mailing address of PO Box 526852, Miami, FL 33152 and *La Voz de la Tribuna Libre* at 2300-2330 using an address of PO Box 11304, Miami, FL 33111. Junta Patriotica Cubana may be the same group which had its own illegal transmitter on the air some years back. Don't be surprised if the ranks of anti-Castro voices on shortwave continue to grow as the

opposition sees the situation on the island deteriorate.

While clandestine broadcasting efforts centered on Nicaragua and El Salvador have dropped to almost nothing, another Central American country has seen the appearance of an apparent former clandestine—*La Voz Popular*. German DX'er Bernard Grundl reported to the DSWCI club on his visit to Guatemala where he spotted Popular's signals. It is scheduled Tuesdays and Fridays at 2315-0025 on variable 7000 and Wednesdays and Saturdays at 0200-0310 on 3650 variable. These are UTC times and days so the 0200 broadcast is on the same

(Continued on page 76)

THE EXCITING WORLD OF RADIOTELETYPE MONITORING

For many years, Fred Hetherington of Florida has been sending me loggings bearing the callsign of "HY5D." He pinpointed the station's location to somewhere in East Asia, but he couldn't quite get a handle on the station's identity.

The last time the logging appeared in these pages was last February at 11299.9 kHz. This month, Fred has two more frequencies to add, 11295.4 and 11300.3 kHz. At about the time I received the latest loggings from him, I got a letter from James Hubbard of Guam, who read Fred's February listing, and wanted to shed some light on the identity of "HY5D."

Jim says, "I also have been monitoring this station for a lot of years, and believe this is a shore to ship broadcast of the South Korean Navy.

"I have loggings dating back to 1985 that show him addressing his 5L coded messages as 'CK115 DTW to P72 BT.' Even his test tapes would ID as, 'QRA de DTW ZHC? RYRYRY.' Later on, until the present, he dropped the 'DTW' in favor of 'HY5D.' Commencing 1 Jan 1991, he made still another change and his traffic appears as 'CK84 Z02 to Z72 BT;' however, he uses HY5D on the test tapes.

"There are about 10 of these 'zulu' calls that he sends to. I suspect that these may be hull numbers of his ships. It would be interesting to see a photo of a South Korean Navy vessel to see how their hull numbers appear.

"I am unable to find a breakdown for DTW except for its call allocation to South Korea. I have logged him on the following frequencies: 4400, 5570, 5700, 5900, 6300, 6759.5, 7801, 9180, 10716.6, 10735.2, 10749.5, 10900, 11300, 11500 and 19995 kHz."

After reading your letter, Jim, I opened my copy of Jane's Fighting Ships, and examined the photos of South Korean Navy ships. All had just numbers on the hulls except for patrol boat oilers. The patrol boats have "PB" in front of a number, and the oilers have "O-" before a number.

In the written descriptions of the vessels, both the hull letters and numbers are listed. None of the listings show a "P" plus a number, nor a "Z" plus a number.

Although I have not studied such a transmission, it seems to me that "DTW" is nothing more than a "delta tango whiskey" tactical callsign, and Z02 to Z72 (or Z37 to Z72 as Hetherington gave with his notations) are 'zulu' message numbers. In the same vein, I regard "HY5D" as just being "hotel yankee 5 delta."

Even if we regard these designations as being tactical ones, they still could be from

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ZCZC
CCCC
MESSAGGIO COMPUTE_IZZATO NON TOCCARE LA TASTIERA
-----TE_ ROMA
IT I_____PL MOSCA
I RD 41__?3) 12.03_1991 U_GENTE 1/2
////
////
TLIC VIECL WFINI VOGMD HAYSS NHOH GSFCO RMSTX WFMVP Y_WEJ
RJRH XJWJG WXITW WOWJS ZKSJ_ UB
___N_J YVIP_ BWDFF PMTHO
VMRK BHPUE YSHRF AFSWL GMQRD HIPYR _LQMI SAANX AJWLL RVFPZ
MFQP VIZOF ZFERJ CPGVQ K_
B HDEVC DKSCA QTNVN NCSSV CTJYO
___C JUZIW CVAQQ KXYCV VUGSK TBH_W JNLEF OSLJF VTCU_ UQBKO
DJWX KDM
    
```

IPG20, MFA, Rome, Italy, was caught sending a 5L msg to its embassy in Moscow, USSR, on 20612 kHz at 1432 UTC, ARQ-E/96. (Logged by Robert Margolis).

the South Korean Navy, as you say. Only further study will tell.

By now most of you, I'm sure, have heard that the United States Information Agency's "Wireless File" of RTTY news broadcasts is no longer on shortwave radio. Following the lead in recent years of the Associated Press, United Press International, Reuters, and Agence France-Presse, the USIA has switched its broadcasts to satellite.

RTTY transmission of the "Wireless File" to Europe and Latin America ended in 1990; and the transmission to Africa, Asia, and the Middle East were terminated at the end of last March.

John Thomson, Chief of the Press Division of USIA, which is responsible for preparing the contents of the "Wireless File," told POP'COMM that the "delivery of the File is now done by USIA's Computer Management Division, which makes it available for computer-to-computer dial-up or dial-out via international telephone lines or by State Department dedicated circuit, and by USIA's Television Office of Networks and Communications, which handles our satellite circuits and TVRO dishes."

For those of you able to pick up the satellite news broadcasts, you'll find that the "Wireless File" is transmitted five days a

```

TO: GOM44 FROM: M3G40 (I) DE M3G END OF TFC K
TO: GOM44 FROM: M3G40 (I) DE M3G END OF TFC K
TO: M3G40 FROM: GOM44 (I) DE G3M QSL 161508Z K
TO: GOM44 FROM: M3G40 (I) DE M3G DO U HAVE ANY FUTHER TFC FOR THIS STATION K
TO: M3G40 FROM: GOM44 (I) DE G3M NEG MAY I ZKJ K
TO: GOM44 FROM: M3G40 (I) DE MEG RGR ZKJ ATT K

TO: LOH44 FROM: M3G40 (U)
TO: M3G40 FROM: L6H54_ (U)
TO: LOH44 FROM: M3G40 (I) DE M3G GOOD MORNING R U RDY TO SEND STATS REP K
TO: LOH44 FROM: M3G40 (S)
TO: LOH44 FROM: M3G40 (S)
I FRAMES
TO: LOH44 FROM: M3G40 (I) DE M3G GOOD MORNING R U RDY TO SEND STATS REP K
TO: LOH44 FROM: M3G40 (I) DE M3G GOOD MORNING R U RDY TO SEND STATS REP K
TO: LOH44 FROM: M3G40 (I) DE M3G GOOD MORNING R U RDY TO SEND STATS REP K
TO: M3G40 FROM: LOH42_ (I) **@9n!n3
TO: LOH44 FROM: M3G40 (I) DE M3G GOOD MORNING R U RDY TO SEND STATS REP K
TO: LOH44 FROM: M3G40 (I) DE M3G SEND REP ATT K
    
```

Packet radio transmission of a U.S. Military station identifying itself as Mike 3 Golf 40. This traffic was sent to Golf 0 Mike 44 and Lima 0 Hotel 44 on 14897.8 kHz, between 1500 and 1600 UTC. (Logged by Robert Margolis.)

QRYRY DE LN2A LN2A LN2A TESTSTATION F06 NORWEGIAN TELECOM ON 14413 KHZ. TIME I
S NOW 04:32 UTC. NEXT SESSION START AT 04136 UTC ON 20955 20955 KHZ.QWSOXX__XJ

Test tape of "LN2A test station for Norwegian telecom" was found on 14415 kHz at 0438 UTC, 45 baud. This station was found on the air 12 hours earlier, and it ran periodically for more than 24 hours, with the time being changed to match the time of the current transmission. (Logged by Robert Margolis.)

week in English, French, Spanish, and Arabic, to five regions of the world, in five regional editions. There is also a Sunday File produced only in English, Thomson said.

Shortly after the end of the Persian Gulf war, I saw that the Kuwait News Agency (KUNA), had returned to the air with its RTTY news broadcasts, but found just one frequency, 18440 kHz, in operation. I wasn't able to learn where the transmitter site was located. I remembered reading in the newspapers that some \$150 million worth of radio and television equipment was stolen by the Iraqi soldiers during the plunder of Kuwait, and most of it was carted off to Iraq.

On Feb. 27, the day Kuwait City was freed, regular mediumwave radio broadcasting resumed in the capital city. Television began to return about two weeks later. Although the radio and television studios were severely limited in size compared to what it was before the war, they were able to operate with the equipment left behind by fleeing Iraqi soldiers during the liberation. That equipment, according to *The New York Times*, had been left intact because it was meant to be used by the Iraqi military for its own use.

The newspaper article, unfortunately, did not mention shortwave broadcast facilities, leaving me in the dark as to the whereabouts of KUNA's transmitter site. If any reader knows where that site is, please drop us a line. It's possible the site, if it's not in Kuwait, is still being used at this time.

A well-known utility frequency guide lists one type of RTTY code at 164 baud SAU-

FEC, which is supposedly used by MFA, Riyadh, Saudi Arabia. Word comes to me from a communications equipment firm in The Netherlands that such a mode doesn't exist. It is in reality 164.5 baud ROU-FEC, the firm says, and is transmitted from Romania. Traffic is in both encrypted and normal Romanian text, and one frequency it can be found on is 19557 kHz. I don't have the means at this to determine the validity of either mode.

James Dickerson of Texas was intrigued by some recent fax printouts we ran in this column and asked about the method used to monitor fax. This is not the same fax mode with which most people are familiar, Jim, i.e., using a personal computer and appropriate fax software, a fax machine, a fax-compatible modem, and ordinary telephone lines. The mode occasionally mentioned in this column is radiofax, and uses a fax machine and radio transmitter to send mainly weather maps, and news photos and text, over shortwave radio frequencies to stations that subscribe to the services.

To monitor radiofax one needs a good quality shortwave receiver that has single sideband mode; a fax decoder, such as those sold by some of the advertisers in *POP'COMM*; a printer that is compatible with the decoder; and an antenna able to pick up shortwave radio signals.

Answering a question submitted by M.D. Rutley of England: when copying press agencies using radiofax, set your fax decoder to a drum speed of 60 an IOC of 288.

Keith Lapp of Ontario writes about his reception of a fax weather chart on 5850 kHz

that look similar to that of OXM, Ittoqqortoormiit Radio, Greenland, on 20002 kHz, about which I wrote last March.

He says I stated "that the station OXM is apparently not in service at this time. I think you can locate OXM broadcasting fax at 0030 UTC daily on 5848.5 USB. I myself had great difficulty identifying the fax charts until I read the article describing those broadcasts from Greenland." He enclosed a printout of his fax map, saying that "the comparison are quite remarkable."

Well, Keith, the station you copied was not OXM. It was OXT, Copenhagen Meteo, Denmark, which is registered with the International Telecommunications Union as using 5850 kHz. OXT usually sends a fax weather map that looks like the one I said was from OXM. OXT also sends weather charts on 9360, 13855, and 17510 kHz. OXM is not registered with the ITU for fax operation, just SSB voice communications.

In my article I said that I heard OXM using a CW identifier between fax broadcasts, and that helped me to make an identification. ITU files show no station registered to use 20002 kHz. The article went on to say that after being in operation for several days, OXM's fax signal was not heard again by me on that frequency, which leads me now to believe that the broadcast was a brief experiment.

FAX Trivia Dept.: PWZ33, Rio de Janeiro Naval Radio, Brazil, has radiofax broadcasts at 0745-0830 and 1745-1830, on 12025 and 17140 kHz. Check it out, folks.

RTTY Intercepts

4004.5: LRO2, Telam, Buenos Aires, Argentina, w nx in SS, 50 baud at 0042. (Dallas Williams, CO), and at 0134 (Harold Manthey, NY)

4570: HZN46, Jeddah Meteo, Saudi Arabia, w coded wx at 0144, 100 baud. (Manthey, NY)

6851.5: "NEW286" w encrypted msg to "BCI," 300-baud packet at 2254. (Ed.)

7397: "RPFN," Monsanto Navrad, Portugal, w RYRY & foxes, 0330-0333, 75 baud. (Williams, CO)

7626: TZH, ASECNA, Bamako, Mali w RYRY, 50 baud at 0128. (R.K. Manthey, OH)

7690: TUH43, ASECNA, Abidjan, Ivory Coast, w RYRY, 50 baud at 0338. (Ed.)

7760: RGH77, Arkhangelsk Meteo, USSR, w coded wx, 50 baud at 0351. (Ed.)

7850: ZAA, ATA, Tirana, Albania, w nx at 1917, 50 baud. (Manthey, NY)

8123: Un-ID w wx at 0215, 96/ARQ-M2 (Ed Deasy, VA). It's TNL48, ASECNA, Brazzaville, Congo—Ed.

8705: DHS, Ruegen R., Germany, wkg ships in ARQ at 0200. Now uses DHS on all channels where it used to sign as Y5M when it was in the former East Germany. (Fred Hetherington, FL)

8988.5: FDY, French Air Force, Orleans, France, w RYRY & le bricks, 50 baud at 0125. (Hetherington, FL)

9372.1: Un-ID w 6 short msgs in SS, 75 baud at 0015. (Hetherington, FL)

10102.5: 3XA, Conakry Aero, Guinea, w RYRY, 50 baud at 0707. (Ed.)

10257.9: NSS, USN, Washington, DC, w AP & UPI nx, FDM channel 16, 50 baud at 2122. (Ed.)

10283: FUF, French Navy, Fort de France, Martinique, w "controle de voie," ARQ-E3/72 at 0044. (Ed.)

10492: "RFTJ," French Navy, Dakar, Senegal, w "controle de voie," ARQ-M2/96, channel B, at 2035. (Robert Hall, RSA)

10845.5: Un-ID w 5 grps, 75 baud at 0130. (Deasy, VA)

10893.5: LRB39, Telam, Buenos Aires, Argentina, w nx in SS at 2012_50 baud. (Hall, RSA)

BCI	NEW286	,SR812.T6, 289954, 5749,-2312
BCI	NEW286	228578
NEW286	BCI	
BCI	NEW286	hQ8P8PD83hAG!h8D
BCI	NEW286	SR812.T6
NEW286	BCI	
BCI	NEW286	P 83h8R#P83hu8P8P8
NEW286	BCI	
B81P<83NBW2863P883P8		
B81P<83NBW2863P883P8		
NEW286	BCI	
NEW286	BCI	
BCI	NEW286	kh1h.gO-h&>ti\$h8
BCI	NEW286	kh1h.gO-h&>ti\$h8

"NEW286" with encryption to "BCI" via packet radio on 6851.5 kHz at 2254 UTC (Logged by Robert Margolis.)

15806.5: Italian Embassy, Amman, Jordan, w 5L msg after header "21740" uniform tango yankee alfa kilo" to Rome, ARQ at 1626. (Ed.)

15821.5: IPG20, MFA, Rome, Italy, w msgs in II, ARQ, 1611-1640. (Ed.)

15856.7: DMK, MFA, Bonn, Germany, w crypto to Havana, Cuba, at 1412, ARQ-E/96. (Ed.)

15871: Polish Embassy, Ottawa, Ont., w a 5F msg & msgs in Polish, 1448-1510, POL-ARQ. (Ed.)

15946-15948: GXQ, Royal Army, London, England, w RYI's, foxes, & 10 count, FDM 50 baud, on nearly all channels, at 1335. (Ed.)

16111.1: HBD47, Swiss Embassy, Havana, Cuba, w ARQ msgs at 1529. (Ed.)

16145: RWM77, APN, Moscow, USSR, w nx in EE, 100 baud at 1154. (Ed.)

16183: Nairobi Aero, Kenya, w wx, 50 baud at 1230. Callsign is unlisted. (Hall, RSA) The sta. is listed at 5YF75, Nairobi Meteo—Ed.

16190: RGW26, Tass, Moscow, USSR, w nx in PP at 1515, 50 baud. (Hall, RSA)

16298: Possibly "DFZG," MFA, Belgrade, Yugoslavia, w tfc at 0155, 75 baud. Sig too weak for positive ID. (Williams, CO)

15352: BCC22, PTT, Shanghai, China, w RYRY at 0117, 50 baud. (Williams, CO)

16595: Un-ID German sta w an ARQ msg in GG at 1425. Gave freqs at 23.3, 4145.3, 8296.4, 16595 & 22224. Also a misprint "432693," which may be 12693. (Hetherington, FL)

16604: Un-ID w a long 5F msg at 1350, FEC-A/144. Ends 1400 w "QRU NIL GN." (Hetherington, FL) I venture a guess this sta. is TAD, MFA, Ankara, Turkey, for two reasons, (1) TAD uses the FEC-A/144 mode, and (2) the time in Ankara at s/off would be 1600, or 4 pm local, when someone going home for the day just might say "GN" (good night)—Ed.

16663: S6EP, Mulbera (Singaporean container ship), w wx obs to Melbourne Meteo, Australia, via VIP35, Perth. Was ARQ at 2336. EDZA, Carolina P. (Spanish fishing vessel) w a telegram to Casablanca, Morocco, via EHY, Madrid. Was ARQ at 2348. (Ed.)

16670.5: D5XA, Ferngol (Liberian-registered vehicle carrie) w telexesf to Tokyo, Japan, via WCC, Chatham R., MA. Was ARQ at 0330. (Ed.)

16691: URRN, Leonid Brezhnev (Soviet ship), clg UAT, Moscow, at 0153, ARQ. (Ed.)

16896: "GMN" w RYRY & a 5F msg, 1753-1800, 50 aud. (Ed.)

16955: UDH, Riga R., Latvia, w telegrams in RR & a computerized msg in EE ("enter command or use help"), ARQ at 1714. (Ed.)

17492: "CKA" circuit ID on coded wx from New Zealand at 0306, 75 baud. (Williams, CO) I think this might be ZLK44, Weedons, New Zealand, beaming due south to McMurdo Sound, Antarctica—Ed.

17497.5: BAO2, PTT, Beijing, China, w RYRY to Hanoi, Vietnam, 50 baud at 0112. (Williams, CO)

17510: RGW33, Tass, Moscow, USSR, w nx in PP, 50 baud at 1455. (Hall, RSA)

17532: Un-ID Polish diplo w tfc re passports, and mentd Ottawa & Toronto. Was POL-ARQ at 1546. (Deasy, VA)

18027: The French embassies at Moscow, USSR, & Luanda, Angola, in 2-way comms w each other, FEC-A/192 at 1414. (Ed.)

18040: MFA, Sofia, Bugaria, w msgs & crypto after DDDD, foll by nx in Bulgarian. Was 75 baud at 1825, & beamed to Ottawa. (Hetherington, FL)

18174: Un-ID w 5L grps, 75 baud at 1515. (Manthey, NY)

18187.6: NMO, USCG, Lualualei, HI, w plaintext wx forecast to the cutter Sassafras, 75 baud at 0310. (James Tally, CA)

18196.2: Un-ID, w "KRN" tactical c/s, w RYRY foll by a 5F & a 5L msg, 50 baud, 1736-1746. Oddly, CLP1, MFA, Havana, Cuba, was once logged on a freq 600 Hz higher than this one. (Ed.)

18440: The Kuwaiti nx agency, KUNA, w nx in EE & AA, less than a month after the end of the Persian Gulf war. Since Kuwait was plundered by Iraq, including the theft of all its communications equipment, the xmtr site/country for this xmsn was not known at the time of this writing. Was 50 baud at 1759. (Ed.)

18518: Un-ID French diplo w encryption, ARQ6-90/200 at 1557. (Ed.)

18600.7: VOA, Greenville, NC, w operational msg, 75 baud at 1353. (Ed.)

18607: VOA, Greenville, NC, w msgs to Tangier, Morocco, FDM 75 baud at 1504. (Ed.)

18760: "RFGW," MFA, Paris, France, w 5L grps, FEC-A/192 at 1634. (Deasy, VA)

19350: Un-ID w occasional RYRY + VMGTCNJBH embedded within crypto, 75 baud at 1856. (Ed.)

19400: VVD59, New Delhi Meteo, India, w wx data for Iran & Iraq, 50 baud at 1412. (Manthey, NY)

19425: SAM, MFA, Stockholm, Sweden, w 5L grps + msgs in EE & Swedish to Prague, Czechoslovakia, SWED-ARQ at 1300. (Deasy, VA)

19439.5: LOR, Puerto Belgrano Navrad, Argentina, w 5L grps at 0130, 75 baud. (Deasy, VA)

19865.5: YZJ4f, Tanjung, Belgrade, Yugoslavia, w nx in SS, 50 baud at 1607. (Manthey, NY)

19612: Un-ID sta, w "BPA" c/s, w RYRY & a 5F msg at 2222, 75 baud. (Ed.)

19756.7: MFA, Jakarta, Indonesia, w diplo tfc at 1330, SI-ARQ/96 (5 charac). (Ed.)

19928.5: OEC, MFA, Vienna, Austria, w nx in EE, SI-ARQ/96 (5 charac) at 1407. (Ed.)

19931.8: Un-ID w 5L grps at 1501, ARQ6-90/200. (Deasy, VA) This might be a French diplo channel—Ed.

19991.5: IPG20, MFA, Rome, Italy, w 5L msgs, 1330-1405, ARQ. (Ed.)

20068: "PHWR," Hickam AFB, HI, w coded wx at 0110, 75 baud. Same sta also found on 20108 w coded wx at 0145. (Williams, CO)

20157: 5KM, Bogota Navrad, Colombia, w RYRY & unclas tfc to CCS, 75 baud at 1625. (Ed.)

20320.3-20322.9: GXQ, Royal Army, London, England, w RYI's, foxes & 10 count on most FDM chan-

nels, 50 baud at 1700. Manually typed msgs in clear from GXQ were xmtd, however, on 20320.5. (Ed.)

20372: IRS23, ANSA, Rome, Italy, w nx in EE at 1500, 50 baud. (Manthey, NY)

20406.5: Indonesian Embassy, Paramaribo, Surinam, w msgs to Lagos, Nigeria, for relay to Jakarta, Indonesia, ARQ at 1620. (Hetherington, FL)

20532: Quito Navrad, Ecuador, w service msgs at 1550, 75 baud. (Manthey, NY)

20584.5: RCC73, Tass, Moscow, USSR, w nx in AA, 50 baud at 1434. (Ed.)

20662: Un-ID w 5F grps. 50 baud at 0330. Probably North Korean, which was previously logged on this freq. (Williams, CO)

20738: CLP5, Cuban Embassy, Algiers, Algeria, w "operaciones" msgs to CLP1, Havana, at 1422, 50 baud. (Ed.)

20810.7-10812.7: MKK, RAF, London, England, w RYI's, foxes, & 10 count, FDM 50 baud on many channels at 1537. (Ed.)

20815: "P6Z," MFA, Paris, France, w RYRY & s/on msg to "J5W," Rabat, Morocco, foll by "non protege" tfc, FEC-A/192 at 1535. (Ed.)

20826: RWZ76, Tass, Moscow, USSR, w RYRY & local time, 50 baud at 1540. (Ed.)

20957: "LN2A" in Norway w test xmsn. See 14415 kHz for details. (Ed.)

20992: CLP33, Cuban Embassy, Addis Ababa, Ethiopia, w 5F grps & a telex in SS, 50 baud at 1930. (Williams, CO)

22582.5: UFN, Novorossisk R., USSR, w a "war alert" to "all ships," FEC at 1635. (Hall, RSA)

SUBSCRIBE NOW & SAVE!

HOW I GOT STARTED

POP'COMM invites readers to submit, in not more than about 150 words or so, how they got started in the communications hobby. Each month, we'll accept them (preferably) typewritten, or otherwise easily legible. If you have a now and/or then photo of yourself, please include it with your story. We can't return or acknowledge material, whether or not it is used. Your story need be submitted only once. We'll keep it on file to consider it for future issues. All submissions become the property of *Popular Communications*.

Each month, we will select one writer to be featured in our issue. Entries will be judged taking into consideration if the story they tell is interesting, amusing, or unusual. We reserve the right to make necessary editorial changes to improve style or grammar.

The winner each month will receive a 1-year subscription (or subscription extension if already a subscriber) to *Popular Communications*.

Address all entries to: How I Got Started, Popular Communications, 76 North Broadway, Hicksville, NY 11801.

Our Winner For September

The winning story for September came in from a student at Idaho State University who requested that we not use his name. He writes:

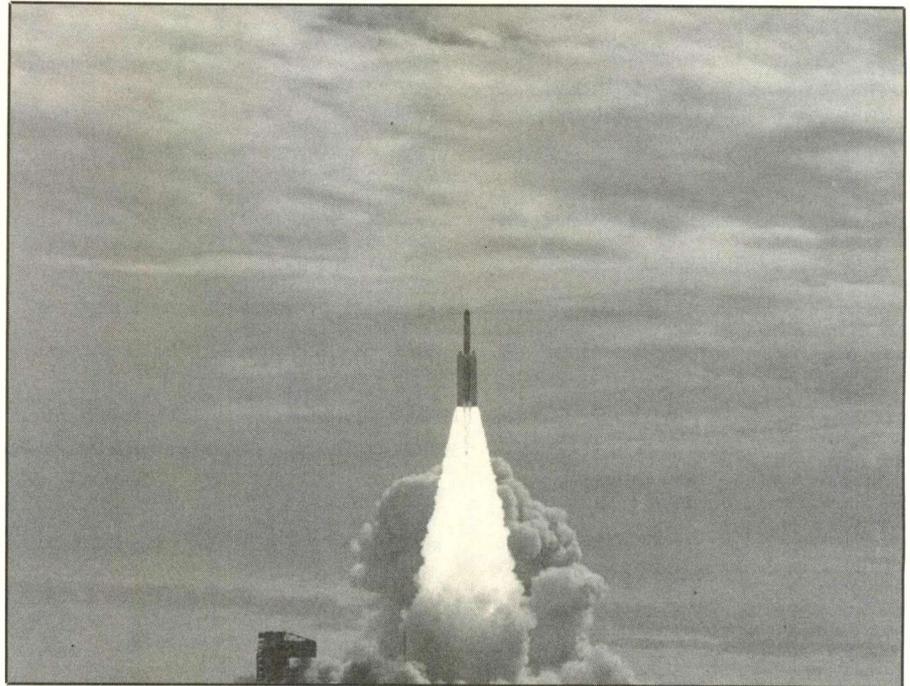
"Back home in Malaysia, when I was 13, I built an FM mike from a kit. The range was 30 yards, although I tried without success to extend that range. When I was 18, I attended an engineering school where I learned about the Class C amplifier. Using the school's oscillator kit, I built my first RF amplifier. The result was quite amazing. With 750 mW, I could cover several surrounding villages. Then I started a pirate radio station in which I gave a telephone number out on the air for callbacks. The number was for a wireless countryside phone booth that I could monitor the ringing on my scanner. On my first broadcast, the phone attracted calls. I never did complete my engineering degree, but I am soon graduating in broadcasting. Currently, I am a licensed ham operator, and my transmitter is still operating from on top of a mosque's minaret back home."

Military Communication Satellites

The Persian Gulf war was mercifully short and obscenely expensive. The high-tech weapons used during the war seemed reliable and dazzled us with their accuracy. Most of these weapons, including the Cruise Missiles, 117A Stealth bombers and high data communications satellites are products of the Carter White House. President's Carter's background in engineering served the country well. We got the weapons we needed and did not build such obsolete and poorly designed boon-doggles as the B-1 (which sat the war out on some isolated US air base—grounded)

One of the biggest stars of the war was the Patriot anti-missile battery. The Patriot was designed in the 1960's and has been upgraded as technology has allowed. Today the system consists of two separate units, a radar system and an anti-missile, missile launcher. Not surprisingly, satellite communications play a large role in the Patriot's success. In fact, two military satellite systems are used on the Patriot, possibly three. Each Patriot battery is linked, via satellite to NORAD, in Colorado's Cheyenne Mountain. NORAD is the secret of the Patriot's success. As the anti-missile battery points its radar toward the direction of an expected Scud attack, it detects the incoming missile two minutes out. This data is radioed, most likely via the FlSatCom satellites, to NORAD. They calculate the missile's trajectory, the Patriot's location and the "window" coordinates, during which missile will be within range of the Patriot's missiles. This information is then sent back to the Patriot battery by a second satellite system, possibly the NATO 3 system, which then aims for the Scud. The Patriot fires and if, and only if, the Scud passes through the window that was calculated for it by NORAD the anti-missile will usually lock on to its target and make the kill. Of course, as we saw during the war, this is a difficult proposition at best. If two-way satellite link and calculations cannot be completed within the two minute time frame, well the anti-missile missiles of the Patriot are fired anyway with very little in the way of results. As with most high-tech equipment, the critical link is communications, and in this case Satellite Communications.

Military communications satellites, both tactical and strategic, fall under the general control of the Department of Defense. Several satellites with names like Flsatcomm (Fleet Satellite Communications), DSCS III (Defense Satellite Communications System), SDS (Satellite Data System), NATO-3



The October 1987 launching of the Titan 34D from the Vandenberg AFB in CA.

and MILSTAR, provide voice and data communications for all western military forces. The Strategic communications include dispatch of US nuclear forces, both land and sea based. The tactical include troop movements during war games and routine exercises.

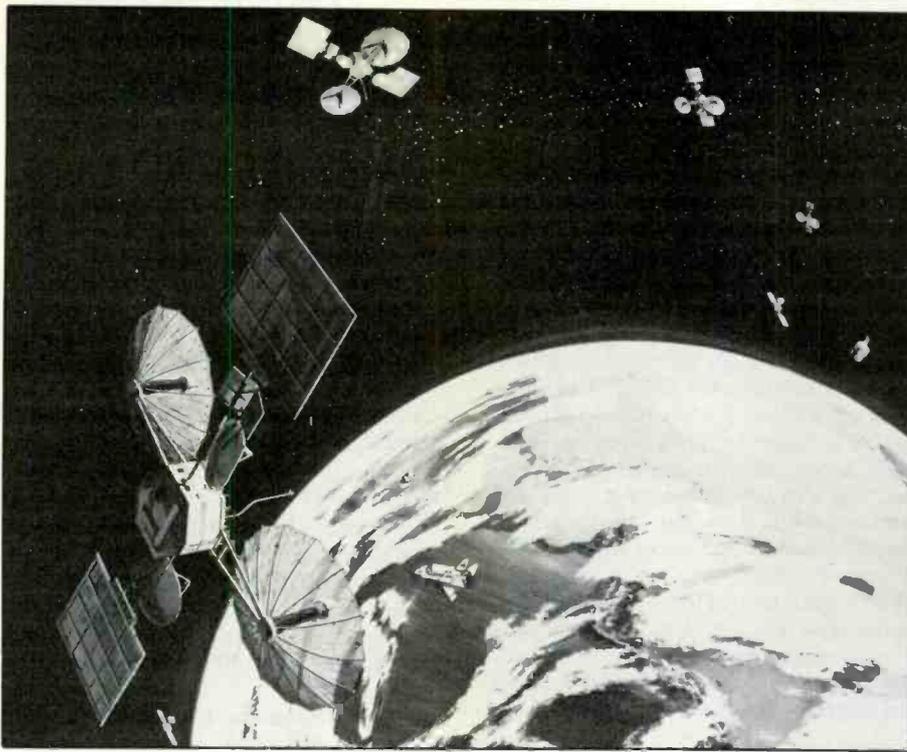
Navy

The Navy boasts having the most versa-

tile and secure satellite system in the military, and they may well be right. The Navy's Flsatcomm satellites carry strategic communications for the President, the NSC, Joint Chiefs, SAC, NORAD, Special Task Forces and even the CIA. Naval Intelligence is a business which operates as a front for intelligence operations, such as the now well known Air America company. During Watergate II: The Sequel, better known as

Satellites	Frequency	Military Satellites Orbit	User
DSCS II & III	7,250 to 7,775 MHz downlink 7,900 to 8,400 MHz uplink	Geo-stationary	NSC/AF/CIA/NSA/DOD
Flsatcom	240 to 265 MHz downlink 290 to 318 MHz uplink	Geo-stationary	Navy/AF/CIA/NSA
Marisat	240 to 328 MHz downlink 240 to 328 MHz downlink 335 to 399 MHz uplink	Geo-stationary F1-15°W/F2-72°W F3-176°W	Navy Navy
	1,535 to 1,542 MHz downlink 1,635 to 1,665 MHz uplink	F1-15°W F3-176°W	Commercial Maritime
	4,190 to 4,200 MHz downlink 6,410 to 6,425 MHz uplink	F1-15°W/F2-72°W F3-176°W	Commercial Maritime
SDS	200 to 400 MHz	Molniya orbit	AF/CIA/NSA

Note: CIA proprietaries also lease transponders on commercial satellites.
Marisat are commercial maritime satellites with 1.5 and 4.2 GHz downlinks as well.
The Army's tactical satellite system (Tacsat) also use 240 to 325 MHz.



The Tracking and Data Relay Satellite System.

the Iran-Contra investigations, some interesting uses of such cover businesses came to light. Large sums of money, missiles and even intelligence reports were laundered through proprietaries set up by the CIA and dealing directly with Iran. Flsatcomm and DSCS II & III satellites are often used to relay communications concerning such operations. These Special Task Forces usually identify as TF 159 or TF 147, for example. It should be pointed out, however, that most of the intelligence communities' messages are sent over secured hardwire (telephone) lines by teletype or computer terminals. The terminals are given non-descript, generic identification. They are known as 960's. These systems send encrypted messages which are then secured even further by bit inversion in a special computer format. Manual as well as automatic encryption machines can also be used. The Voice and data communications carried by Flsatcomm are wideband FM. From time to time, plain FM voice comms can be heard in a cluster of frequencies near 261 MHz.

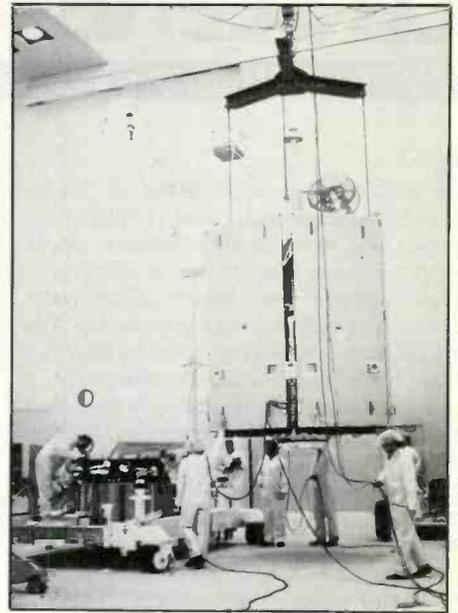
These spacecraft also relay information concerning the Navy's anti-submarine program. Navy listening devices, anchored to the ocean floors, monitor Soviet submarine activity. These buoys transmit data back to the states on the location of the subs through the Flsatcomm system. The Navy also uses small listening devices which can be deployed by ship, aircraft or helicopters, they too relay info through Flsatcomm.

Since the Navy first began to use satellites they have been unable to keep up with the demand for them on their own. They have had to turn to commercial satellites, gener-

ally known as GAPSATS, to make up the difference. The military has leased 3 transponders on Marisat, the commercial maritime communications satellites.

The next generation spacecraft to be used by the Navy will be called Leasat. They are the scheduled replacement for Flsatcomm. Leasat are to be launched from the space

(Continued on page 76)

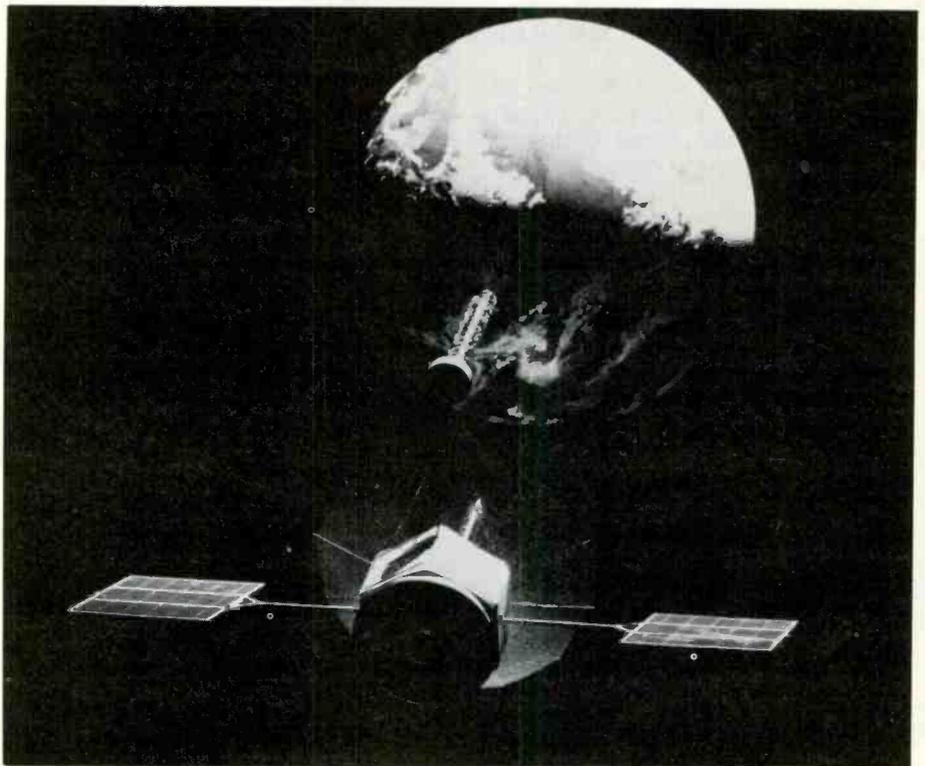


The US Navy's FltSatCom-A.

shuttle, as they are too large for standard launch vehicles. They will be placed into a geo-stationary orbit.

Air Force

Perhaps the most important satellite system in the military is one operated by the Air Force. Known as the Satellite Data System (SDS), these satellites relay information to and from spy satellites and the ground stations which control the spacecraft. This system also provides communications for the President and our strategic forces world-



27 MHz COMMUNICATIONS ACTIVITIES

The first time someone asked me if I ever heard of a CB weather radio, I thought they meant you never knew whether it would work when you turned it on. Subsequently, I learned that it was a type of mobile transceiver that had a front panel switch that would let the operator monitor the NOAA's three main 162 MHz weather channels.

Several units have this useful feature, and this month I'd like to introduce you to Radio Shack's Realistic TRC-476, which the manufacturer points out is suited to mobile and marine use, most likely because of its PA and weather features.

Basically, this is a small AM rig with switchable noise blanker, variable RF sensitivity, and instant Channel 9. A four-step LED shows RF power, and doubles as a received-signal strength indicator. Channels are switched by up/down push buttons.

This rig runs \$129.95 at all 7,000 Radio Shack outlets.

Offbeat and Off Frequency

We received a letter not long ago from Carmen J. Narde, of Coming, NY asking a question that used to be put to us very often, but which we hadn't heard in several years.

Carmen was tuning around the CB channels on a communications receiver when a couple of truckers on Channel 19 (27.185 MHz) said they wanted to get away from some of the local chatter. One trucker told the other to switch to Channel 20, then turn the knob one-quarter way. After that, they were both chatting on 27.195 MHz, which isn't listed as a CB channel.

Carmen wondered what this was all about, and what that frequency is. The answer is that when the original 23-channel ("Class D CB") band was opened in 1959,

there were several frequencies between certain CB channels that were reserved for radio control ("Class C CB") use. These were 26.995, 27.045, 27.095, 27.145, and 27.195 MHz.

Although CB voice has never been permitted on these frequencies, they immediately attracted the attention of some operators looking for what they felt were "private" channels. They became unofficially known as Channels 3A, 7A, 11A, 15A, and 19A by AM operators. Sideband operators called them the "10-down" frequencies, because they were 10 kHz below authorized channels.

Voice operation on these frequencies remains illegal, and is possible only by means of equipment that has been modified. Operators caught there by the FCC would be subject to sanctions.

Photo Gallery

Ray Fusselman, "Unit 643," of Ohio is 31 years old and has been into communications since 1974. He tells us that he met his XYL (of 13 years) via CB radio, and now he's got two harmonics getting interested in radio. By the time you read this, he should have a set of PDL-II beams up on the roof. Ray is into radio on several levels, including 27 MHz, scanners, SWL'ing, and more. He's often on the lower side of Channel 40.

A letter with many kind words about POP'COMM and CB Scene arrived from John E. Warhurst, Registered Monitor KGA4DG, of Alpharetta, GA. On the CB channels, he's better known as SSB Network member SSB-44R, and "Pokey the Smokey." His XYL, Lyvonne, "Lucky Lady," is Registered Monitor KGA4DS, as

well as SSB Network member SSB-55G. They monitor numerous public safety channels, plus the lower side of CB Channels 36 through 40. The photo John sent us shows a well-organized station, set up for ease of operation and efficiency.

If you have a photo of your station, you are invited to send it along to us with some information about yourself as well as your interests.

Desert Storm

We continue to receive inquiries about CB in Kuwait. Errol Urbelis, SSB Network member SSB-6721, of Kings Park, NY sent us a rare card from a member of the Kuwait Arabia International DX Group which is dated September 24, 1990. That's after Iraq invaded.

The QSL notes the KAXDXG club frequency as being 27600 kHz. The group's address is given as P.O. Box 23143, Safat 13092, Kuwait. Of course, we have no idea regarding the present status of this group, or if it exists at all at this time.

This 'n That

Readers appear curious about power mikes, compressor mikes, and noise-canceling mikes. The question seems to be if there is any significant difference between these and the mike that comes with the CB rig. Or is it all hype?

The two stock mikes most often encountered in low cost communications equipment are dynamic and carbon. There are advantages to both, and dynamic mikes (which are popular in CB rigs) are quite efficient.

Power mikes are an advantage where modulation is low, by allowing the operator



Radio Shack's Realistic TRC-476 offers NOAA weather band reception as a feature.



Kuwait Arabia International DX Group



Monitor frequency
27.600 MHz

TO STATION	DATE	TIME	RST	MODE	FREQ	QSL
KC 2879	24.9.90	19 h 5 MT	5 9	USB	27.565	PSE TNX

I Hope to hear from you soon best 73's and good DX!

For any Information send \$5 to P.O. Box 23143 Safat 13092 KUWAIT Official Club Card No. 2

DX in Kuwait, anyone? Here's a QSL from Kuwait dated after the Iraqi invasion! (Courtesy Errol Urbelis, SSB-6721, NY.)



This neatly arranged shack belongs to John, SSB-44R, of Alpharetta, Georgia.

Ray (Unit 643) hails from Ohio. You may have heard him.



to increase the modulation level. Most power mikes contain a small amplifier built inside the base or case, and use a small battery. Variable controls are used to adjust the output to its most efficient level (which is usually not "wide open").

A compressor can also be included in power mikes. The compressor acts as a processor for excessive modulation (which could cause distortion) and re-feeds it into the modulation patterns. This allows the operator's voice to sound louder, but without distortion.

Noise-canceling mikes do what their name implies. They cancel out unwanted background noises from engines and other things that could interfere with readability. They are handy in boats, large trucks, tractors, and in heavy equipment. These mikes are designed so that they respond only to the basic range of frequencies found in the human voice that are required for intelligible communications. Other noises, such as wind and engines, are ignored by the sound-sensitive components in the mike. The trade-off is that the sound quality may be somewhat less robust than a standard mike, but it's a small price to pay to get your message through.

Readers often write to ask about TV interference (TVI). I'd like to mention that in most instances where there is TVI resulting from an unmodified, legal, CB rig, the fault lies with the TV receiver and not with the CB operator. However, if you've had TVI complaints and you want to do everything you can to try and solve the problem, short of selling your CB rig or else moving to the Azores, then you can try several things.

Purchase a low pass filter made for CB radios. They're inexpensive and all you need do is hook it to the antenna connector at the back of your transceiver, and then

plug your antenna into the filter. Run a heavy, solid copper grounding-wire from the filter's case to the nearest radiator, cold water pipe, or other good grounding point. That will eliminate the possibility of any signals radiating from your station above about 40 MHz. The TV Channels begin at 54 MHz.

"Missing Link," of Thunder Bay, Ontario, wrote to tell us that a CB'er in his area put up a base station tower, and used polypropylene rope for guylines. Link says he was under the impression that metal wires were supposed to be used as guy wires.

There are a couple of good reasons to use polypropylene rope. It doesn't rust or corrode, nor does it break quite as easily as wire. More importantly, wires tend to radiate in response to a transmitted signal if they are cut to a size anywhere near the transmitting wavelength. This could distort the station's radiated signal pattern. So, if wire is used, it should be put into short lengths connected together by egg insulators. The heavy-duty plastic rope allows stronger single-piece runs of line that won't shrink or stretch with temperature changes.

A note from Harve Jantzen, Eureka, CA reports that he has a mobile unit that he likes a lot. He rationalizes that he could save on the purchase of a base station unit if he merely pulled the mobile rig from his pickup and made it double as his base station. He asks if it will perform as well as a regular base station when hooked to a base station antenna. Someone told him the least expensive way to do this is with a power converter, but he wonders if that's all there is to the job.

Right you are in thinking that the least expensive way is by pressing your existing mobile unit into use as a base station radio. Although it may lack the frills of a few of the fancier base stations (clock, etc.), it should

offer good communications.

When you select a power converter, make certain that you don't go for the cheapie models. Get a regulated 12VDC power supply rated for a minimum of 2.5-amps continuous use. If you don't get a regulated supply, you're going to pick up the hum from the 117 VAC line. This can damage the radio, aside from the fact that it will sound crummy. Expect to spend at least in the \$40 ballpark for a suitable power supply.

This device changes your household 117 VAC to the 12VDC your mobile radio requires. Actually the converter will probably be putting out 13.5VDC, but that's close enough. Just be careful about maintaining the proper polarity when connecting your CB to the output terminals of the converter. The red insulated wire goes to the pos (+) terminal.

Another 12VDC source you could consider is an old car battery. If you have a little 12VDC trickle charger, you could leave it on during the day. When you use the CB, the battery will be sufficiently charged. Hey, in an emergency, you could power your mobile rig from eight flashlight batteries.

We'll leave you with a pip of a question. "Rob Roy," of Durango, CO asks, "Could you tell us what to do to make our signals head north? A friend tells us that something is in the Rocky Mountain air around here that forces signals to go south more easily than north. Since some of the stations we want are north, we need something that defeats these things in the air. Also, would this cost more than CB'ing just towards the south?"

The statement that radio signals naturally head south instead of north is pretty funny, but that's about all. I'd love to sit down with

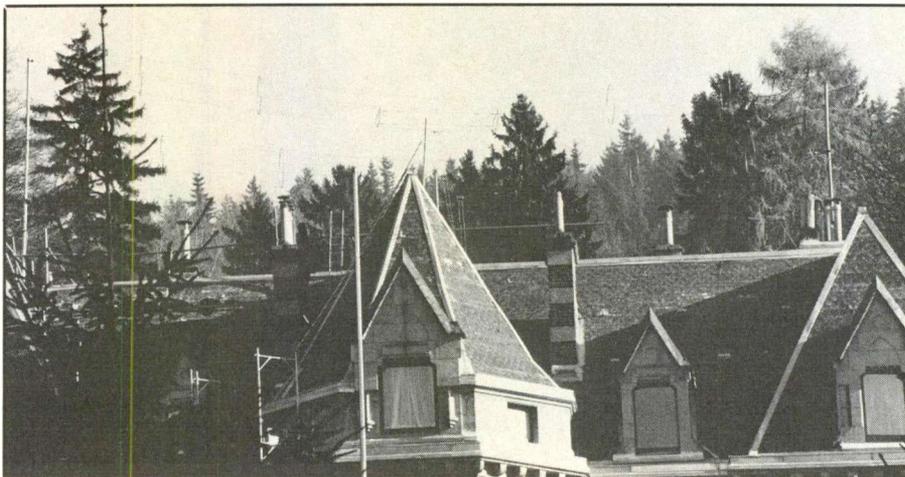
(Continued on page 76)

COMMUNICATIONS CONFIDENTIAL

YOUR GUIDE TO SHORTWAVE "UTILITY" STATIONS

Before I forget again, I want to mention the successful SWL Winterfest which was held this past March in Kulpville, PA. Among the door prizes were three 1-year subscriptions to POP'COMM donated by the Publisher, and Editor Tom Kneitel donated several autographed copies of his books. The Banquet Speaker, David Alpert, gave a most interesting talk on "Shortwave Monitoring from Nicosia, Cyprus." Dave, an employee of ABC News, was sent there during the Gulf War, where he and other members of the group monitored various SW Broadcasts from the Middle East area.

For those who missed the affair you should really try to attend the 5th annual SWL Winterfest which will be held in the Spring of 1992. Advance notice will be carried in the column when details are firm.



Antennas at Soviet Embassy, Luxembourg. Photo courtesy of Professor Desmond Ball, Australia.

UNCLASSIFIED	LOW LEVEL WEATHER REPORT FORMAT - VOICE/AFSATCOM																																						
REPORT EXAMPLES (See SAC Form 1417, 1417a Instructions)																																							
EXAMPLE: IR300 usable. Light icing from point K to point M. Thunderstorms at point U.																																							
VOICE REPORT:																																							
_____ THIS IS _____ RELAY TO _____ (Station/Call Sign) (Tactical Call Sign) (See Addressees on SAC Form 1417, 1417a)																																							
BREAK JOPREP JIFFY WEATHER REPORT:																																							
Item 1. <u>1B</u> Item 2. <u>Trail 20</u> Item 3. <u>1525</u> Item 4. <u>IR800</u> Item 5. <u>Y</u> Item 6. <u>11</u> Item 7. <u>1</u>																																							
Item 8. <u>K-M6/U10</u>																																							
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Items 5,6,and 7 - Cross out Inapplicable code.																																							
ITEM 8. WEATHER/HAZARD ENCOUNTERED (If more than one use most severe)																																							
1 - LIGHT TURBULENCE 9 - HAIL 2 - MODERATE TURBULENCE 10 - THUNDERSTORMS 3 - SEVERE TURBULENCE 11 - BIRDS GATHERING/MIGRATING 4 - EXTREME TURBULENCE 12 - BIRDSTRIKE 5 - TRACE ICING 6 - LIGHT ICING 7 - MODERATE ICING 8 - HEAVY ICING																																							
Item 7, worst condition at any part of low level. I - IFR, M - MVFR, V - VFR.																																							
ITEM 5 (Usability)		ITEM 6																																					
USABLE : Y NOT USABLE : N		HAZARD : H ROUTINE/NORMAL : R																																					
REPORT NUMBER	TCS AND SUFFIX	TIME (Z) (ROUTE EXIT)	ROUTE	USABILITY	HAZARDS	WORST CONDITION	Hazard and location and/or Remarks: Locations along route followed by hazard (e.g. K - M6/U10 would indicate light icing from point K to point M and thunderstorms at point U.) Use plain language remarks if desired. If space is insufficient transmit SAC Form 1402a for additional remarks.																																
1	2	3	4	5	6	7	8																																
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
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SAC Form 1417c, MAY 86 REVISED		OPR/DOWX		LOW LEVEL WEATHER FORMAT (U)														UNCLASSIFIED																					

Figure 1

OPTIONAL FORM NO. 10
MAY 1962 EDITION
GSA FPMR (41 CFR) 101-11.6

Memorandum

DATE: 910414

FROM: NNNBYU, MARK T. SPALDING
NAVY-MARINE CORPS MILITARY AFFILIATE RADIO SYSTEM

TO: POPULAR COMMUNICATIONS
76 NORTH BROADWAY, HICKSVILLE, NY 11801

SUBJ: NNNBYU, QSL INFORMATION,

SWL STATIONS MAY QSL TO NNNBYU (NAVMAFCORMARS STATION) WITH A RECEPTION REPORT. THIS STATION CONTROLS A NAVMAFCORMARS NET FOR A HALF HOUR ON THE FREQUENCY OF 4472 KHZ (4470.5 Assigned frequency), AT 0200 ZULU THROUGH 0230 ZULU DURING DAYLIGHT SAVINGS TIME OR AT 0300 ZULU THROUGH 0330 ZULU DURING REGULAR TIME.

THIS STATION IS ALSO KNOWN AS N0C1J WHICH IS AFFILIATED WITH THE NAVY-MARINE CORPS MARS. NNNBYU/N0C1J IS LOCATED IN GARDNER KANSAS AND HAS BEEN A MEMBER WITH NAVMAFCORMARS FOR OVER TEN YEARS NOW. THIS STATION OPERATES A TS-430S KENWOOD WITH A MC-60 DECK REC., AND THE ANTENNA'S ARE KNOWN AS A COAXIAL DIPOLE. MOST OF THE COAXIAL DIPOLE'S ARE CUT FOR THE OPERATING FREQUENCIES THAT ARE USED FOR MARS OPERATIONS. IN SOME CASES THE RF-302 ANTENNA COUPLER IS USED IN LINE TO OPERATE ON FREQUENCIES THAT THE COAXIAL DIPOLES ARE NOT CUT FOR.

THE ADDRESS TO SEND A SASE REPORT AND A RETURN QSL IS:
NNNBYU NAVMAFCORMARS RADIO STATION
MARK T. SPALDING / OPERATOR
831 ROSEWOOD DRIVE, APT A
GARDNER, KANSAS 66030-1560

Here is a portion of a memorandum concerning MARS QSL'ing.

This letter QSL from the FAA was received by Dan Grote, IL.



U.S. Department of Transportation
Federal Aviation Administration

New England Region

12 New England Executive Park
Burlington, Massachusetts 01803

March 28, 1991

Mr. Dan R. Grote

Dear Mr. Grote:

Thank you for your inquiry regarding our radio transmissions.

Our records show that we were transmitting on our High Frequency/Single Side Band (HF/SSB) equipment during the time period you mention on March 4, 1991. We were transmitting to another FAA facility, KLD-70, located in Nashua, New Hampshire. It is interesting to know that you were able to receive our transmission at such a distance away. For your information, we use a Rockwell Collins HF-8070A Receiver Exciter for transmitting and receiving, and an omnidirectional Andrews Spiracone Antenna.

We appreciated knowing that radio enthusiasts are out there monitoring the air waves.

Sincerely,

Barbara E. Travers
Manager, Operations Center, ANE-6

Reference the low-level WX report format discussed by Norm Pritchett, CA in the March 91 column, John Berezin, WI has provided the following additional information. "I received the SAC Form (see Fig 1) through a FOIA request. Except for aborts, about the only unit that uses this report is the 329 CCTS at Castle AFB, CA. This squadron trains the new B-52 G and H crews and uses the call sign "TUFF." Only bombers make 1-B reports on IR (Olive Branch) routes. These are low-level bombing routes, and often provide radar bomb scoring as well as ECM activity. Tankers and Recon aircraft don't fly them." Thanks to John for these details.

From Simon Mason, England we learned, "I have discovered something about the YL/EE 3/2F "long count" stations. The

maximum number of groups sent per message is 225. Recently, the activity of these has stepped up and many have sent 225 group messages but no more groups than 225. In past years much fewer groups were sent. For example, two years ago group counts were typically 131, 140, 75, 128, 142, 97, 103, etc. But in the last few months recent counts have been 225, 210, 197, 154, 152, 143, 225, 225, 221, 225, 225, 210, 225, 225."

Leonard Szalony, CA has rejoined us and said he now has the Icom 765, Icom R71A, and the Hustler 4BTV plus a 50' longwire for his antennas.

Because of his move from Texas to Missouri, Jay Thomas was inactive from monitoring for over a year but he has now resumed SWL'ing and uses a Kenwood TS-

440, antenna tuner and a SSB filter.

A note from Chuck Penson, MN indicated that when he wants to monitor the higher frequencies he checks fixed stations in the 17008-17216 kHz region as a propagation indicator. This includes such stations as DAG, TAH, 4XZ, JFA, DAN, CLA, PPR, CBV, ZSC, GKP6, and UPB.

Gregg Arens, BC, Canada sent in a batch of LF loggings and commented in part, "I wish to become an active participant and contribute to the fraternity of "Bottom Band Prowlers" (maybe we should call ourselves the "Catfish of DX'ers")."

M. Stuart, DE spotted a new Secondary frequency for the Norfolk SESEF activity of 14645 kHz in addition to the 9950 kHz Secondary. 7535 kHz still seems to be Primary #1. He added that during the period follow-

CSY

TO: HUGH M. HAWKINS WDX5597
THIS WILL VERIFY YOUR RECEPTION OF
SANTA MARIA AERONAUTICAL STATION CSY
(station name) (call sign)

AZORES
(location)

Date (UTC): 12/11 - 1990
Time (UTC): 2013
Frequency: 14693.5 kHz
Mode: AEROCON Power: 2 kw
Antenna: RHOMBIC AERIALS

[Signature]
(signature/title) (station stamp)

Hugh Hawkins, KY shares his PFC with readers. He indicated he had sent a report in Portuguese almost a year ago with no reply. He then sent a report in English and it was answered.

PORTISHEAD RADIO

GKA British TELECOM International

Thank you for your reception report, which has been found to be correct and corresponds with our log.

DATE	TIME	FREQUENCY	CALL	MODE
3-1-91	0502Z	8559.5kHz	GKBY	CW

[Signature] Radio Officer 13 MARCH 1991

Jimmy J. Poole, AR received this Portishead Radio QSL.

BFBS FORCES RADIO

TO: RICH DIXSON

We thank you for your reception report on
20TH DECEMBER 1990
and confirm the details are correct.
We hope, you will continue to enjoy our transmission.

Signed:

RICHARD ASTBURY
STATION MANAGER

BFBS FORCES RADIO

BFBS LONDON
Bridge House
North Wharf Road
London W2 1LA
Tel: 071 724 1234
Fax: 071 706 1582

The Radio Division
of
SSVC

During the Gulf conflict BFBS confirmed reception reports with this QSL. Sent in by Rich Dixson, NY.

ing Desert Storm he heard 121 different USN MARS units. "A goldmine for the beginning DX'ing USN QSL'er."

First time contributor, Gregory Baker, MD wrote "Recently I have begun monitoring utility stations. This can be a bit difficult in a groundfloor apartment with a Sony ICF-2001 and an 8-meter longwire along the roof, but I have been learning a little. The first trick is to cut the sensitivity down on the receiver, as noted in Harry Helms' "You Should Know" in the April POP'COMM. I tried it and I found that I still catch stations, but I don't have as much noise."

Henry Chinaski, Italy has discovered a daily sked on 14332.5 kHz at 0500 UTC run by an Italian Ham, I4ZIN, who contacts the Italian Sailboats located in the South Pacific Ocean participating in the "Europa 92" World Regatta. The contact Henry reported was on the Galapagos-Hivaoa (Marquesas Islands) leg. Other port calls for the Regatta were to be Pago-Pago, Port Vila, and Darwin. The expected final port call is to be Seville, Spain in 1992.

Henry advised that he is going to try and learn something about HF use for the "America's Cup" and "Whitbread" races.

We have had several queries regarding the "Link 11" system mentioned in the June 91 column. Here is some additional information on this system which is manufactured by Magnavox. This Data terminal set is labelled AN/USQ-76(V) and is totally self-contained digital data terminal set which provides all required modem and network control functions in a TADIL-A/NATO Link-11 system using either HF or UHF radio equipment. It may be operated as a station, it accepts picket addresses from a computer or optional address control panel which provides up to 64 addresses in modules of 16 addresses each. All system control, performance monitoring and self-test functions are performed directly on the front panel of the AN/USQ-76(V). A remote control panel, capable of system control and performance monitoring functions, is available as an option. The equipment

was designed specifically for ship or ground installation where size, weight, prime power, cooling and reparability are critical factors. Data rates are 1364 and 2250 bps (TADIL-A). Reception is USB, LSB, manual or automatic diversity, operator selectable.

The above details were extracted from "Military Communications 1988/89" published by INTERAVIA DATA, Switzerland.

Ute Intercepts. All Times UTC.

- 203:** Beacon KL, Schefferville, PQ, Canada at 1058. (Crabill, VA)
- 205:** Beacon XZ, Wawa, ONT., Canada at 1100. (Crabill, VA)
- 233:** Beacon PDR, Ottawa, OH at 1122; Beacon SRW, Salisbury, NC at 0625. (Crabill, VA)
- 241:** Beacon HF, Hearst, ONT., Canada at 0901. (Crabill, VA)
- 266:** Beacon FA, Fresno, CA at 0739; Beacon BY, Beechy, Sask., Canada at 0744. (Vaage, CA)
- 278:** Beacon BST, Belfast, ME at 0606; Beacon FD, Poplar Bluff, MO at 1109. (Crabill, VA)
- 280:** Beacon MQW, McRae, GA at 0357. (Crabill, VA)
- 294:** Beacon SB, Santa Barbara, CA at 0727. (Vaage, CA)

- 305:** Beacon RO, Roswell, NM at 0722. (Vaage, CA); Beacon OI, S. Sioux City, NE at 1211. (Crabill, VA)
- 307:** Beacon LUX, Laurens, SC at 0109. (Crabill, VA)
- 308:** Beacon DST, Missoula, MT at 0719. (Vaage, CA)
- 310:** Beacon F, Georgetown Lightship, SC at 0111. (Crabill, VA)
- 317:** Beacon CVP, Helena, MT at 0716. (Vaage, CA); Beacon VC, La Range, SK, Canada at 1236. (Arens, BC, Canada)
- 329:** Beacon IA, Niagara Falls, NY at 1317. (Arens, BC, Canada)
- 330:** Beacon D, Santiago Del Estero, Argentina at 1321. (Arens, BC, Canada)
- 335:** Beacon RWN, Winamac, IN at 0218; Beacon SV, Savannah, GA at 0323; Beacon SW, Newburgh, NY at 2323. (Crabill, VA)
- 338:** Beacon O, Georgetown, Guyana at 1248; Beacon PBT, Red Bluff, CA at 1248 w/wx. (Arens, BC, Canada)
- 356:** Beacon AY, St. Anthony, Nfld, Canada at 2237; Beacon BXG, Waynesboro, GA at 0521. (Crabill, VA)
- 360:** Beacon KIN, Kingston, Jamaica at 0438; Beacon LYS, Lyndon, NY at 1053. (Crabill, VA)
- 368:** Beacon YJF, Fort Liard, NWT, Canada at 1345. (Arens, BC, Canada)

This will verify your reception of vessel:

ARTHUR M. ANDERSON

Type of ship: Bulk carrier Tonnage: 12,341 G. T.

Frequency: 4075 Khz Call sign: WE 4805

Date: Nov. 22, 1990 Time: 1107 EST

Antenna: NORTHSTAR DMEC Power: 150 WATTS PEP.

Signature: _____

Stamp:

STR. A.M. ANDERSON **Great Lakes Fleet**

Russ Hill, MI sent in this PFC which was returned to him by one of the vessels in the Great Lakes Fleet.

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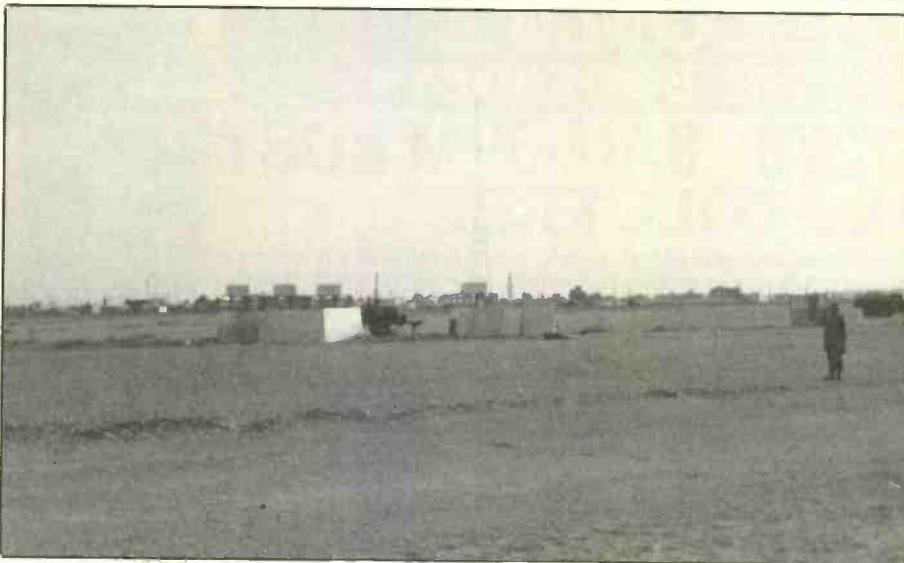
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One of the antenna areas found at Al-Qaisumah Airport. The building on the far right (in distance) is believed to house beacon HFR (113.1 MHz). Photo courtesy Kevin Tubbs, Saudi Arabia.

- 371:** Beacon ITU, Great Falls, MT at 1305. (Arens, BC, Canada)
- 374:** Beacon HL, Momona, New Zealand at 1333. (Arens, BC, Canada)
- 402:** Beacon C, Camaguey, Cuba at 1037; Beacon TR, (unlocated), at 0435. (Crabill, VA)
- 404:** Beacon BMW, Winder, GA at 0202. (Crabill, VA)
- 406:** Beacon YLJ, Meadow Lake, SK, Canada at 1335. (Arens, BC, Canada)
- 408:** Beacon MK, Milwaukee, WI at 0813. (Crabill, VA)
- 410:** Beacon JU, West Jefferson, NC at 0232. This is a new call; ex-JUH. (Crabill, VA)
- 423:** Beacon CKP, Cherokee, IA at 1147; Beacon DXE, Dexter, MO at 0017. (Crabill, VA)
- 429:** Beacon IKY, Springfield, KY at 0414. (Crabill, VA)
- 499:** Beacon RL, Waterville, ME at 1107. (Arens, BC, Canada)
- 511:** CW Stn LSW (prob Buenos Aires, Argentina) clg CQ at 0549. (Tubbs, Saudi Arabia)

- 515:** Beacon SAK, Kalispell, MT at 1320. (Arens, BC, Canada)
- 1672:** Medium frequency CW beacon WJ, Arleta, CA heard at 0721 w/id in CW, repeated. Runs 100 milliwatts into a 7' vertical roofmounted antenna w/6' diameter tophat. On nightly. Run by Wallie Jones, W6SZQ who also runs a LOWFER beacon on 179.54 kHz. (Homuth, AZ)
- 1687:** Medium frequency CW beacon "SD," Descanso, CA. 110mw into 7' vertical antenna. Heard from fade-in 0434 to fadeout at 1419 the next morning. Also on 513.6 kHz running 100mw but not heard here yet. Logged by another SWL in Tucson. (Homuth, AZ)
- 2025:** USN MARS stns sending tfc from Midwest in USB at 0300. (Thomas, MO)
- 2095.5:** Voice net, EE oprs. One stn requested Alligator freq. Bravo Charlie clg Golf Hotel, Charlie Alpha clg Mike Tango; Papa Bravo clg Charlie Alpha. Charlie Alpha seemed to be net control. (Tubbs, Saudi Arabia)
- 2285:** A6DX in CW sent continuous. Hrd at 2205. (Boender, Netherlands) This appears be one of the 4-character callsigns that operates similar to the SLHFB



One of the microwave towers in Al-Qaisumah. Thanks for photo go to Kevin Tubbs, Saudi Arabia.

transmissions, i.e., continuous repetition of callsign and occasional interruptions for passing 5F grps. (Ed)

2714: NSWU, USS MacDonough DDG39 (off freq) clg Bermuda Harbor Control at 0050; NGMN, USS Mount Baker AE34 (off freq) clg Philadelphia Tug Control. NavSta Philadelphia doesn't guard HF. (Stuart, DE)

2716: CGZP, MHCS Nipigon DDH266 clg QHM Halifax (Queens Harbor Master) at 2325; CHAA, HMCS Halifax FFH330 wkg Osborne Head at 0000. Halifax was giving continuous position reports every few seconds, almost like radiation pattern tests; NCOW, USS Cowpens CG63 clg Portland Port Control at 0140; US Navy Research Vessel Athena giving position report for AUTEK Ops at 1030; Fisher (Cape Radio) and Canaveral Control wkg "US Navy Warship" at 1045. This u/i ship was preparing to enter the Eastern Test Range; NDAG, USS Gary FFG51 clg Long Beach Tug Control at 1050; NHBJ, USS Gridley CG21 clg San Diego Control 1 at 1100; NCOW, USS Cowpens CG63 clg Cristobal Signal Station (Colombia) at 0940. Cowpens has been very active on this circuit, perhaps running drug interdiction against A/C w/Colombia Govt.; NOAL, USS Affray MSO511 clg NavSta New York re fishing boat having located 1940 era MK15 Torpedo Affray was sent to disarm the torpedo on the deck of the fishing vessel, Shinnecock 1; NZOK, USS Mahon DDG42 clg Charleston Navy Tug Control at 0100 re Mahon reporting jammed starboard shaft, screw could not turn. They had to limp in on port prop. Needed two tugs to rendezvous at Cooper River Bridge. (Stuart, DE)

3067: McClellan w/alphanumeric msg at 1415 in USB. (Barton, AZ)

3320.5: USN Mars stns in USB sending tfc from Midwest at 0320. (Thomas, MO)

3378: Rainbow Radio, St. Johns, NFDL, Canada in USB w/pp to unknown a/c at 0422. (Thomas, MO)

3659: P8K, u/i in CW at 2020 w/coded msgs + VVV DE P8K. // with 3159 kHz. (Boender, Netherlands)

3719: Maryland Slow CW Net at 0040. Callups at 0045 for tfc passing at 0100. This is a good place to work on your CW copying. (Baker, MD)

3732: 578, u/i in CW sending call repeatedly foll by coded msgs at 2125. (Boender, Netherlands)

4014: VDE, u/i in CW at 2215 rptng marker "VVV DE VDE" for over 10 mins. (Boender, Netherlands)

4066.1: NJZU, USS Dahlgren DDG43 clg Norfolk ICSB at 0045; NAOP, USS Elliot DD967 wkg San Diego CSS1 at 0200 w/request for spare parts. (Stuart, DE)

4425: Live YL/RR w/5F grps at 1905. At 1907, YT sent in CW. At 1910 YL/RR w/5F grps. At 1912 YL sent in CW again. This format rptd until 1927. (Mason, England)

4515: NTBK, USS Klakring FFG42 wkg SESEF Charleston at 1005. Ship making all mode tests via Charleston Test Control. Later on 7535 kHz the Klakring was wkg Norfolk SESEF at 1150. (Stuart, DE)

4720: Strong CW sig hrd 0550 sending 3 dots, one dash pattern. Rechecked freq later and CW note had developed familiar raspy sound. Next day hrd raspy dot-dash pattern same freq. (Barton, AZ)

5158: Signal is basically a "T" beacon but length of dash varied & sometimes was short enough to be an "E." Interval of beacon was irregular varying from 2 secs to 30 or 40 secs - mostly in the 2 sec range. CW at 0257. (Penson, MN)

5287: U/i CW stn w/5L grps at 1235. Off at 1242. (Penson, MN)

5319.9: YL & OM/EE at 0747 w/LIMA 13 THIS IS MIKE 31 . . . 3-2-1 (foll by u/i burst about 100-150 baud). Then MIKE 31 THIS IS LIMA 13 MESSAGE RECEIVED. (Tubbs, Saudi Arabia)

5416.5: CW stn w/call-up of WMW TT BT WDT TT BT and into 5L grps (cut nbrs). ANDUWRIGHT = 1-0. (DP, NC)

5426: USN Special Warfare Ops, Mare Island, CA in USB at 0500. Picking up Marin County Sheriffs Deputy to conduct "DRUGS OPS" (DARK OPS?). Said secondary was 8476.5 kHz Upper. (Thomas, MO)

5802: A rushing sound - sig strength would increase incrementally in 5, one-second steps. Last step was a buzzing sound. Cycle then repeats. Pattern was interrupted now and then w/periods of silence lasting up to one min. Still going when I checked again at 1200. Also hrd another day on 6859 kHz at 0246. (Penson, MN)

5828: OM/EE clg at 0657 COPTON THIS IS COLORADO. Latter call was that for a roadside maintenance shop a few miles SW of Al-Qaisumah. Also hrd METRO-

POLIS and CHIDSEY. (Tubbs, Saudi Arabia)
5930: YL/SS in AM at 0225 w/4F grps. Right on top of a Bcst stn. (Penson, MN)

6200: NMOM, USS Engage MSO433 wkg USCG ComSta Miami at 1100 w/request for freq for secure RTTY; NDEV, USS Devastator MCM6 wkg NMN, USCG ComSta Portsmouth, VA at 0320; WVFQ, University of RI, Marine Research Vessel Endeavor wkg USCG ComSta Boston at 0125; WTEG, NOAAAS Mt. Mitchell S222 wkg NMN at 0100. Both vessels ref'd to Cape Race Lorán C being out of operation. (Stuart, DE)

6235: New YL/GG w/186 x3, 88281, 032 on this freq every Mon and also on 4395 kHz between 2200-2205. After 5 tones into 5F grps. New YL says as "Noyner" and has very laid-back style. (Mason, England)

6375: URB2, Klaipeda, USSR in CW at 2245 sending msgs to RWWM, u/i. (Boender, Netherlands)

6384: CKN, Vancouver, BC, Canada in CW at 0528 w/mkr & freq list. (Szalony, CA)

6675: Open carrier here every night. At 0000 "Drums & Trumpets" tune until 0005 when YL/Czech sends "Norma 90 Gruppi 18" and into 5F grps. Not same stn as empty carrier. (Mason, England)

6707: OM/EE at 1347 w/63 THIS IS 26, ROMEO 08 THIS IS FOXTROT 26 SENDING IN 3-2-1 (u/i burst about 100-150 baud). Same type of xmsn hrd on 0559 sent by ALPHA 61. Also hrd YANKEE 06 and OSCAR 61. (Tubbs, Saudi Arabia)

6761: NEW CROP in USB trying w/o success to contact ARTCI 42 at 0628. (Barton, AZ)

6770: Two oprs, British accent, BRAVO 3 and BRAVO 4 at 0604. Then OM/EE NOVEMBER 1 THIS IS NOVEMBER 3 RADIO CHECK OVER. Next was OM/EE w/ALPHA 18 THIS IS SCORPION 1 OVER. Also hrd YL-OM/EE ROMEO 1 and ALPHA 1 sending reports. (Tubbs, Saudi Arabia)

6840: Rumanian "Skylark" tune at 2300. At 2304 OM/Rumanian w/5F grps. BBC feeder on same freq w/sports news. Kept reporting same news items. (Mason, England)

6900: YL/GG w/1-0 count and 086 from 2300-2310. After ten tones Gruppen 203 and into 3/2F grps. Also on 5400 kHz. (Mason, England)

7394: SLHFB "V" idling, weak sig. Hrd at 2030. (White, ME)

7446.5: U/i CW at 0934 rptng short msg of 5L grps. (Tubbs, Saudi Arabia)

7485: NJZU, USS Dahlgren DDG43 clg SESEF Charleston at 1700 then shifted to 9950 kHz. (Stuart, DE)

7535: NCDG, USS Comte De Grasse DD974 wkg Norfolk SESEF at 1630. Norfolk was tracking ship via TACAN as they crossed under the Hampton Tunnel out-bound from Norfolk; NOGB, USS Mount Whitney LCC20 wkg Norfolk SESEF at 1830. Ship had to wait in line as other units tested w/SESEF. The Mount Whitney had over 25 emitters to test; NCRG, USCGC Courageous WMEC622 w/USB radio check w/Norfolk SESEF at 1815. (Stuart, DE)

7790: CLN83, PTT, Havana, Cuba hrd on USB at 1510 w/an OM/SS. (Margolis, IL)

7846: YL/SS at 0700 w/5F grps. Callup was 678 04 02. (Barton, AZ)

7887: YL/EE rpts 83555 on USB at 2200, foll by music mkr ("Vive le Compagnie" in G-flat Major). At 2210 5F grps until 2246, then back to music mkr until 2247. (Margolis, IL)

7997: Andrews AFB setting up data link to unknown stn at 0208 in USB. Lots of retrys and open mike comments. Finally QSY'd to 9320 kHz at 0135. (Thomas, MO)

8089.6: U/i CW stn at 0505 w/5L grps. (Szalony, CA)

8090.3: SLHFB "T" in CW at 1912. (Szalony, CA)

8241.5: NODL, USCGC Firebrush WLB393 wkg ComSta Honolulu (8765.4 kHz) at 0950; NODX, USCGC Sweetbrier WLB405 wkg USCG ComSta Kodiak, AK (8765.4 kHz) at 0940. Both vessels are buoy tenders. (Stuart, DE)

8410: 3EIX2 Peruvian owned "Presidente Ibanes" in CW at 2245 wkg OBC3, Callao, Peru as ship passing Panama northbound to San Cristobal. (Chinaski, Italy)

8424: Chemical Cargo ship "Albarabi" in CW at 2220 sending tfc to CNP, Casablanca, Morocco. Vessel enroute to Santos, Brazil w/cargo of phosphoric acid. (Chinaski, Italy)

8452.6: VAI, Vancouver, BC, Canada in CW at 0513 w/mkr CQ DE VAI. (Szalony, CA)

Abbreviations Used For Intercepts

AM	Amplitude Modulation mode
BC	Broadcast
CW	Morse Code mode
EE	English
GG	German
ID	Identifier/location
LSB	Lower Sideband mode
OM	Male operator
PP	Portuguese
SS	Spanish
tfc	Traffic
USB	Upper Sideband mode
w/	with
wx	Weather report/forecast
YL	Female operator
4F	4-figure coded groups (i.e. 5739)
5F	5-figure coded groups
5L	5-letter coded groups (i.e. IGRXJ)

8540: UBN, Zhdanov, USSR in CW at 1905 w/tfc list. (Boender, Netherlands)

8681.95: SLHFB "M" and "O" in CW at 1954. (Szalony, CA)

8687.5: URD, Leningrad, USSR in CW at 2055 w/QSX mkr. (boender, Netherlands)

8696: CFH, Canadian Forces, Maritime Command, Halifax, NS in CW at 1355 w/mkr. (Baker, MD)

8719: NADQ, USS Grasp ARS51 wkg COMSUPRON-8 at 1540 w/request that Roosevelt Roads Port Services be contacted re Grasp pending arrival; NKXR, USNS Powhatan T-ATF-166 wkg COMSUPRON-8. Powhatan relayed ETA back into Little Creek to COMSUPRON-8 for passing onto Port Ops. (Stuart, DE)

8828: Honolulu Radio w/aviation wx best in USB at 0707. (Barton, AZ)

9027: USB comms. This is Romeo channel of SAC. (Talley, CA)

9082: RMP, USSR Navy Kaliningrad in CW at 1924 passing coded msgs to UHEL. (Boender, Netherlands)

9133: OM/EE at 1035 w/PAPA GOLF, PAPA LIMA and PAPA TWO "THAT TRACK IS (missed) HONEY BLANKET." (Tubbs, Saudi Arabia)

9206: U/i CW stn at 1420 sending 5L grps, using full alphabet and not cub nbrs, until 1427. New xmsn at 1440 and hrd again at 1504. (Baker, MD)

9222: YL/SS rptng 291 and 1-0 count at 0300. Tfc begins 0310 w/Gruppo 257, then 4F grps. (Barton, AZ)

9919: ZXTK DE M6ZW in CW w/rptd calling starting at 1259. On another date hrd 7DEK wkg 1IHF. (Tubbs, Saudi Arabia) These appear to possibly relate to same type of activity as 2285 kHz logging. (Ed.)

10033: Honolulu Base Ops, OM/EE opr w/heavy Asian accent in USB at 1225. Appeared to be wkg another base stn which sounded like "OSCO FIN" (?). (Thomas, MO)

10332: SLHFB "V" in CW at 1324. (Tubbs, Saudi Arabia)

10643.95: SLHFB "S" in CW at 1010. Very weak. (Szalony, CA)

10650: YL/SS at 0220 w/150 grp msg. (White, ME)

11028: Lots of US Govt Agencies in Mid-West in a giant "SHARES" Op in USB at 1700. Ref'd this freq as daytime Primary freq. (Thomas, MO)

11090: U/i stn in MCW at 0500 w/call-up 267 and into 5F grps. Zero cut as "T." Down at 0513 w/TTTTT. (Barton, AZ)

11108: YL/GG w/3 + 2F grps w/various headers in AM. Call-up from 0600-0605 was PAPA November. (Barton, AZ)

11178: U/i SAC stn in USB at 1235 sending 7-character grps. (Baker, MD)

11233: CHR, Trenton Military, Canada wkg CANFORCE a/c w/freq info at 0136; VXA, Edmonton Military wkg CANFORCE 6646 w/tfc request & flight info at 0144; VXA wkg CANFORCE 706 for wx status in Edmonton. All in USB. (Dube, WA)

11267: Military tfc in USB at 1241. Mixed callsigns, incl three-sixteen, 660, Juliet 1 Papa. 2-16 and 660 might be pennant nbrs of NATO warships and JIP the callsign of a P-3 Orion squadron. On same freq at same time were popping noises up and down 6 kHz on the dial. I suspect this was OTH radar w/the slightly irregular

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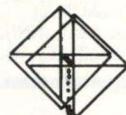
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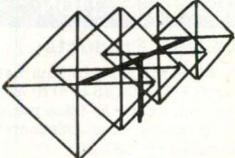
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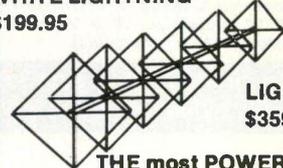
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pulses used to hinder counter-measures by hostile ships. (Baker, MD)

11359: RFNV, Moscow Air in CW at 2013 w/coded air wx. (Boender, Netherlands)

11396: Darwin, Australia wkg Lufthansa 797 in USB at 1525 w/selcal check. This is active SE Asia ACC net as is 6556 kHz. (Chinaski, Italy)

11405: Picked up FOGHORN signal at 0244. Went off at 0316. (Penson, MN)

12314: YL/GG rptng Alfa Bravo w/electronic tones 1430-05 w/TASS RTTY in background. At 1435 msgsg for 804 and 299. (Mason, England)

12580: 3EC24, vessel Candelaria (Panama flag, Spanish owned) w/tfc to EAD, Aranjuez, Spain in CW at 2130. Vessel bound for Valencia, Spain. (Chinaski, Italy)

12586: ELJB2, Aguas Calientes (Liberian flag, Mexican owned) passing tfc to XFU, Vera Cruz, Mexico in CW at 2215. (Chinaski, Italy)

12590: 3ENN5, Trade Friend (Panamanian Bulk Ore carrier passing tfc to SUH, Alexandria, Egypt. Ship in West Med enroute Bremerhaven-Hong Kong w/cargo of steel & empty container. Seeking Suez transit authorization. CW at 1500. (Chinaski, Italy)

12635: UUIO, Russian Trawler Sergey Yesenin in Magellan Strait bound for Callao, Peru for repairs. Passing tfc to OBC, Callao, Peru. CW at 2240. (Chinaski, Italy)

12727.5: LGW, Rogoland, Norway in CW at 0529 w/call tape. (Szalony, CA)

12875: FUG, French Navy La Regine in CW at 1555 w/freq list mkr. (Boender, Netherlands)

12895: UNM2, Klaipedo, USSR in CW at 1600 w/tfc list. (Boender, Netherlands)

12916.7: KLB, Seattle, WA in CW at 1820 w/QSX mkr. (Szalony, CA)

12994: WLO, Mobile, AL in CW at 1505 w/high speed tfc. (Baker, MD)

13010: UQA4, Murmansk, USSR in CW at 1605 w/call tape. (Boender, Netherlands)

13113: CG ComSta w/marine wx bulletins in USB at 2245. Honolulu?? (Barton, AZ)

13138: PCH, Scheveengin, Holland in SSB at 2150 w/pp w/Cypriot vessel. (Baker, MD)

13270: New York Radio, FAA, JFK Airport w/wx. USB at 1733. (Baker, MD)

13345: KI2XLB, u/i experimental stn testing in USB at 2220. (Thomas, MO)

13626: KQF62, FAA Midland, TX w/monthly rdo check at 1704 in USB. (Thomas, MO)

13974: NNNONBL, Navy MARS Groton, CT in USB at 1755 w/pp to NNNOCVU, USS Saginaw & NNNOCXN, USS Portland. (Chinaski, Italy)

14383.5: NUJR, USS Proteus AS19 (NNNOCQH) wkg NNNONPN (NAV CAMSWESTPAC), Guam at

1030. This MARS station is rarely used. (Stuart, DE)

14402: FOGHORN signal at regular intervals wiping out AAAUSA clg CQ in CW. Hrd at 0330. (Penson, MN)

14441.5: USS Fanning FF1076, NNNOCWW clg "Any San Diego area MARS stn" at 0100. (Stuart, DE); NNNOMCL, USMC MARS Camp Lejeune, NC in USB at 1815 answering NNNONZK, USS Vreeland & NNNOSTN. QSY'd 14467 kHz. (Chinaski, Italy)

14477: NTAW, USS Conquest MSO488, NNNOCQ wkg NNNONIK at 2310. (Stuart, DE)

14645: NBRK, USS Arleigh Burke DDG51 w/tests via SESEF Norfolk during sea trials of this new destroyer. (Stuart, DE)

14750: YL in AM rptng Kilo Papa Alpha Two. Down at 0520. (Barton, AZ)

14792: KJY74, National Hurricane Center, Miami, FL wkg San Juan in USB at 1930. Called this channel "Six Upper." (Thomas, MO)

15105: Hrd Incirlik, MAC 13425, MAC 13157, MAC 13429, MAC 13147, Phantom & Crayon at 1111. (Tubbs, Saudi Arabia)

15530: New YL/GG w/089 x3, 15927, 039 between 1410-1413 in 19 meter band. Very strong sig. Before each of the five tones there is a rush of "White Noise" as the an AGC is used. Into 5F grps and rptd at 1600 every Wed on 6708 kHz. (Mason, England)

15702: OM/RR at 1400 rptng 55555 until 1405 then off. (Mason, England)

15875: USCG LORMONSTA Yokota, Japan (NRT) at 0846 wkg USAF LORSTA Kwangju, South Korea in USB at 0846. (Sabo, CA)

16363: KKN50, Dept of State, Wash DC in CW at 1519 w/mkr. (Szalony, CA)

16522: ELLU9, Italian Cruise ship "Danae" owned by Costa Crociere Genoa clg Rogoland for RT/calls in Ionian Sea during cruise to Greece, USB at 1456. (Chinaski, Italy)

16802: HCBT, Colombian ship "Isla Baltra" in CW at 1833 w/tfc to HCG, Guayaquil, Ecuador. Ship enroute Miami, FL. (Chinaski, Italy)

17019: EBA, Madrid, Spain in CW at 1803 w/Navv tfc. Shifted to RTTY tfc at 1815. (Boender, Netherlands)

17129.5: OM/EE at 0613 w/BRAVO 02 THIS IS KILO 79 OVER and w/count down to u/i burst 100-150 baud. (Tubbs, Saudi Arabia)

17195: SVB7, Athens, Greece in CW at 1855 w/call tape. (Boender, Netherlands)

17370: YL/EE w/1-0 count and 392 from 2000-2010. After ten tones "count 152" and into 3/2F grps. Also on 14420. Carrier still on at 2220. (Mason, England)

17398: YL/EE in AM at 1223 w/3 + 2F grps. Down w/END. (Tubbs, Saudi Arabia)

17424: U/i CW at 1258 w/header BT QTC 3TT 83 2 1415 3TT BT and into 5L grps w/special characters.

(Tubbs, Saudi Arabia) See 7446.5 kHz logging for similar type tfc. (Ed.)

18356: YL/EE w/1-0 count and 009 from 1600-1610. After ten tones "count 225" and into 4F grps. Warblers affecting this freq and also parallel freq of 16395 kHz. (Mason, England)

18994: SPW, Warsaw, Poland in CW at 1348 w/call & QX mkr. (Boender, Netherlands)

19043.15: JCU, Choshi, Japan in CW at 1951 w/CQ DE JCU. (Szalony, CA)

19075: FOGHORN in progress at 0255. Still going when I shut down at 0338. (Penson, MN)

19105: YL/EE w/1-0 count and 354 from 1800-1810. After ten tones Count 154 and into 3/2F grps. In parallel w/17370 kHz. On another day at same time w/758 and Count 154. (Mason, England)

19168: NUW, NAS Whidbey Is., WA w/MARS pp - Welfare tfc to u/i stn in "The Gulf," in USB at 0020. (Thomas, MO)

19715: YL/EE rpt Echo Zulu India on USB at 2100. At 2103 w/Message Message Message 65 Group 65 65 & into 5L grps using phonetics. At 2112 w/intro again and rpt of msg. At 2121 End Of Message and down. (Margolis, IL)

20050: AF-1 & Andrews AFB, MD wkg in LSB. (Tal-ley, CA)

20188.5: AGA7E, Commander MARS Director Europe passing telegrams in USB at 1130 to unhrd State-side MARS stn. (Chinaski, Italy)

20328: RIW, Kiva Navy Rdo, Uzbek, SSR in CW at 1400 clg ROD, unlocated, passing tfc in 5L grps. (Chinaski, Italy)

20762: CW stn at 1203 w/callup at 874 874 874 1 then 328 124 328 124 & into real fast 5F tfc w/cut zeros. Ends w/TTT TTT. (Tubbs, Saudi Arabia)

20865: 832 sent in MCW at 1540 foll by TTT. Rptd until 1545. (Prob means no msg for 832, since usually 5F tfc in this format concludes w/TTT.) (Barton, AZ)

20904: North Korean Embassy, San Jose, Costa Rica w/sign off in CW at 2043 after RTTY xmsn. (Margolis, IL)

20936: NMER, USNS Mercy T-AH-19, NNNOCWO wkg NNNOBNR at 1500 w/pp's for former US POW's released by Iraq. (Stuart, DE)

20991.7: SLHFB "S" in CW at 1635. (Margolis, IL)

21901: SLHFB "T" in CW at 2348. (Szalony, CA)

22220: YL/EE in AM at 1615 w/5F grps. Ended at 1625 w/572 572. (Barton, AZ)

22251: WXBZ, US Merchant "Potomac Trader" in CW at 1415 w/AMVER msg to NMN, USCG Portsmouth, VA. Ship off Atlantic Coast of Panama enroute from Chiriquia Grande to Freeport, TX. (Chinaski, Italy)

22260: TSLS, Tunisian Tanker "Tacapen" in Arabian sea route to Persian Gulf proceeding at reduced speed due to high temp. motor fault. CW at 1000. Passing tfc to FFL, St. Lys, France. (Chinaski, Italy)

22266: DUYHP, Philippine ship "Western Lark" in CW at 1035 passing tfc to A9M, Bahrain Radio, Bahrain. (Chinaski, Italy)

22296: BOGE, Chinese Ore Carrier "Han Chuan" in CW at 1020 sending Suez transmit authorization msg. Was in Babel Mandeb enroute from Port Kelang to Antwerp w/Silicon cargo. (Chinaski, Italy)

22325.6: JNA, Tokyo, Japan in CW at 0522 w/CQ DE JNA. (Szalony, CA)

226773.5: SUH, Alexandria, Egypt in USB at 1632 w/OM & YL/AA in ship-shore comms. (Margolis, IL)

22900: GPA7, Portishead, England in CW at 1233. (Tubbs, Saudi Arabia)

22915: U/i EmbaCuba w/diplo CW tfc in SS at 1724. (Margolis, IL)

23562: PCW1, MFA, Den Haag, Netherlands in CW at 1252. (Tubbs, Saudi Arabia)

24140: Strong carrier w/diesel engine sound at 1755. At 1800 YL/EE begins 934 call-up. 1810 YL rptng Type 160, Type 160 and into 3/2F grps. At 1829 END & more diesel engine sounds and down at 1842. (Barton, AZ)

24978: YL/EE here at 1830 w/3 + 2F grps. At 1831 said "Repeat" x2 Count 225 x2. Freq is near Ham band. (Mason, England)

25094: LATV2, M/V Mostween 8, Norwegian flag. CW at 1400, passing tfc to LGX, Rogoland, Norway. (Chinaski, Italy)

25308: LGU, Rogoland, Norway in CW at 1633 w/call mkr. (Barton, AZ)

26885: FOGHORN blasting away here at 1936. Bet the "outbanders" love this. (Barton, AZ)

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The widely reported **One Voice Radio** has closed down. Joe, of the station, says they elected to quit after several other stations were shut down by the FCC. Sometime later they discovered they were number nine on the FCC's ten most wanted list! Joe provides a photo of the station's production equipment. Thanks very much, Joe!

Colorburst Radio was planning a spring start so they may be active by now. Initial plans were to use just one watt on 3579 and then later to go to the 7400 area using 75 watts. The station is located somewhere in the midwest.

Another pirate fan is now offering a mail-drop service. Interested station operators may contact the Democratic Radio Group, PO Box 244, Bristol, IL 60512 for more details.

Chris London of Minnesota says he logged what was probably the last broadcast of **Hope Radio**. It included an announcement that they'd been visited by the FCC. So I'm not going to run the Hope Radio logs received this month.

Boner Radio was picked up by Dwight Weidman in West Virginia who heard them on 7415 at 0225 with anti-war comments. Howard Milweger of Maryland had them with host Bob saying they were a clandestine station, not a pirate, and planned to continue broadcasting "until we get busted." David Corney of New York had them at 0023 to 0034 close.

Folk Radio was heard by Michael Owens of Indiana on 7415 at 0150 with the Radio Animal hosting a show called "The Doghouse."

Delta Tango 306 was heard by Robert Ross of Ontario on 7416, later 7383 with a joint broadcast (4 DJs in the studio) of WKND, Action Radio, Peterbuilt Radio, etc. Chris London found them on 7417 at 0048 giving an address of Box 59, Wolf Cross, OH 43970.

In Kentucky, Joshua Wilkes heard **Samurai Radio** on 7415 at 0321 with DJ "Eddie" playing rock and giving the Blue Ridge Summitt address. Pat Murphy in Virginia heard them using the slogan "The Voice of Oriental America."

London heard **CFBN - Fly By Night Radio**, with middle of the road music and numerous IDs. The announcer gave his name as "Black." Dan Grote of Illinois found them at 0012 with a special broadcast supposedly from Tahiti. The Fly Brothers—House and Black (flies—get it?) interviewing islanders. Ross heard what sounds like the same thing. Apparently the Fly Brothers were on spring break in Tahiti and were broadcasting from a teak cabin. The Wellsville, NY address was announced.



The production area and equipment of The Voice of Bono, which has now ended its pirate career.

Ross had several loggings of the European **Radio Tower** on 15050USB at various times between 0000-0400. This one is said to be from Holland. Address announced as Box 19074, 3501 DB Utrecht, Holland. In a later broadcast, they gave power as 40 watts.

Bob also heard **Radio Bland** at 2231 on 15043 claiming to be on Sable Island, off the coast of Nova Scotia and giving the Blue Ridge Summitt address. Pat Murphy had this one at 2301 with punk music and spoofs on various shortwave DX programs and publications.

Pat Murphy picked up the **Voice of Bono** on 7412 at 0122 with announcer Gary Daniels and rock music. Ross had them on 7414 to 0138 sign off, announcing Box 6257, Baltimore, MD 21219.

Ross logged **He Man Radio** at 0218 to 0222 close on 7415USB, with a brief segment from a 1990 baseball game. The announcer, "He Man," said it was their first broadcast.

Another Ross log was **East Coast Beer Drinker** on 7415 at 0313 with hard rock, IDs, funny commercials and the Blue Ridge address. Off at 0329.

Skip Harwood in California had **Radio**

Soundwave on 7425USB at 0355-0400 with their first broadcast, an all-talk affair. They said they'd QSL in the future.

Skip also heard the first broadcast of **Radio Planaria**, at 0345-0355 on 7414 with war commentary by "Allard P. Fall" who said the station was named after the planarian, "a worm with two eyes but cannot see."

Dan Grote had **KNBS** on 7412 at 0133 to 0205 sign off.

Ross had the **Northern Ireland Shortwave Service** on 6272.3 with a weak signal and what may have been traditional Irish music. He had a definite ID at 0446.

Still another of Bob's logs was **Radio Beaver** on 15043USB from 2129 to 2207 sign off. DJ Bucky Beaver, oldies, ID as "the pirate voice of Canada - Radio Beaver" and address as Box 293, Merlin, Ontario.

That catches things up for this go 'round. I hope you'll all continue your excellent support by sending in your loggings and other information each month. I'm always interested in hearing from station operators, too. Readers appreciate knowing a little something about the stations they tune. If you can supply sample QSL's and/or studio/transmitter photos, that would be great! ■

SCANNING VHF/UHF

BY CHUCK GYSI, N2DUP

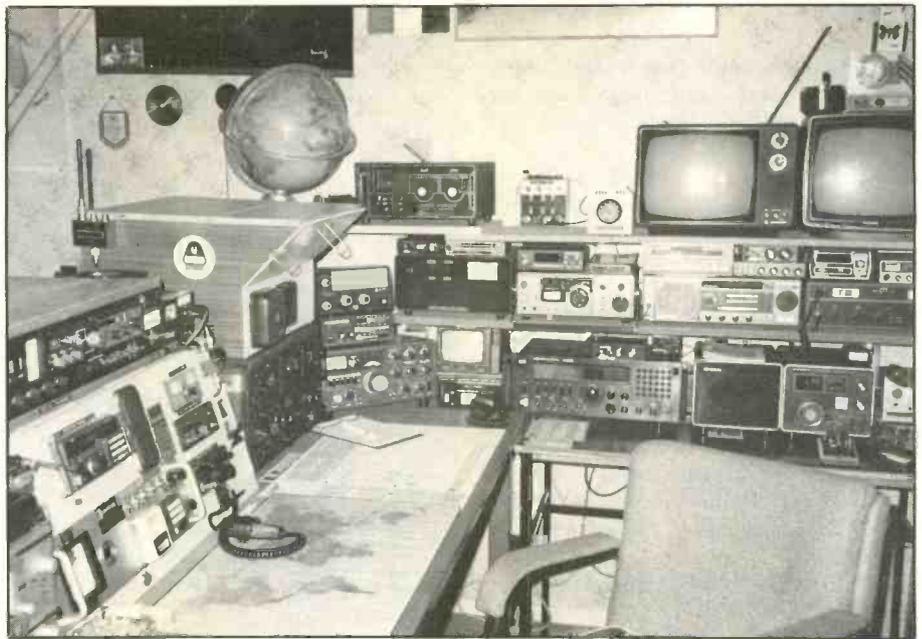
MONITORING THE 30 TO 900 MHz "ACTION" BANDS

The greatest thing about scanning is sharing information with other hobbyists; it's the easiest way to get ahead in the hobby. Many POP'COMM readers do that every day when they send in a letter with frequency information or listening tips. Without anything further, let's check in with this month's correspondents.

POP'COMM's low-band DX expert, Chuck Robertson of Illinois, writes in with some information on the opposite end of the spectrum where he usually is tuned in to. Chuck says he's found a five-channel trunked 800 MHz system south of Carbondale, Illinois, on 8671.4875, 862.4875, 864.4875, 865.4875, and data signalling on 863.4875 MHz. He says the most of the users on this system use their radios to place phone calls; the interesting part is he hears police officers, state's attorneys and all sorts of professionals. He also has heard paging for national forest officers as well as regular two-way radio users such as businesses. Chuck says that other trunked systems in southern Illinois operate on: 861.2125, 862.2125, 863.2125, 864.2125 and 865.2125; 861.8125, 862.8125, 863.8125, 864.8125 and 865.8125; 861.8375, 862.8375, 863.8375, 864.8375 and 865.8375; 861.9625, 862.9625, 863.9625, 864.9625 and 865.9625. One additional note: Chuck says Federal Express has a repeater on 857.8625 while U.S. Drug Enforcement Administration agents at Carbondale use 418.975 for telephone calls.

On the international front, Roger Neyens writes from the town of Mamer in Luxembourg. Roger says he's been monitoring VHF and UHF since 1978 but reports there isn't as much to hear in his nation as here in the United States. Roger's main VHF-UHF receiver is a Yaesu FRG-9600. Ham repeaters in Luxembourg are on the following frequencies: 145.700, 145.725, 144.675 (packet digipeater), 438.750, 434.250 (ATV video) with 439.750 (ATV audio), and 50.023. Beacon stations can be heard on 144.902 and 1296.902 MHz, while a linear all-mode transponder has an output of 144.450 to 144.490.

Staying on the international front, a reader from Australia sent along these frequencies: Maritime Services Board - 27.505, 27.595, 27.615; weather "wave-rider bouys" that gather weather information at sea off western Australia use 27.565 and 27.695; marine channels used by many small boats, mostly during the day and mostly in AM mode (although there is some SSB), are 27.88 (main), 27.68, 27.72, 27.82, 27.86, 27.90, 27.91, 27.94, 27.96, 27.98; Victoria army barracks - 33.53, 38.25, 38.45; Australia army mobile to mobile on 33.35 and 41.90; Conar-



Here's the well-equipped DX station of Roger Neyens of Mamer, Luxembourg. It's doubtful that Roger misses anything going on in his locals.

go Council on 35.01/37.01; cordless phones use 30/39 MHz pairs.

Shayne Lovitte writes from Mobile, Alabama, with a few frequencies: Southflite helicopter, 155.235; Mobile Transit Authority, 453.150; Mobile Civil Defense, 453.600; Mobile Yellow Cab, 152.420.

Aaron Tijerina of League City, Texas, sends some interesting frequencies for Johnson Space Center in Houston: 164.175, Earth Science; 164.200, fire/security; 168.000, engineering division and support services; 170.750, rigging; 170.350, construction and support services; 170.400, old GSA taxis; 170.750, aircraft, and operations.

Fred Wolf, N3CSL, of Lancaster, Pennsylvania, offers a tip for AOR AR-1000 scanner users. He advises not to use the CLEAR button to erase a stored frequency. Apparently once a frequency is entered into a memory, it can be locked out or changed, but not removed from memory using the CLEAR function. The clear memory capacity seems limited and causes the microprocessor to lock up the unit, rendering it useless. Again, Fred advises to use CLEAR only to correct a programming error. Fred says he can't find the frequency used in Lancaster and York, Pennsylvania, by Schaad Detective Agency. Our records show they have a repeater in York on 461.025. Lastly, Fred says that the airport in Lancaster has added an ATIS transmitter on 125.675 and has a new ground frequency of 121.800. The tower at the airport uses 120.900 and simulcasts on 251.100 for military flights.

William Shepard of New Britain, CT, says he recently bought a Realistic PRO-36 handheld scanner and was curious as to whether the radio can be modified to receive the 800 MHz band or have its 20-memory-channel capacity increased. This is one of the general questions we get here at POP'COMM almost every week, if not a few times a week. First of all, your radio has to have that circuitry to receive the band desired. Most scanners that exclude the cellular band can be modified to once again pick up the 50 MHz of cellular band, however, they already have the circuitry in place to receive other 800 MHz signals. As far as the additional channels, the Realistic PRO-2004 was the expansion champion: by soldering in place a single diode, the radio's capacity could be expanded from 300 to 400 channels. Some scanners can have more extensive surgery to expand to thousands of channels, but this usually involves external or internal add-ons and banking channels so that only one single bank can be scanned at a time, and not all the banks. As far as the PRO-36, I haven't heard of any modifications, but that doesn't mean that someone isn't trying!

Sebastian Cultrera of Wethersfield, CT, writes to say that he finds Scanning VHF/UHF both informative and accurate. Sebastian also wrote to say that the city of Hartford, CT, plans to switch all public safety operations to a 16-channel trunked 800 MHz radio system by the end of the year. The new frequencies for trunking police, fire, EMS and possibly public works includes:

(Continued on page 76)



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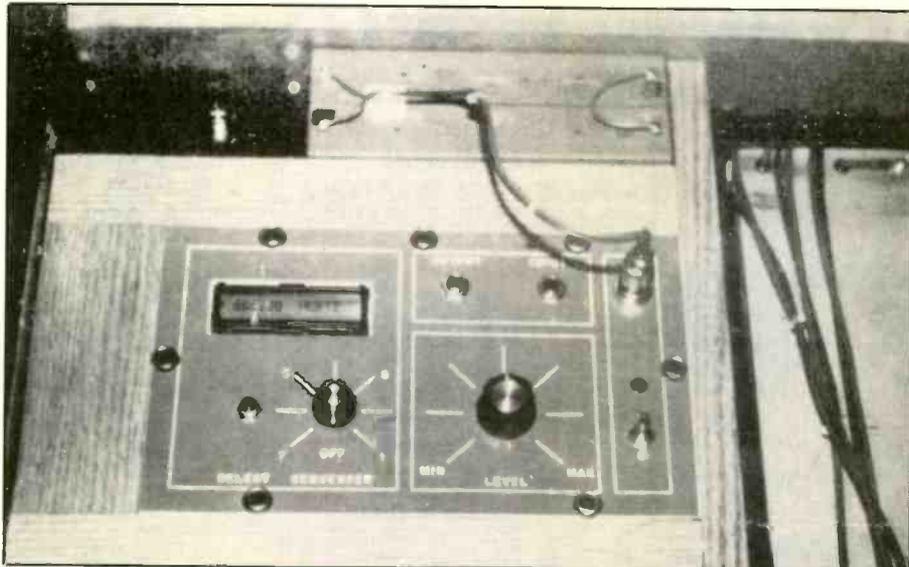
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Beaming In (from page 4)



The Rife Frequency Generator transmits on the signals on the discrete frequencies of germs, bacteria, etc. in order to zap them with signal overload. (Courtesy Super Science.)

involved, there is a danger from accidental shock. Also, that the device is experimental and untested, but isn't intended for medicinal or healing purposes.

You may ask why one would want to risk life and limb in order to experience the privilege of being exposed to the MWO. Simple! It balances the aura and aligns the chakras. It is described as being like an electronic shower to wash away the stress of daily life.

Frankly, the Globe Hi-Bander, which was my first 6 and 2 meter band ham transmitter, generated 55 watts of RF interference, and easily on as many frequencies as the Lakhovsky MWO. In the late 1950's, it cost me only \$150. People three counties away were squawking about this transmitter's TVI, FMI, BCI, and even interference

to their electric can openers. That was more than thirty years ago, and after my using it, even now the tuning slugs in my chakras still don't need more than a slight tweak once every few years to keep them aligned. However, at 52 ohms, my aura remains unbalanced beyond all hope. Guess that's what you're getting for the additional \$900 when you buy an MWO.

Then, there's the Rife Frequency Resonator, which costs close to \$1900. The theory there is that germs, bacterium, microbes, viruses, and all other nasty little varmint that make you sick each have their own unique resonant frequency within the band 200 Hz to 20 kHz. For instance, they say AIDS is on 2.489 kHz.

The Rife device uses computer software

to generate certain specific frequencies (to .01 Hz accuracy) with a modulated square wave output (3 seconds on, 1 second off). Transmissions on the critical frequency of a specific ailment suffered by a person who is exposed to the machine supposedly zap the little beasties that are causing the problem, thereupon achieving a cure by means of signal overload. Something like the way a 1 kW 6-meter ham transmitter fed into a 10-element beam quickly cures an entire neighborhood of the plague of TV. The Rife machine comes factory programmed with nine frequencies of popular (but unnamed) ailments operating on 666, 690, 728 Hz and others, and the user can ask also the factory to program in six additional malady channels of his own choice. Maybe someone will issue a frequency directory.

Next, for only \$369 you can get the *Extremely Low Frequency Generator*. Although the power output of this transmitter isn't specified, it has a variable frequency output from 1 to 32 Hz. The frequency may be set to .001 Hz accuracy using the digital read-out on the front panel.

Sure, your first guess is that you can use this to communicate with submarines. Nothing so mundane is suggested. The specs point out that the psychic state of the brain is between 7 and 9 Hz, and the brochure therefore hopes that the user of the transmitter might want to experiment. I'm not sure what that means, but I could see experimenting with patching *Bart Simpson* saying "Eat my chakras, man!" into all crystal balls within communications range.

More intriguing, however, is the information that our planet has a resonant frequency at precisely 7.83 Hz. This, the catalog observes, is caused by the interaction between the earth's surface, the ionosphere, and the atmosphere. Therefore, by means of exquisite logic, it is explained that the ELF transmitter can neutralize the negative effects of electro-radiation from fluorescent lights, TV sets, computer monitors, and the effects of jet lag, also to increase the power of meditation. I suspect that for a lot less money, an on/off switch could accomplish many of those goals.

They don't mention whether this gizmo might be used to manipulate the ionosphere in order to increase your chances for hearing or working DX. Maybe it could neutralize the ionosphere to DX, and you could use it to mess up the chances of people you don't like hearing or working those rare countries and DXpeditions.

The main use they propose for this ELF Generator is for it to be used to transmit to UFO's. You'd only need one, the brochure states. That's because the UFO crews will answer you back via telepathy. They mention the possibility that UFO entities known as Ashtar or Lazaris will respond, although they suggest "reasonable caution" in such comms. Or, you could get two ELF generators and, they claim, tune them up on the same frequency to establish a telepathic telephone with a friend.



The Lakhovsky Multi-Wave Oscillator, shown with its two antennas. It can realign your chakras and put your aura in balance. (Courtesy Super Science.)

The most novel of all of the New Age electronics products is the *UFO Detector*. It's only \$239, so that means it's inexpensive enough to sit one right up there on your car's dashboard next to your *Fuzzbuster* for a couple of laughs during non-UFO periods.

From what the description reveals, this measures disturbances in the earth's magnetic field, such as are caused by nearby UFO's. In the presence of UFO's, there is radio and TV interference, car ignitions go dead, there are power outages, and compasses malfunction. Of course, the brochure points out things other than UFO's can also disturb the earth's magnetic field.

So, if you suspect a magnetic field disturbance, I guess you can confirm it by using this detector. Then you can stick your head out the window and look around. If you see a large, glowing, disk hovering in the sky over your home or car, you can be reasonably safe in assuming that the problem is caused by a UFO.

At that point, you would be well advised to seriously consider running like hell. That's because here the brochure finally decides to reveal at least one good reason why "reasonable caution" should be used when contacting UFO's with the *ELF Generator* described above. It notes that the majority of UFO crew members are ugly little gray-skinned bearded men who delight in kidnaping humans in order to subject us to hideous and degrading medical examinations and experiments. You get the feeling that maybe sending out ELF signals to contact UFO's is going to accomplish nothing more than putting you in contact with the very same ugly little alien entities you attract by calling CQ on 14313 kHz.

Still, placed on the dashboard of your car, this *UFO Detector* would be a wonderful conversation piece for you and your passengers. And just think what reaction you would get from a Smokey in the event you ever got pulled over. The story of the guy with the *UFO Detector* next to the *Fuzzbuster* on his dashboard is guaranteed to be told at every local police picnic and banquet for years to come. Even better, it stands a good chance of eventually finding its way permanently into the national annals of legendary police locker room yarns and tall tales.

I'm not going to get into the technical specifics of the *Orgone Energy Blanket* (\$269 to \$699, depending upon the size). I will mention, though, that it is described as a cross between a diode and a capacitor that acts as an accumulator blanket. You place the twelve pound blanket over your body in order to attract and get you "charged up" with *life energy, prana, the ether, elan vital, orgone energy*, or what the catalog also points out was called *the Force* in the movie *Star Wars*, as in "May the Force be with you."

The catalog doesn't say, but it looks like this may be the very same energy that Mel Brooks mentioned in his 1987 film, *Spaceballs*. In *Spaceballs*, it was called the *Schwartz*, as in "May the Schwartz be with

you." If so, the orgone energy blanket is the only device in the New Age electronics catalog that appeals to me. *The Schwartz* is my speed. This, I understand. I'll take one of those orgone energy blankets, please; king size, navy blue.

The New Age electronics devices in this wonderful brochure are no doubt great, but most of them go over my head instead of in-

to it. It's not the catalog's fault, it's me. In the era of New Age electronics, I'm programmed for Old Age electronics.

Oh, Jeeves, poke around in the attic for my Globe Hi-Bander, and also that 1957 *Allied Radio* catalog. I'm taking the orgone energy blanket out on the rear deck for my afternoon nap. Wake me if you see the blanket starting to attract any *Schwartz*. ■

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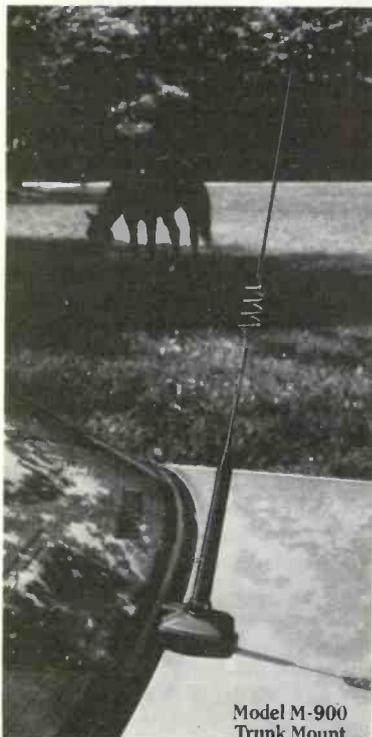
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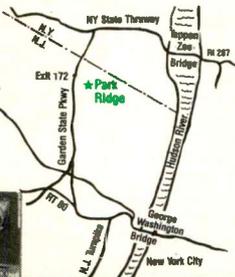
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CB Scene (from page 63)

this chap's friend and hear some more of his theories. There are a variety of factors that can influence a radiated signal, but as far as getting signals to and from a particular direction, I would suggest getting a high-gain beam and an antenna rotor. That way, communications can be concentrated in any desired direction. Notwithstanding the contrary whims of the ionosphere, strong northerly winds, air pollution, acid rain, Chernobyl fallout, holes in the ozone layer, radioactivity from Rocky Flats, smog, the DEW line, the Canadian Customs Service, and local malevolent atmospheric components attempting to force your signal southward, you'll at least maximize your chances of contacting your friends to the north. And, yes, a good beam and antenna rotor installation will cost several hundred green-stamps. You'll feel it was worth every cent.

What's left to say at this point, except that we'll catch you on the flip-flop. Let's see some shack photos and CB QSL's, also any news, questions, or comments, you have about 27 MHz. ■

Satellite View (from page 61)

wide. SDS satellites maintain a Molniya orbit with a perigee of 400 miles and an apogee of 40,000 miles.

The Air Force also has transponders on host satellites. Flsatcomm's satellites carry AF transponders. Other spacecraft may carry AF transponders as well. This may be an attempt on the part of the Air Force to spread their communications resources around in a way that would enhance the chances of the system surviving if attacked.

There are two other satellite systems used by the military, DSCS II (Defense Satellite Communications System) & DSCS III. They carry a wide variety of communications, including Diplomatic and even relays of highly sophisticated intelligence gathering techniques such as bugging and wire taps. These intercepts can be uplinked by listening devices which can be air dropped into the target area or from bugging equipment which is put in place by more conventional means. DSCS III (an improved version of DSCS II) carry communications of for a network of sonar stations onboard ships which continually scan the oceans for Soviet subs.

Support Systems

The military operates two important navigational satellite systems, NavStar and Transit. They enable ground forces, ships and aircraft to pinpoint their exact location. They are also used by high-tech weapons systems for guidance and control. NavStar is also used by our nuclear subs. They enable the subs to pinpoint their targets. The NavStar is a high altitude (12,000 miles) system, while Transit satellites maintain a polar orbit and an altitude of 600 miles.

Military satellites provide communications for over 2,200 mobile and fixed stations around the world. The majority of these terminals are onboard ships, aircraft and communication vans. These stations generate between 100 to 500 watts of RF, depending on the satellite system they are trying to access.

Flsatcomm satellites require only 100 watts of uplink to access. Another nice feature of this system is that the antennas can be kept simple. Aircraft carry a 4 element beam antenna and ships use a small, 6 foot diameter dish antenna.

Future military satellite systems will be Low Earth Orbit (LEO) systems. The Milstar Project has been put on hold due to cost overruns. Newer and less expensive LEO systems are being planned for the future. This on the heels of the successful Packet Satellite Program used by Amateur Radio Operators. These LEO satellites are inexpensive, easily replaced and just as reliable. They are closer to the Earth's surface and therefore require less sophisticated and expensive ground station equipment. Commercial interest has sparked plans for extensive LEO satellite systems in future telephone communications systems. ■

Scanning VHF / UHF (from page 72)

854.96725, 856.4375, 857.4375, 857.9375, 857.9875, 858.4375, 858.7125, 858.9375, 858.9875, 859.4375, 859.7375, 859.9875, 860.4375, 860.7375, 860.9375 and 860.9875. In addition, Hartford plans to utilize the new nationwide mutual aid channels on the 800 MHz band: 866.0125 (national calling channel) and 866.5125, 867.0125, 867.5125 and 868.0125 (national mutual aid channels.)

Sebastian goes on to say that when Hartford police switch over to 800 MHz, Newington police in Connecticut will start using Hartford's F-4, 460.400. Newington currently uses 460.425. Hartford's current system is as follows: 460.050, police F-1, north; 460.200, police F-2, south; 460.375, police F-3, towing; 460.400, police F-4, detectives/command post; 857.9625, vice and narcotics (note that between 2 and 10 a.m., only 460.050 is used for citywide police dispatching); 462.950, EMS dispatch; 154.310, fire F-1, dispatch; 154.310 (repeater with input on 154.205), fire F-2; 155.940, fire F-3, support services; 154.830, fire F-4, fireground; 154.265, Hartford County fire mutual aid.

What are you hearing on your radios? If you have frequency updates, listening tips, photographs we'd love to hear from you. Write to: Chuck Gysi, N2DUP, Scanning VHF/UHF, Popular Communications, 76 N. Broadway, Hicksville, NY 11801-2909.

Clandestine (from page 53)

local day as the 2315 broadcast. Actual frequency usage varies, especially on 3 MHz. Grundl noted the signals variously on 3545, 3680, 3700 and 3710. The station identifies itself as "una emisora de la Unidad Revolucionaria Nacional Guatemalteca."

The South Korean based *Radio Echo of Hope* has a new and expanded schedule. It now airs at 2000-2100 on 3985, 2300-0100, 0300-0700 and 0800-1200 on 6348 and 1300-1700 on 3985. 6348 has not been used in the North American early morning hours for many years. It's this time period which offers the best chance to hear this station, which, unquestionably, is an operation of the South Korean government. No QSL's exist.

Yugoslavia continues to be a hot spot so here's the most recent schedule for *Radio Libertas*, which airs over WHRI and calls for independence for Croatia: Monday-Saturday at 1600 on 11790 and 21480 and Sundays at 2100 on 13670 and 17830. The program includes some English. Radio Libertas appreciates reception reports and sends an attractive QSL card. The address is 1174 Clarkson Road North, Mississauga, ONT L5J 2W2, Canada.

Information about clandestine stations and the groups which run them—from loggings to QSL data to news clippings to position papers and so on are always much appreciated. Your identity can be kept confidential if you wish. Thanks. ■

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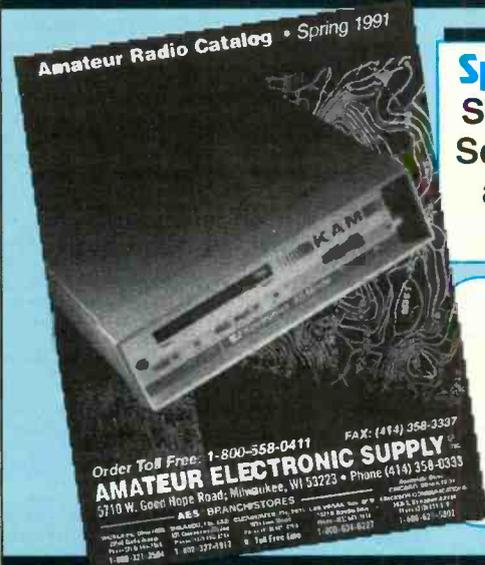
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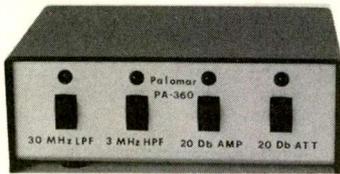
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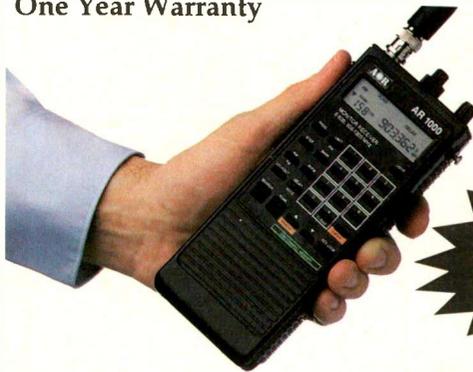
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IF: 561.225, 58.075, 455KHz or 10.7MHz
Increments: 5 to 955KHz selectable/ 5 or 12.5 steps.
Audio: .4 Watts
Power: Input 9 - 13.8 V. DC
Antenna: BNC
Display: LCD
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Specifications:

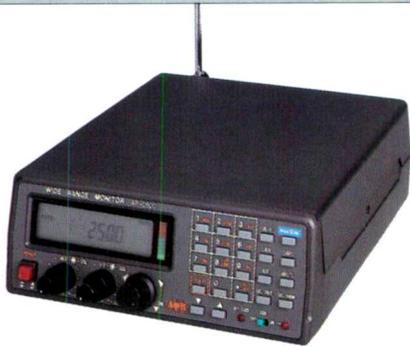
Coverage: 27-54, 108-174, 406-512, 830-950MHz
Sensitivity: .4uV Lo, Hi. .8uV Air. .5uV
UHF. 1.0uV 800
Scan Speed: 15 ch/sec.
IF: 21.4MHz, 455KHz
Increments: 10, 12.5, 25, 30
Audio: 1W
Power: 12.8VDC, 200MA
Antenna: BNC
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Coverage:	1MHz-1500MHz
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IF:	750.00, 45.0275, 5.5MHz 455KHz
Increments:	5,12,5,25 KHz
Audio:	1.2 Watts at 4 ohms
Power:	Input 13.8 V. DC 300mA
Antenna:	BNC
Display:	LCD, backlighted
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- One Year Limited Warranty.

Options:

Earphone.	EP200	\$2.00
External Speaker. Mobile Mount.	MS190	\$19.50
Extended Warranty. 2/3 yrs.		\$65/\$75
Mobile Mounting Bracket.	MM1	\$14.90
RS232 Control Package	SCS3	\$295.00
(software & cable) offers spectrum display and database.		
Wide band preamp	G-W2	\$89.00

Specifications:

Coverage:	100KHz-2036MHz
Sensitivity:	.35uV NFM, 1.0uV WFM, 1.0AM/SSB/CW
Speed:	20 ch/sec. scan. 20ch/sec. search
IF:	736.23, (352.23) (198.63) 45.0275, 455KHz
Increments:	50Hz and greater
Audio:	1.2 Watts at 4 ohms
Power:	Input 13.8 V. DC 500mA
Antenna:	BNC
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- VC-10 VHF converter
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- Optional Accessory**
- PG-2N Extra DC cable

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