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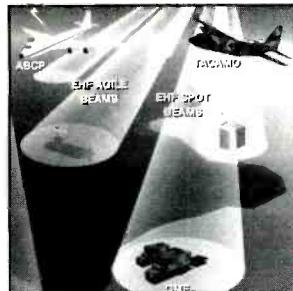
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This month's cover: USA: Ft. Collins, CO. Electrical engineer Matthew Deutch of WWV checks out 15 MHz antenna. Photo by Larry Mulvehill, WB2ZPI.

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A publication of

 CQ Communications
76 North Broadway
Hicksville, NY 11801-2953 USA

Offices: 76 North Broadway, Hicksville, NY 11801. Telephone (516) 681-2922. FAX (516) 681-2926. Popular Communications, Inc. Second class postage paid at Hicksville, NY and additional offices. Subscription prices: Domestic—one year \$19.95, two years \$38.00, three years \$57.00. Canada/Mexico—one year \$22.00, two years \$42.00, three years \$63.00. Foreign—one year \$24.00, two years \$46.00, three years \$69.00. Foreign Air Mail—one year \$77.00, two years \$152.00, three years \$228.00.

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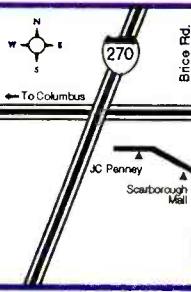
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BEAMING IN

BY TOM KNEITEL, K2AES

AN EDITORIAL

Radio's Rules Of Thumb

Not long ago, a reader wrote to tell us that he had improvised a shortwave antenna by clipping his receiver to the finger stop of a rotary dial telephone. He reported that the scheme worked just fine, although he couldn't understand why so many people he told about this idea insisted that it was pretty stupid.

We ran his letter here in the *Mailbag* column, offering the tidbit of folk wisdom, "if it's stupid and it works, it ain't stupid." That brought in other reader letters, including those supporting the concept that this does make a respectable impromptu receiving antenna that has been known about for decades, and that people shouldn't have condemned it as being stupid.

Other letters were directed more at the folk wisdom we had offered, commenting that our advice to the reader was one of those little gems of truth along the lines of, "if it ain't broke, don't fix it." Some readers asked if we knew any more of these rules of thumb, axioms, Murphy's Laws, or whatever you choose to call them. A couple of readers passed along examples that were right on target. After assembling what we had here, we thought it might be a kick to run them and invite readers to send in any others they might have.

You might not relate to each and every one of these, but you're certain to find at least several that hit home for you. Here's what we have so far:

1. Spilled coffee and soda have a magnetic attraction to QSL cards.

2. As soon as the best frequency in your scanner activates, uninvited relatives will drop in for coffee.

3. If you monitored a funny cordless phone call, chances are that the first person you tell about it will be the person whose call it was.

4. The very worst thing you can hear on a scanner is your license plate being run on a surveillance channel.

5. You know you're getting old when an evening's listening to the police on a scanner doesn't reveal even one person suspected of doing anything wrong who is your age, or older.

6. Snacks consumed during the use of communications equipment never contain any calories.

7. The time you spend using communications equipment is not deducted from your total lifespan.

8. A ham radio contact with an attorney might bring you a QSL card, but accompanied by a \$500 consultation fee.

9. If the ham station with the rare DX call answers you first from out of the pileup, then he's probably a pirate.

10. Be wary when people "knock" various radios. A poor operator will be dissatisfied with the results provided by even the best equipment.

11. All numbers are relative. The difference between 10 w.p.m. and 13 w.p.m. is the equivalent of the difference between 10 m.p.h. and 55 m.p.h.

12. Regardless of how many high-tech functions your new radio has, you will never use more than 75 percent of them, and never understand how to use at least a couple of them.

13. An instruction manual should be referred to only as a last resort. Never admit to anybody that you needed to look.

14. When your tape deck decides to start eating cassettes, it will begin with one you made of your best DX catches.

15. The guy you had the fight with on the CB yesterday will certainly be the volunteer examiner administering your ham radio test tomorrow.

16. The one thing that will deaden the entire shortwave spectrum worse than solar flares or any other factors is your decision to demonstrate your station to someone.

17. The surest way to invite sudden and serious equipment malfunction is to attempt a demonstration for a prospective buyer.

18. Should you ever hear the one DX broadcaster you have always sought, it will be the week they ended their QSL policy.

19. The longer you listen to a weak station for an ID, the better the chance there is for noise to cover the ID.

20. If a signal is affected by fading, the station's ID will come at a low point in the fade.

21. The new frequency you discovered will be changed the day after you mail in your logging to POP'COMM.

22. That piece of coaxial cable you located will be at least 6 inches too short for the job you need it for.

23. Long wires and lengths of coaxial

(Continued on page 74)

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LETTERS TO THE EDITOR

We're In Good Company

Saw you on the Jane Pauley TV show in April, 1991. Have it on tape, too. As soon as I saw you on NBC, I felt as if I had known you for years. The other day, I heard you with Jane Pauley, doing a short segment on cellular phones over local KRLD-AM. Jane Pauley likes scanners. My kind of person!

Ronnie Jones, ex-WA5ASC,
Saginaw, Texas

Can Anybody Lend A Hand?

At present I own a current model scanner, also an older unit that was used by my father. The older set is a Sears Model 93436390602 (licensed under SBE's US Patent 3937972). The Sears set uses a punched card system to program in the frequencies. Over the years, the cards were all used up and the frequency programming book was lost. I tried contacting Sears but the people at my local store have no idea what I'm

talking about. Neither does my local radio shop. Does anybody know where I could obtain some program cards and the programming manual? I would like to use this as a back-up scanner while the other one is in search mode.

Allen F. Cunningham,
214 Tennessee Trail,
Browns Mills, NJ 08015

I have a Sears 5-band scanner, Model 934-36390601. It's actually an SBE 16-channel receiver that requires 3X5 plastic punch cards to load in the frequencies. The programming codes are based on a binary or hex code system. I have been able to figure out NOAA weather frequencies but nothing else. Sears can offer no information, and I don't know if SBE is still in business. Does anybody have the frequency formula for this scanner?

Peter Kodis, N1EXA, Chief Engineer,
Stations WCTK/WNBH,
737 County Street,
New Bedford, MA 02741

The Sears scanners are obviously identical to the 10 and 16-channel set that was called the SBE Opti-Scan. The units were designed and marketed in the mid-70's by SBE, Inc., of Watsonville, Calif. The user punched holes for all of the scanner's channels into a plastic programming card, then fed the card into a slot in the scanner where it was optically read. Does anyone have some extra cards to spare, and can copy the programming manual? If so, please contact these readers directly.—Editor.

Who's A Technocreep?

The word "technocreep" doesn't bother me. But then, when I was a kid, I never minded when the other kids called me "the mad scientist." I feel that anyone fool enough to talk about confidential matters on what they should know is a radio has no right to object. But, if they don't know it's a radio then they've got to be too stupid to have anything to say that's worth listening to. I do agree that no restrictions on listening should be invoked. Such restrictions are a hallmark of dictatorship.

Dave Wiesen, K2VX,
Newark, N.J.

When Dave was a teen-ager, he was licensed as W2WHB. That was around 1950, when we both lived three blocks from one another in New York City. I'd like to go on record here as pointing out that I was the one neighborhood kid who didn't call him a mad scientist.—Editor.

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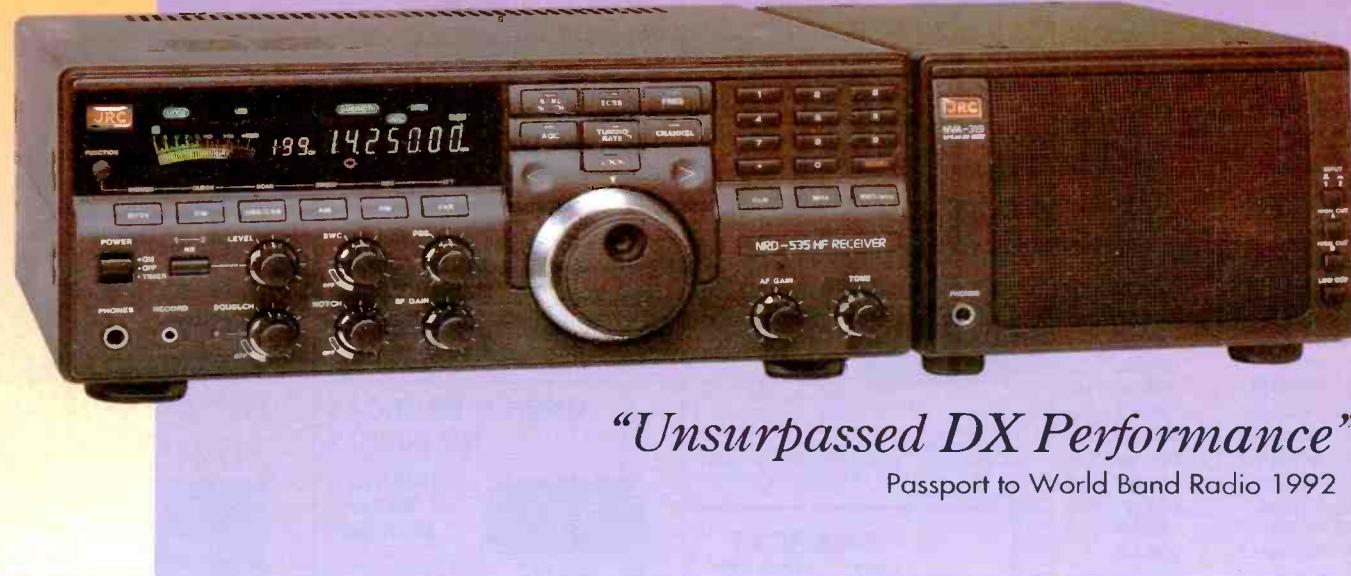
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Here Come Shortwave's New Countries!

Start Logging These—Now!

BY GERRY DEXTER

Just about the biggest kick a shortwave broadcast DX'er can get from doing his or her "radio thing" is hearing that new one—the one that puts a new country to the logbook—and then hopefully getting a QSL a month or two later. These kicks come thick and fast in the early part of one's DX'ing career but, each new country you catch means one less fish in the pond. After a few years in the game many of those which are still unheard are the ones which are extremely hard to catch. Eventually, though, with good equipment and enough patience, persistence and experience, you'll probably land most of them.

Those early days of SWBC DX'ing, though, when the new countries are heard at a fast and furious pace, can get you hooked on logging new countries. It's not easy to accept the diminishing number of targets—even if you make the smart move and focus your attention on stations of which there are many more. No matter how long you've been in the DX game the new countries are the

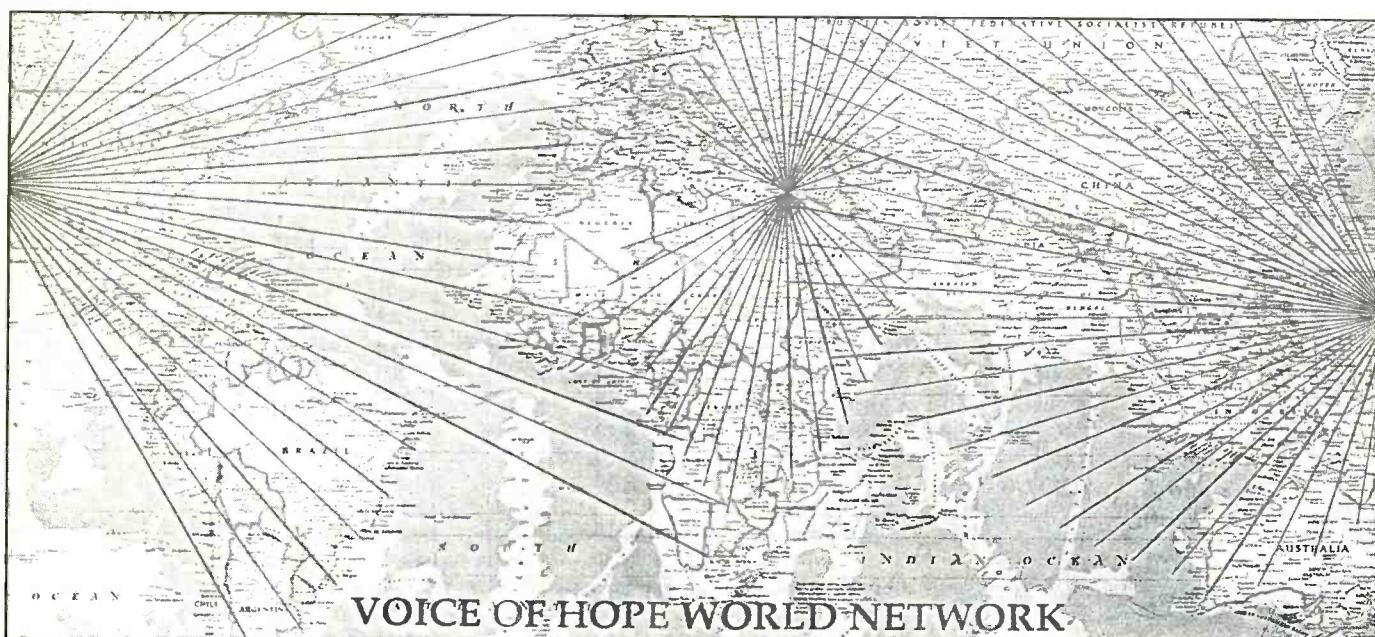


Bougainville Island, on the far right on this NBC map QSL has declared itself independent of Papua New Guinea.

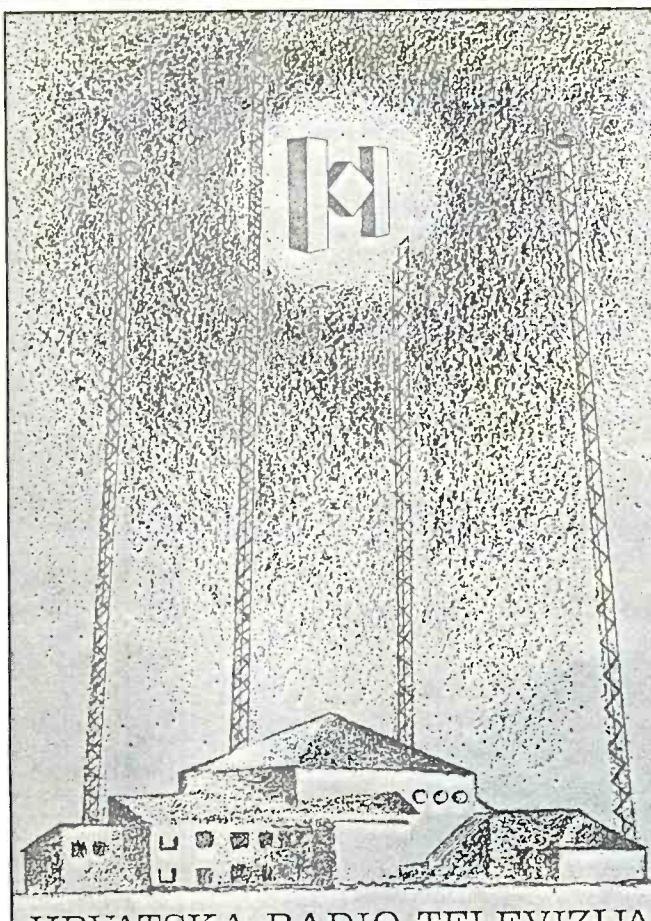
glamour logs. Logging a new country ranks at the top of the DX Enjoyment Scale. Consequently, the arrival of a new country on shortwave is a happening

guaranteed to quicken the pulse of any serious DX'er.

In average times such events don't take place all that often. A couple of new



The Voice of Hope-Asia is now on the air from Pacific island of Palau.



HRVATSKA RADIO TELEVIZIJA

Hrvatska Radio from newly independent Croatia has been heard and QSL'd by many.

countries may become active on the SWBC bands in a year's time, on the average—and about as many go off the air for various reasons. These, however, are not average times. Normally new shortwave countries come on the air as a result of a government deciding to get in or return to shortwave broadcasting, or a private concern putting a transmitter on the air or a large broadcaster adding a relay somewhere. Recent political changes have also created or are about to create new countries on both the political map and the radio—moreso now than at any time in many years.

The breakup of the Soviet Union created a number of new countries, politically speaking, so you might expect a host of new, ex-USSR republics would be on the air and could now be counted as countries. But the major shortwave broadcast DX "country" lists have always counted the various USSR republics as separate countries so independence for Latvia, Kazakhstan, the Ukraine and so on caused no changes on these country lists. Most had and have shortwave transmitters within their borders, though in some cases they were nothing more than slave units, relaying Radio Moscow and other services from the USSR's capital.

The bottom line, then, is that the collapse of the USSR caused no bonanza of new countries for DX'ers using lists like that of the North American Shortwave Association (NASWA). The future, however, may see one or two additions, as we'll note later on.

But if there was no goldmine of new country targets in the former USSR, other radio and political goings on have created a number of new countries or countries returning after years of inactivity. It's our purpose here to take a look at these new targets and give you some tips on how to add them to your log if you haven't already done so. Many of them will prove very tough to log but don't let that stop you from trying.

Anguilla: Religious radio personality Dr. Gene Scott still has the money pitch going, trying to finish funding for the shortwave operation he plans for this Caribbean island. He intends to run two 100 kilowatt transmitters. It could be that we'll see this one active sometime in 1993.

Bahrain: Radio Bahrain is still somewhat new on shortwave and it's a tough one to hear, too, despite the fact that it's running 60 kW. A few North American monitors have heard the 31 meter band

RADIO PRAHA



Radio Czechoslovakia (ex-Radio Prague) may soon speak only for the Czech half of that country.

frequency, listed for 9745 but which varies to 9746. Mostly Arabic programming airs between 0300 and 2115. The North American loggings seem to occur around 1300-1500. There is a lot of QRM on the frequency so be prepared to fight for the signal. Reports go to Radio Bahrain, PO Box 702, Manama, Bahrain.

Bosnia Herzegovina: This former Yugoslavia republic is very much in the news at the moment as an ethnic/civil war rages there. Although no programming originates in "B-H" Radio Federal Yugoslavia's (ex-Radio Yugoslavia) has a 500 kilowatt transmitter at Bijeljina, just over the Serbian border. Actually this site is used for most of the frequencies of Radio Federal Yugoslavia. Try the English program to North America on 11740 at 1130-1200 (also on 11710 and 21610 to other areas). The Bijeljina site is also employed for the 0030-0100 broadcast to North America on 11870. If Bosnia is eventually added to the country lists most of your Radio Federal Yugoslavia loggings will probably really count as Bosnia and genuine loggings of the shrunken Yugoslavia will be rare.

Bougainville: This island has declared its independence from Papua



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Thank you very much for your reception report and enclosures. The programme details 'on' mention confirms to our Broadcast schedule.

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Date : 22. 1. 92

for DIRECTOR OF BROADCASTING

Bahrain, on shortwave for about a year, has yet to be added to most DX'ers logs.

New Guinea, but things are far from settled. The Papua New Guinea government has relocated its Radio North Solomons to Rabaul, on New Britain Island from its former location at Kimbe, Bougainville. A clandestine transmitter is broadcasting from or near the town of Aroua, home of the Bougainville provisional government. Radio Free Bougainville is using 3880 and has been heard by several in North America in the 0900-1100 time frame. Reports can be sent to Humanitarian Aid Coordinator, PO Box 1203, Honiara, Solomon Islands. They are asking for \$5 to accompany letters, apparently to help cover broadcasting costs.

Croatia: Another of the ex-Yugoslavian republics to have declared its independence and Croatian Radio from Zagreb came on shortwave shortly afterwards. It has a European service which runs 24 hours a day on 7240, 6210, 9830 and 21480. The station carries brief English news segments several times daily: 0600, 0800, 1200 and 2100 Monday-Friday (actually at three minutes past the hour) and at three past 0700 and 0900 on Saturday and Sunday. QSL's for this station come from Hrvatski Radio, Dezmanova 10, 41000 Zagreb, Croatia.

El Salvador: It's anybody's guess as to how long El Salvador has been absent from the shortwave bands. The government's Radio Nacional has been silent for years. We simply don't know for certain whether the FMLN's Radio Venceremos or Radio Farabundo Marti stations were really within El Salvador territory so loggings of those two have been considered as clandestine and not placed in any particular country. Now, however, Radio Venceremos is a legitimate broadcaster, operating from within El Salvador and is maintaining a transmitter on shortwave.

The nominal schedule is 0000-0400 and 1200 to 1500. If you don't hear it on 6300, try 6320. We haven't been able to locate a current address for Radio Venceremos.

Eritrea: When the various factions making up the Ethiopian People's Revolutionary Democratic Front took power in May, 1991 the long battle for independence for the province of Eritrea took a huge step forward. A vote on independence is scheduled for sometime in 1993 so we can't yet call Eritrea a new country but it seems likely that it will be. The Eritrean People's Liberation Front has long operated the Voice of the Broad Masses of Eritrea and now claims the situation is operating from Asmara, the capital. The station is currently scheduled in Amharic and other local languages at 0400-0700, 0900-1100 and 1500-1800, using 3940, 7020 and 7490. A few North American DX'ers have been able to snag this one around 0400 on the 7490 frequency. To QSL it, try a report in care of the Eritrea Relief Committee, 475 Riverside Drive, Room 907, New York, NY 10115.

GOA: A Portuguese enclave on the west coast of India Emissora de Goa operated here until 1062 when India moved in and made the area a part of India. All India Radio is supposed to be establishing a shortwave transmitter site here, although we've seen no indication as to when this might come on the air. If this area becomes active again and you follow the NASWA list you'd be able to count it as GOA—if you're able to hear it!

Hawaii: 1993 should see the arrival of an actual broadcast station in Hawaii—for those of you who consider WWVH a utility not a broadcaster and thus not countable as SWBC. World Harvest

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CIRCLE 124 ON READER SERVICE CARD

January 1993 / POPULAR COMMUNICATIONS / 11

Radio, which operates WHRI in Indiana, is building a station on the Big Island which will carry WHRI's programs to Asia and the Pacific. They intend to have a 100 kilowatt transmitter on the air before the end of the year.

Maldives Islands: Although it was active on shortwave for many years (and an extremely tough catch for every one of them). The Voice of the Maldives has been silent for a number of years now. Word is that the station plans to return to shortwave. We don't know when to expect it, however, and we'd venture a guess that it isn't going to be a much easier log when it returns than it was in the old days.

Moldova: Now independent, the former Modavian SSR, had been silent on shortwave for over 20 years. Earlier this year it was learned that an active shortwave site exists at Krasnodar. This was used for a time to carry the programs of Radio Vilnius, Lithuania, on 11860 but, at last report, this had been discontinued. At the moment we have no information as to what frequencies Krasnodar is using, if any, or to what purpose the transmitter is being put. There is word, however, that Radio Moldavia is to go on the air with a foreign service on shortwave so, at the moment about all we can do is wait for that to happen.

Palau: Broadcasts from this South Pacific Island—one of those in the US Trust Territory of the Pacific Islands—began back in the spring. High Adventure Ministries in California put The Voice of Hope for Asia on the air in April and should be using its full 100 kilowatts by now. The most recent schedule has Chinese at 2200 to 0300 and English 0300 to 0800 on 11900. You'll likely have better luck with 9830 between 1000 and 1500. Chinese runs on this frequency to 1330, then Indonesian,

Chinese again and Vietnamese, each for a half hour. Reception reports go to PO Box 66, Koror, Palau 96940.

Slovakia: Czechoslovakia looks as though it is going down the same path as Yugoslavia, though hopefully without the bloodshed. Slovakia has recently voted in favor of sovereignty and experts are predicting a full split. Radio Czechoslovakia has several transmitter sites, some of which are within Slovakian territory. Both Rimavská Sobota and Veľké Kostoľany are within Slovak territory. Radio Czechoslovakia's third site, at Litoměřice, is within Czech territory. But, again, there's a problem in knowing which transmitter site you are hearing. So far Slovakia has made no move to take control of the transmitters so the best approach now is probably to report a number of different Radio Czechoslovakia frequencies and ask that the site be indicated on your QSL cards. Radio Czechoslovakia current schedule has the following English language schedule: 0730-0800 on 17725 and 21705 to the Pacific. 0600-0630 and 1000-1057 to Europe on 6055, 7345, 9505 and 11990. Also 1700-1725 on 5930, 6055, 7345 and 9605; 1830-1857 on 6055 and 7345, 2000-2027 and 2100-2130 on 5930, 7345 and 9580; 0300-0330 on 7345, 9810 and 11990 and 0400-0430 on 7345, 9580, 11990, 13715 and 15355. Other frequencies to check are 9540, 11685, 17725 and 21705. Send reports to Vinohradská 12, 120 99 Prague.

St. Helena: Radio St. Helena, the government (and only) station on this small South Atlantic speck operates on 1548 mediumwave with just 450 watts. In October, 1990 it co-operated with the organizers of a DX contest sponsored by the European DX Council and transmitted a one-time broadcast on shortwave,

using the island's point-to-point transmitter. At this writing the station had arranged to make another one day appearance in October, probably too late for readers of this article to take advantage of. However, there is some hope for more broadcasts in the future, perhaps even some sort of regular schedule on shortwave as the station is said to be excited by the prospects of broadcasting on shortwave. Stay tuned!

Tatarstan: What used to be Tatar ASSR, USSR has announced its independence and has apparently even set up its own diplomatic service. This and the several other small areas of the ex-USSR seeking or claiming independence is still a situation which is very much up in the air. Kazan is the capital and the site of a large shortwave transmitting center. It carries its own domestic service 0400 to 2200 on 6120 but that's tough to pick up here. Kazan is a major Radio Moscow site using dozens of frequencies. Check the *World Radio TV Handbook* for a listing.

Tonga: Another tough catch is Tonga, which has recently returned to shortwave after an absence. The Tonga broadcasting Commission uses just one kilowatt on 5030 between 1730 and 1000. Only a few North American DX'ers have been lucky enough to get this one, usually between 0600 and 0900. Reports go to PO Box 36, Nuku'alofa, Kingdom of Tonga.

Trans-Dniestr: Also known as the Dniester Republic and located within Moldova (ex-Moldavia), east of the Dniester River, this is another area within one of the former USSR republics seeking independence. Reportedly, a former Radio Moscow site exists at Grigoriopol, although the WRTH doesn't show it in its ex-USSR frequency listings. This one, therefore, may be very difficult to track down as to times and frequencies until we get more data. As far as we know, neither this one nor Tatarstan have yet been considered for radio country status in any of the radio country lists used by SWBC DX'ers.

Between the new countries created politically and the existing countries becoming or about to become active on SWBC it looks like even the most jaded SWBC DX'ers aren't about to run out of targets anytime soon. As mentioned earlier, because of such things as frequency and schedule choice, power usage and just plain lack of information about where to find them, many of them will be extremely tough to log. A good number haven't been accepted yet by such widely used country lists as that of the North American Shortwave Association. But don't let that deter you from seeking them out because you never know. Today's logging may count as a new country tomorrow, or next month, or next year! ■

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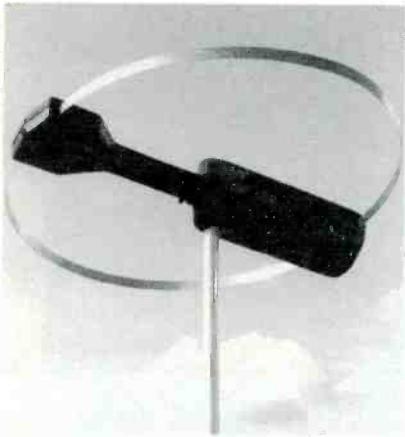
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A Visit To The Cradle Of German Radio Broadcasting

The Shortwave Communications At Nauen

BY GENE GRENEKER III, K4MOG

Nauen, Germany was only 35 Kilometers from downtown Berlin when I visited the city in 1980, however, at that time, because of political difference, access to one of East Germany's most historic radio sites was impossible for an American citizen. However, it was a different situation in November 1991, almost 2 years after the Berlin Wall had fallen. Through special arrangements, a visit to both the historic radio transmitter site was the cradle of Radio Dorchevella, formerly Radio Berlin International (RBI), was possible.

Upon arrival at the transmitter site 5 kilometers north of the town of Nauen the first welcome was extended by the manager Mr. Klaus Kraemer. Next I was introduced to Herbert Hutt and Gunter Rauner two members of the engineering staff who would serve as guides. Mr. Rolf Shultz an employee of the Telekom research and development laboratories near Berlin was also present to answer questions. Gunter Rauner, an engineer and amateur radio operator (DL2ROR) served as the interpreter with Herbert and Rolf also supplying dialogue and history.

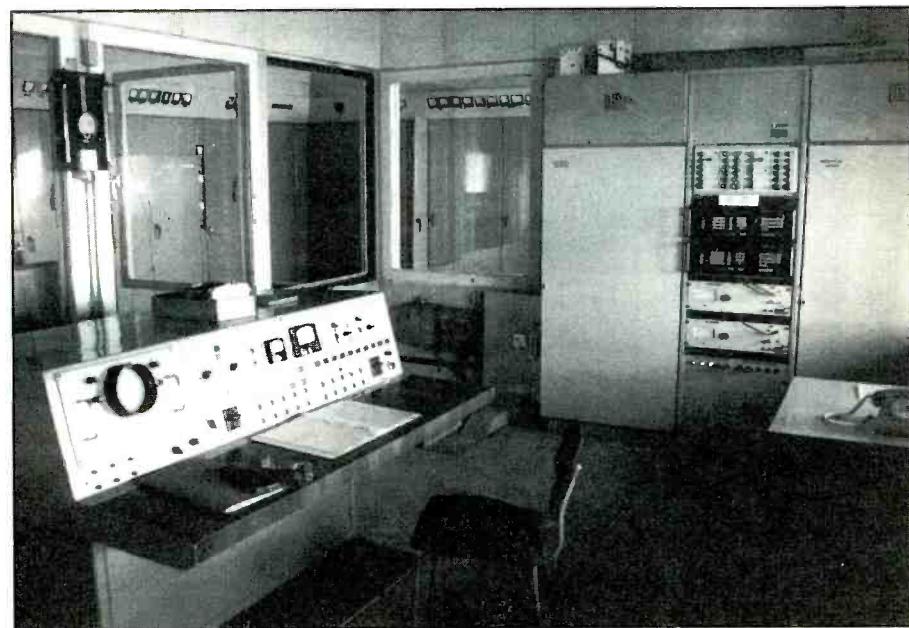
The building housing the Director's office also contained the master control room for several very high powered (500 kW) shortwave transmitters. The master control operator monitors the transmitters and switches the directional antennas from this location.

The most impressive system was a 500 kW transmitter, which was one of two, built in Russia and installed in 1978. The Russian transmitters were added to complement an existing Swiss manufactured 500 kW transmitter that first went on the air for RBI in 1972. Prior to the addition of the Swiss and Russian transmitters the maximum power output at RBI was 100 kW.

The Russian transmitter and associated antenna switch occupy 2 floors in one very large wing of the building. The 2 Russian transmitters use a class-B modu-



Master Control room for the Radio Deutsche Welle Nauen transmitters.



Local control room for 500 kW Russian transmitter.

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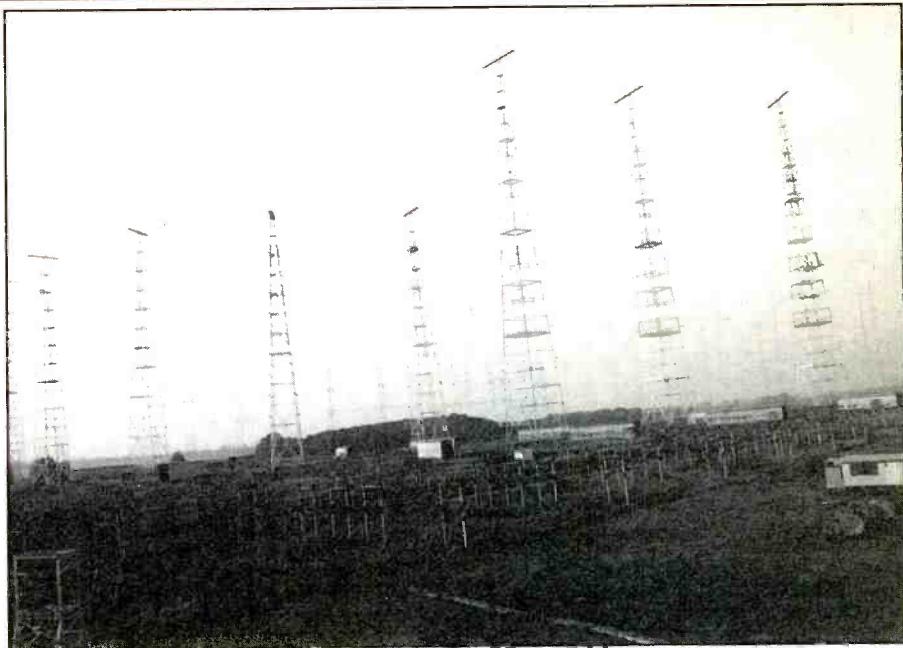
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lator capable of developing 350 kW of audio to fully modulate the 500 kW final amplifiers. The ground floor under the transmitter houses the transformers, power supplies and the water cooling system. The Audio stage and the associated radio frequency stage occupy most of the space on the second floor. Large copper bars carry the low voltage from the filament power supply to power the filaments of the radio frequency tubes in the transmitters cabinet.

The 500 kW output can be remotely switched to feed any one of several massive curtain antennas that provided 18 dB gain in the midband region of operation. Eight broadband dipoles, operating in the frequency range 6 to 12 MHz comprised one array in the bay and another 8 dipoles operating between 12 and 22 MHz comprised a second array in each bay. The entire antenna system extended almost a kilometer. The array was over 160 meters high and was laid out in a large 'S' shaped pattern. This configuration allows programs to be beamed in almost any direction when the appropriated bay is selected by the antenna switching pattern. The gain of the antenna and the transmitter carrier power combined produces an estimated radiated power combined produces an estimated radiated power of almost 50 million watts in the direction of transmission.



Curtain array antenna system used daily for directional broadcasting.

After the tour of the 500 kW transmitter, associated switching network and curtain antenna installation, we were invited to visit a unique experimental facility that was located 1 kilometer east of the high powered site. The antenna could be seen towering over the countryside from several kilometers away.

Gunter Rauner explained that the antenna that we could see in the distance was an experimental broadband 18 dB gain radiator (midband) which is mechanically steerable in both azimuth and elevation. During the site occupancy by RBI, experiments were conducted by rotating the antenna in azimuth to beam to a specific

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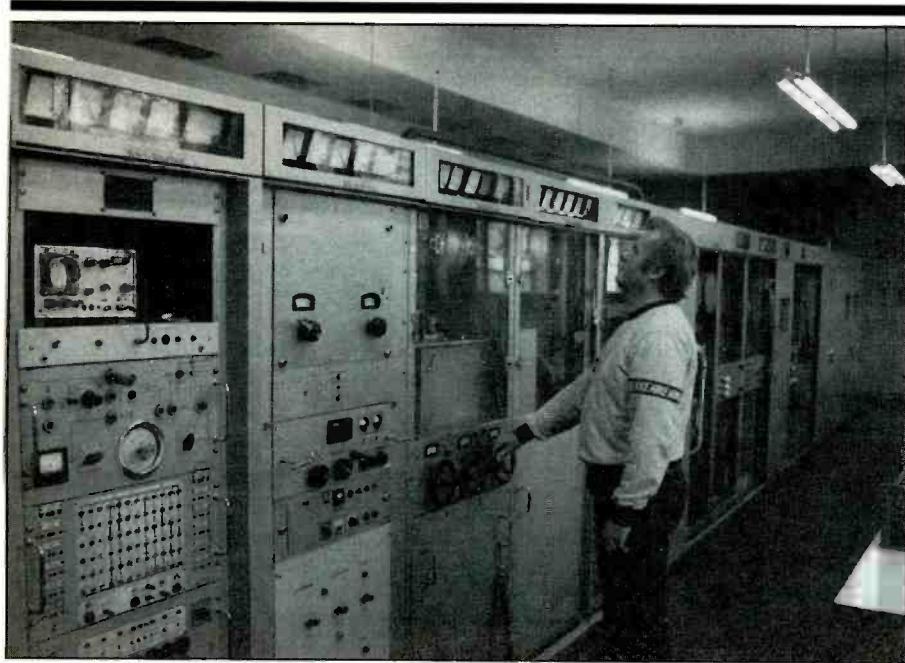
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Transmitter used to excite the steerable antenna.

bearing. Then, the antenna would be slowly tilted up in elevation so that the optimum "launch angle" could be found to take advantage of propagation conditions.

During the experimental period the antennas effectiveness was monitored by ships at various locations around the world. When asked the results of the experiment, I was told, testing showed that low launch angles worked best at the ranges of interest. Nonetheless, the steerable antenna at Nauen was just one example of German ingenuity that I saw during the visit.

The next stop on the tour was the companion shortwave transmitter to the rotational antenna. It was built in the 1960's by engineers in the former German Democratic Republic (GDR). The power output is 100 kW and the appearance was not radically different than many 50 kW broadcast transmitter that I have seen in the United States. The frequency was controlled by a frequency synthesizer so that transmission could occur on any frequency between 6 and 17 MHz.

Following the tour of the modern high powered Deutsche Welle site was taken to one of the more historically famous transmitter sites in Germany. Located within 2 kilometers of RBI is the transmitter site that served as the cradle of German radio. The historic site dates back to 1906 when Telefunken began experiments in radio transmitting using a 20 kW Braun plain-gap spark transmitter operating on a wavelength of 3000 meters.

The historic Nauen site was chosen because the inexpensive, open and cleared farmland had a water table very

close to the surface of the ground. The highly conductive ground was more important in the early days of radio because of the frequency of operation. The antenna system used at these frequencies extended over 3000 meters from end to end. Large mats of copper wire were laid under the antenna to serve as a ground counterpoise and a high water table ensured an even more effective ground.

The historic site was first used by Telefunken for propagation experiments. By 1909 experiments were conducted with a 35 kW quenched spark transmitter using the call letters POZ. This was a period when there was little theoretical knowledge and most progress was made through experimentation. In 1912 Telefunken raised the power to 100 kW using a transformer secondary voltage supplying 75,000 to 100,000 volts. The transmitter produced a very recognized audio note because the spark transformer was driven by a 500 Hz alternator. Daily schedules were maintained between Togo, German West Africa and Nauen, also the Telefunken station at Sayville, Long Island, USA. The spark system was replaced with a high frequency alternator transmitting system by 1916. The alternator oil was cooled in an outdoor cooling pond that is still located in front of the historic building.

During the period preceding World War I, the Telefunken Sayville, Long Island Station maintained communications with the Nauen station. A transmission technique was perfected that allowed messages to be exchanged in very high speed burst, using a high speed recording device called the Telegraphone. Communications between Nauen and the Say-

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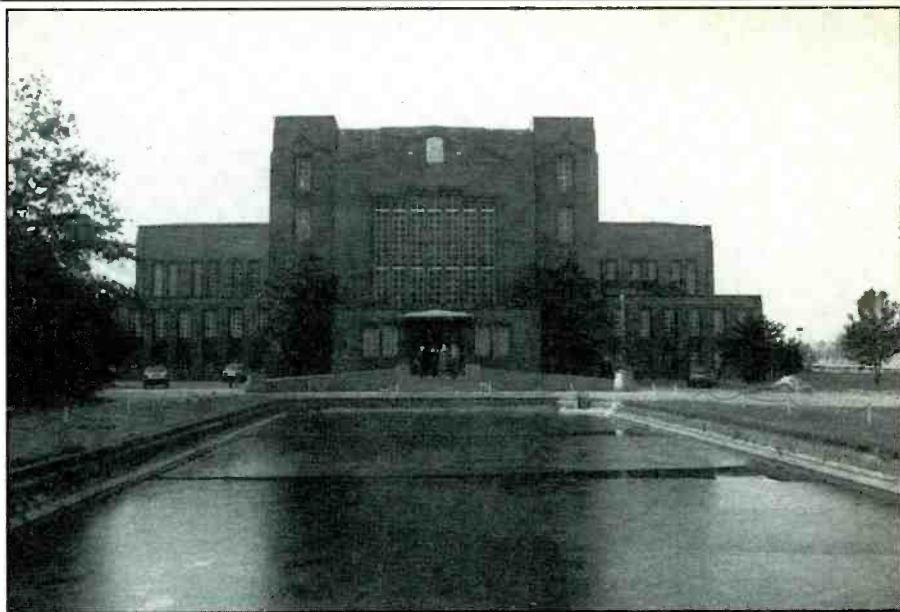
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ville stations have been linked to the sinking of the Lusitania. As a result of the Telephone transmissions and other suspicious activities, the Sayville station was seized by the US Navy on July 6, 1915. An excellent history of the Nauen and Sayville pre World War I operations is presented in the October 1984 issue of *Popular Communications*.

Nauen was used for other than military purposes during the period following World War I. In 1918 the Society of Trans Radio was begun at Nauen as a German commercial broadcasting operation. Earlier in 1918 time marks were broadcast from Nauen on the longwave frequencies at 12 noon and midnight for marine and industrial clock synchronization. Propagation experiments were conducted between 1924 and 1932 between Nauen and Buenos Aires, Argentina, using a kW transmitter. Between 1933 and 1945 the Nauen station was operated under control of the government of Germany. Security was increased and guard post were established. During the period the Nauen site was once again operated as a military station.

In 1945 the Russian forces took control of the site and removed all transmitting equipment from Nauen. The transmitters were sent by rail to the Soviet Union where most of the equipment was buried to keep it from being used in Germany again. Since 1953 the historic site at Nauen was once again used for point to point communications. During the most busy period after 1953 there



Historic Nauen site of POZ, VLF alternator oil cooling pond in foreground.

were 25 shortwave transmitters in operation, each running 20 kW, and 3 transmitters running 100 kW. These transmitters provided point to point communication between Nauen and the Eastern Bloc countries. This service consisted of radio telegrams, meteorological reports, time signals, the press service of ADN, and telephone service to Cuba, China and the USSR.

When the Berlin Wall fell, the Deutsche Bundespost took over the responsibility for the old site. It was determined that many of the communications services being performed on the

High Frequency bands by the Nauen transmitters were redundant with operational satellite circuits. In April 1991 the last of the transmitters at the historic site were deactivated and taken off the air.

Today, the closed historic site remains as a silent reminder of Germany's rich radio history. The main transmitter building is basically unchanged. The black and white checkerboard floor that once supported the 100 kW Very Low Frequency (VLF) alternators is still there. The two story auditorium, once used as a broadcast studio and later a conference center complete with spectators gallery, stained glass windows and a small stage, remains. Two original buildings located at the old site entrance once served as a restaurant and the other as a technical library are today used for other purposes. Although the large VLF towers were removed many years ago, the large masonry and stone "dead men" anchors where the guy wires were attached still remain. During my visit, officials from the Bundespost were surveying the old transmitter site of POZ with the intent of making it a museum. Fortunately, Germans appreciate their history and if the plans are followed through the Nauen site will not fall to the bulldozer blade like so many of the historic point to point communications sites in the United States. There is also a possibility that the area around the historic site of POZ may one day be used for the expansion of the Deutsche Welle shortwave broadcasting facility. This expanded utilization of the historic site for shortwave broadcasting will ensure that Nauen continues to be in the forefront of German shortwave radio.

The latest Deutsche Welle program schedules can be obtained by writing: Deutsche Welle, PO Box 10 04 44, 5000 Cologne, Germany.

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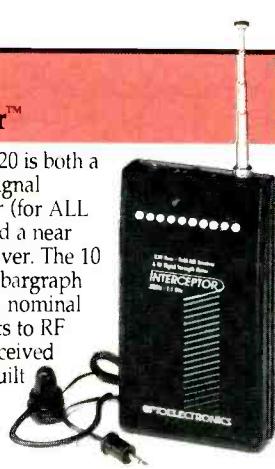


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Tuned In & Toned In

A VHF or UHF Station's Specs Usually Mean More Than Just Its Frequency. There's A Hidden Factor!

BY HARRY CAUL, K1L9XL

The usual case is for scanner owners to consider that they have all the vital stats of a station once they know its operating frequency. But, except for military, marine, and aero service stations, the majority of VHF and UHF two-way stations actually have another important signal component. This consists of certain specific audio tones that are sent out continuously as long as the mic buttons are pressed.

The more than 30 different standard tones used range between 67 Hz and 254 Hz, although the couple of standard codes above 203.5 Hz appear to be little used. Since most scanners don't reproduce audio below 300 Hz, you can't hear these tones. Nevertheless, they are there. They are known as CTCSS tones. The initials mean "Continuous Tone Code Squelch System." More popularly, they are called just "tones," or even "PL tones." The PL represents Motorola's trade name for CTCSS, which they call Private Line.

All two-way equipment operating within a given communications system is normally set up to use the same CTCSS tone, or a user-selectable assortment of several specific tones. The availability of tones can serve a number of different purposes. Some include:

1. The most popular use is to permit several different licensees to share a single frequency. The squelch circuits in the receivers of each system using the frequency are set so they won't pass any signal that doesn't contain a certain designated CTCSS tone. With each local system using a different CTCSS tone, dispatchers will reach only their own fleet of mobile units, and vice versa. Nobody will even hear anyone else's system on-frequency.

2. The use of several selectable CTCSS tones in one system allows the dispatcher to contact only certain groups of mobile units, while bypassing others in the same system.

3. Another popular CTCSS use is to limit access to a repeater. A repeater is



Most two-way radios now come equipped for CTCSS tone operation. This new Standard Communications Corp. HX-241 handheld transceiver offers CTCSS tones and DCS codes. It has 16 channels, 4 watts output, and is made for VHF or UHF operation. It's from Standard Communications Corp., Box 92151, Los Angeles, CA 90009-2151.

often set up so that it ignores all signals on its input frequency, except those detected containing the proper CTCSS tone. On low-band systems, tones stop pickup of any incoming skip signals. A CTCSS tone keeps a repeater available to access only by members of a particular agency, company, club, or group. Tones discourage malicious jamming. On shared commercial and public safety fre-

quencies, a tone keeps stations in one system from accessing the repeaters of unaffiliated systems, or being accessed by them.

4. In a given system, several repeaters may be established on one single input/output frequency pair at different locations in the same region. Each repeater is set up so that a different CTCSS tone is required to gain its access. Mobile units having selectable CTCSS tone capabilities can then pick the desired repeater to be used for best comms.

5. One repeater may be equipped to respond to several different CTCSS tones. This permits several different users to access and cooperatively share a single repeater without being aware of or disturbed by one another's communications. This is popular in leased systems, where multiple lessees share a single machine.

6. In a leased system, if one of the lessees stops paying for the use of the repeater, the repeater's owner simply shuts down the CTCSS tone he assigned to that particular user for accessing his repeater. It instantly denies useful comms to that one user. This invariably acts as motivation for quick payment of all monies owed.

So you see, the tones are quite functional on many levels. In actuality, tones have more uses than the examples given here.

As a scanner owner, you hear several police, ambulance, or business users using the same frequency. But by merely listening, it isn't apparent that there are hidden CTCSS tone signals being sent out with each transmission you're monitoring. And, even if you're aware that such tones exist, you don't know what the specific distinctive and distinguishing CTCSS tone used by each of those stations happens to be. Chances are that the people at the stations, themselves, couldn't tell you—and wouldn't if they could. It's strictly comms tech stuff, to be sure.



AIE's fantastic TCF-3 Tone/Code Finder, shown here mated to a Bearcat BC-760XLT instantly decodes and displays all CTCSS tones, also digital codes

All is not lost, because interest in ID'ing these tones has been running high within the monitoring hobby of late. That has resulted in several scanner products arriving on the market that have addressed themselves to CTCSS tone decoding.

The Uniden Bearcat BC-590/600 XLT and BC-760/950XLT scanners

have optional plug-in accessories that can be programmed to react to 38 standard CTCSS tones. With this feature switched on, and programmed on each active monitoring channel to one of the standard tones, the front-panel squelch control becomes inoperative. Squelch operation is then completely controlled by the incoming signals and their CTCSS tones.

You then can hear only the one system you want, even though it is operating on a busy frequency used by a half dozen local licensees. Should you want to also monitor a second system on this same frequency, you can do that too, and keep it totally separated from the comms of the first system. The thing is, though, that you need to know which CTCSS tone is being used by each system you want to monitor so that you can program it into the scanner.

Communications Specialists, Inc., 426 West Taft Ave., Orange, CA 92665-4296, offers several tone decoder products, most notably the TS-32P and the DCS-23. These are small programmable units built on PC boards. They are intended for installation in your scanner, and will pass the standard CTCSS tones between 67 Hz and 203.5 Hz. These are reasonably priced devices that do a fine job. Ask the company to send their free catalog and other worthwhile literature relating to CTCSS products.

Interesting and useful CTCSS-related products are the several Tone/Code Finder (TCF) decoders made by the Measurements Division, Automated Industrial Electronics Corp. (AIE), 141 Granite Street, P.O. Box 70, Batesburg, SC 29006. AIE kindly loaned POPCOMM a TCF so we could get a look at it in operation. We'd say this device easily ranks among the top ten scanner acces-

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series we have yet encountered.

The basic TCF is a high-speed unit that, when hooked to your scanner, instantly detects, decodes and displays all CTCSS tones through 234 Hz. The tones read out in large red LED digits on the face of the unit. The unit can also decode and read out digital codes, including split channel and inverting codes. Its function doesn't disturb the normal operation of your scanner, and you can turn off the TCF when it's not needed.

Different versions of the TCF offer things like on-board memory that retains all hit and time information and can transfer it on command to a computer or a printer (via RS 232 port). Time is stored in seconds and hits in units, and the unit will retain its memory for up to three weeks even when unpowered.

The TCF can typically be used with base station scanners such as the Uniden 560/600XLT, BC-760/950XLT, the Realistic PRO-2004/5/6, many AOR models, and, in fact, most better grade desktop scanners. The TCF needs to be wired into the innards of a scanner. This is a matter of only a couple of cable connections. Complete instructions are furnished. The job takes about 20 minutes, and should be easily accomplished by most hobbyists. AIE offers the TCF units mated to Bearcat scanners. They can supply some versions configured as stand-

alone units, or for coupling to other scanners.

The TCF units can be powered directly from the scanners to which they are connected. AIE's Tony Crady suggested to me that when using a TCF with Realistic scanners, optimum results are obtained if the TCF is powered from an external 12VDC source instead of from the scanners themselves. A plug-in port for the external power is on the TCF's rear panel.

In use, the TCF is turned on and it sits there waiting for action. If a signal comes that has no CTCSS tone, such as an aircraft, you usually get no reading. But then let's say that the scanner locks on to a busy police frequency. Your local police come on, and the TCF instantly lights up with (for example) the digits 156 during the entire transmission. That lets you know that the standard CTCSS tone 156.7 Hz is the one used by your hometown police. But the next time the scanner stops on the same frequency, it's a dispatch from the sheriff two counties to the west. You see that the TCF now reads out (for example) 136, indicating that this particular agency is using a 136.5 Hz CTCSS tone.

At that point, you readily understand why your scanner picks up this sheriff's dispatcher from a distant county, and everybody else on the frequency, but

your local police cars never pick up any units other than their own. Your home-town police radios have squelch circuits that won't open unless they detect signals infused with their own agency's distinctive 156.7 Hz CTCSS tone! This hidden information isn't in any FCC license data. Yet it's definitely a vital statistic of most stations you monitor. Some frequency guides have now started including the CTCSS data when it is known.

This puts a whole new dimension into monitoring. It's a real kick to park on one busy frequency and watch all of the different licensees show up to reveal their distinctive and hidden CTCSS tones, the digits changing as each new user comes on to utilize the channel. That's what makes AIE's TCF a most informative and hypnotic monitoring aid. Now that I have gotten used to finding out these tones, I can hardly resist checking out practically every station I monitor. Very habit forming. I enter all my discoveries in my monitoring records.

If you'd like additional information on these clever units, contact AIE at the address shown. Be sure to tell them that you read about them in POP'COMM.

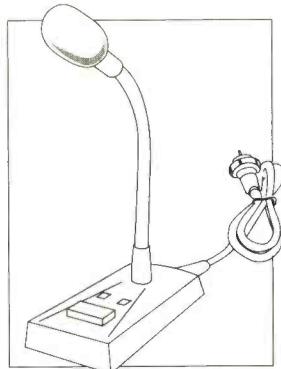
CTCSS tones aren't new, even though scanner users have only recently decided that they are information needed to complete the stats of the stations we are monitoring.

RANGER SDM-1000

BASE MICROPHONE WITH UP/DOWN SCANNING

High-Fidelity Wide band frequency response give your station that broadcast studio sound!

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- Modern slim line design - easy to use with minimum space requirement
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Emergency Operations Center

We're celebrating our 24th anniversary with special pricing on Scanners/Shortwave/CB and Radar. Hurry, offer ends March 31, 1993.

Radio Scanners

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List price \$509.95/CE price \$209.95/SPECIAL
12-Band, 200 Channel • 800 MHz. Handheld
Search • Limit • Hold • Priority • Lockout
Frequency range: 29-54, 118-174, 406-512, 806-956 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 only 100 channels, order the Bearcat 100XLT-C for \$149.95. Includes antenna, carrying case with belt loop, ni-cad battery pack, AC adapter and earphone. If you like to use your scanner in your vehicle, order a cigarette lighter plug part #PS001 for \$14.95 each. A spare battery pack, part #BP205 is \$39.95. An extra AC adapter for charging your battery pack is part #AD140 and is \$14.95. A magnetic mount antenna with a BNC connector part number USAMMBNC-C is \$39.95.



For more information on Bearcat radio scanners or to join the Bearcat Radio Club, call Mr. Scanner at 1-800-423-1331. To order any Bearcat radio product from CEI call 1-800-USA-SCAN.

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NEW! Ranger RCI 2970-C

CE price \$409.95/Introductory SPECIAL

Enjoy ham radio fun and communicate worldwide with a powerful Ranger Communications Inc. RCI2970-C 100 Watt 10 Meter Mobile Amateur Radio Transceiver. With continuous coverage from 28.0000 through 29.6999 MHz., this compact mobile radio has controls for frequency selector, RF power, RF gain, noise blanker, on/off/volume, squelch, clarifier, repeater splits, manual mode, display dimming, memory, enter, frequency lock, frequency up and down selector and more. If you only need 25 watts of power, order the Ranger RCI2950-C for only \$244.95 each. An F.C.C. amateur radio license is required for United States operation. For technical information call Ranger Communications Inc. at 619-259-0287. Order your 100 Watt Ranger radio today.

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During our 24th anniversary special, all books are only \$12.95 each.

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SMHV2-C Scanner Modification Book, Volume 2
PWB-C Passport to Worldband Radio
LIN-C Latest Intelligence by James Tunell
NPD-C Uniden National Police Directory
FBE-C Uniden Eastern Frequency Directory
FRW-C Uniden Western Frequency Directory
ASD-C Air Scan Directory
TSG-C Top Secret Registry of U.S. Govt. Frequencies
TTC-C Tune in to Telephone Calls
CBHC-Big CB Handbook/AM/FM/Freeband
TIC-C Techniques for Intercepting Communications
ECC-C Embassy & Espionage Communications
CIE-C Covert Intelligence, Electronic Eavesdropping

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List price \$599.95/CE price \$289.95/SPECIAL
16 Channel • 25 Watt Transceiver • Priority Time-out timer • Off Hook Priority Channel

The RELM RH256NB is the updated version of the popular RELM RH256B 150-162 MHz. VHF sixteen-channel land mobile transceiver. RELM is the choice of many public safety agencies because this radio has built-in CTCSS tone and scanning capabilities as well as a priority function. The radio technician maintaining your radio system should also order programming instructions, part number PI256N for \$10.00.

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27 MHz COMMUNICATIONS ACTIVITIES

Here's a handy approach to a CB radio, and we mean it literally. It's the Model 27-MCB from Maxon Systems Inc. The unit offers the full benefits of a large CB radio while solving the under-dash space limitations of many late model cars. That's because just about the entire works, including all controls, are contained in a case that is the size and shape of a microphone. In fact, it is the microphone!

So, if you can find a spot to mount a microphone, you can install the Maxon 27-MCB in your car. Yet, it offers digital PLL tuning with multi-function LCD display including channel number, signal strength, and transmit power. For night vision safety, the LCD is backlit with a soft orange light.

Soft-touch buttons are provided for channel selection and access to special features. There are also dedicated buttons for Channel 9, and to recall the last channel used. There are also volume control and squelch controls, plus a rubber PTT button, on the mike. There's a jack, too, should you wish to use an optional external speaker.

The Maxon 27-MCB micro CB carries an MSRP of \$159.95. It's new from Maxon Systems Inc., 10828 N.W. Airworld Dr., Kansas City, MO 64153. For more information, contact Maxon's Karen Priebe, who is the Project Manager at Maxon. Or, you can circle 101 on our Reader's Service card.

Popular In Its Day

Somewhere along the line, the hobby lost Lafayette Radio. We can't pinpoint



The stalwart Lafayette HE-20 was a popular CB rig of the 1960's. This is the HE-20D version, which was late in its evolution.

exactly when, where, or why, but the large national retailer faded into history. They are well remembered, however, as an early player in CB radio. During the 1960's, Lafayette brought out a wide variety of models in all price ranges. If not sophisticated, or loaded with deluxe features, their CB radios were at least reasonably well-made, priced right, and they generally worked. They were also popular, and CB'ers awarded the company the pet nickname "Laughing-yet."

Lafayette's two most popular early 1960's models were the cheapie HE-15 (\$59.95) and the better HE-20 (\$109.50). The HE-15 was typical of the bare-bones CB's of the era. At least it had a single conversion superhet receiver in a time when some cheap sets had

regenerative receivers. The HE-15 offered 5 transmit channels. It had a 3 tube transmitter, but didn't even have a PTT mike. Still, it went through several model versions.

The HE-20, which we believe went as far as the HE-20D type, was one of the most widely used sets of its era. Early versions had 4 transmit channels and a tunable receiver with two IF stages. By the time the HE-20D appeared, it had 8 transmit channels, and the external styling had been greatly improved. The HE-20 had 7 tubes of 4 diodes, giving 14 tube operation. The transmitter final was a 6AW8, modulated by a 6AQ5. The set also had "crystal spotting" to zero-in the unit's transmitting frequencies on the dial of the tunable receiver. There



Maxon came up with the 27-MCB. It's all in the microphone!



Nifty looking CB shack used by Spiros. He's a Greek CB'er

MFJ Super Sensitive Scanner Antenna

MFJ-1864

\$79.95

Your scanner will come alive with signals you never knew existed when you use this new *super sensitive* antenna.

You'll hear distant mobiles -- even handhelds -- as they talk to base stations.

You'll pull in weak ground signals from distant control towers and air-traffic centers -- even hear *both* sides of conversations!

The MFJ-1864 combines new weak-

signal technology -- *an extremely low noise amplifier* -- with a resonant high gain omni-directional antenna.

You get 20 dB of extremely low noise amplification that'll let you hear signals down to the noise level.

The sensitive high gain antenna operates as two collinear 5/8 wave elements fed in phase on the 108-174 MHz aircraft/VHF high bands and as resonant halfwave elements on 30-50

MHz VHF low band.

For really long range reception, you can mount your antenna up extra high outdoor in the clear and feed it with long runs of inexpensive coax.

Coax loss won't degrade your signal. That's because weak signals are amplified at the antenna *before* going into your coax.

Sidemounts to your existing tower, TV mast or any 1 1/2 inch pole with one U-bolt (supplied). 8' high, 2' boom. \$7 S/H.

MFJ high-gain narrow-band scanner antennas outperform broadband ones



For Handheld Scanners

A. **Long Ranger™**, MFJ-1714, \$16.95. Super long range reception on 118-174 MHz VHF high-band. 40" extended, 10 1/2" collapsed.

MFJ World Band radio accessories greatly improve your reception

MFJ Indoor Active Antenna

MFJ-1020A

\$79.95



You'll rival or exceed the reception of outside long wires with this tuned indoor active antenna. "World Radio TV Handbook" says MFJ-1020 is a "fine value . . . fair price . . . best offering to date . . . performs very well indeed."

Tuned circuitry minimizes intermod, improves selectivity, reduces noise outside tuned band. Use as preselector with external antenna. Covers 0.3-30 MHz. Has Tune, Band, Gain, On/Off/Bypass Controls. Detachable telescoping whip. Use 9 volt battery, 9-18 VDC or 110 VAC with MFJ-1312, \$12.95. 5x2x6 in.

MFJ Outdoor Active Antenna

High dynamic range active antenna mounts outdoor away from electrical noise to pick up maximum signal with minimum noise. It lets you receive strong, clear signals from all over the world using minimum space.

"World Radio TV Handbook" says

MFJ-1024 is a "first rate easy-to-operate . . . quiet gain . . . low noise . . . broad coverage."

Covers 50 KHz to 30 MHz. Has gain control, 20 dB attenuator. ON LED. Select 2 receivers, auxiliary antenna or active antenna. 6x3x5 in. Remote unit has 54 inch whip, 50 ft coax with connector. 3x2x4 in. Use 12 VDC or 110 VAC with MFJ-1312, \$12.95.

MFJ-1024 **\$129.95**

MFJ Compact Active Antenna

MFJ-1022

\$39.95



Plug this new compact MFJ all band active antenna into your general coverage receiver and you'll hear strong clear signals from all over the world from 300 KHz to 200 MHz -- including low, medium, shortwave and VHF bands.

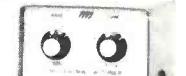
Also improves scanner radio reception on VHF and low bands.

Has detachable 20 inch telescoping antenna. Use 9 volt battery or 110 VAC with MFJ-1312B, \$12.95. 3 1/3 x 1 1/4 x 4 inches.

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MFJ-956

\$39.95



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B. **Dual Bander™**, MFJ-1712, \$14.95. 5/8 wave gives maximum gain 406-512 MHz. 1/4 wave 118-174 MHz. 19" tall, 7 1/4" collapsed.

C. **MFJ Pocket Roll-Up™**, MFJ-1730, \$14.95. Roll up this high gain J-antenna and stick it in your pocket! Hang it up for base station performance. Highest gain on 118-174, 406-512 MHz. 58" plus coax.

D. **"Shorty" Duck** MFJ-1718, \$12.95. 4 1/2" Hi-Q super efficient replacement rubber duck.

For Mobile Scanners

E. **Maximum Gain 5/8 Wave™**, \$29.95. Gives maximum gain of any single element mobile antenna on 108-174 MHz. Resonant 1/4 wave on 30-50 MHz. 48", magnet mount. MFJ-1828B, BNC; MFJ-1828M, Motorola.

F. **All Band Mobile**, \$19.95. Cellular look-a-like. 25-1300 MHz highest gain 406-512, 108-174 MHz. 19". Magnet mount. MFJ-1824BB, BNC; MFJ-1824BM, Motorola.

MFJ Antenna Matcher

MFJ-959B

\$89.95



The MFJ-959B matches your antenna impedance to your receiver so you get maximum signal transfer and minimum signal loss.

You get a preamp with a gain control that boost weak stations 10 times and a 20 dB attenuator that prevents overload. Pushbuttons let you select 2 antennas and 2 receivers. Cover 1.6-30 MHz. 9x2x6 inches. Use 9-18 VDC or 110 VAC with MFJ-1312, \$12.95.

MFJ High-Gain Receiver Preselector

MFJ-1045B

\$69.95



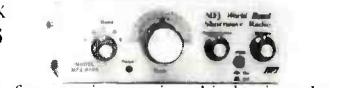
High-gain, high-Q preselector covers 1.8-54 MHz. Boost weak signals 10 times with low noise dual gate MOSFET. Reject out-of-band signals and images with high-Q tuned circuits.

Pushbuttons let you select 2 antennas and 2 receivers. Has coax and phono connectors. Use 9-18 VDC or 110 VAC with MFJ-1312, \$12.95.

Beginner's World Band Radio Kit

MFJ-8100K

\$59.95



Spend a fun evening putting this beginner's regenerative World Band Radio Kit together!

With just a 10 foot wire antenna you'll listen to international shortwave broadcast, hams on SSB and Morse code, WWV, RTTY, packet and much more. Covers all or part of 75/80, 49, 40, 30, 31, 20, 25, 22, 19, 17, 16, 15, 13 Meters in five bands.

Two earphone jacks let you share your listening pleasure. Use your Walkman style earphones or plug-in speaker. Rugged 7x6x2 1/2 inch aluminum cabinet. Vernier tuning. Use 9 volt battery.

Available assembled/tested, MFJ-8100W, \$79.95.

MFJ Dual Tunable Audio Filter

MFJ-752C

\$99.95



This dual tunable audio filter lets you peak desired signals and notch out interference at the same time. You get two separately tunable filters. You can peak, notch, low or high pass signals to eliminate heterodynes and interference. Plugs between radio and speaker or phones. 10x2x6 in.

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Use your computer and radio to receive Morse code, RTTY, ASCII and display brilliant full color FAX news photos and incredible 16 gray level WeFax weather maps with this MFJ-1214PC Multi-mode Data Controller. Includes easy-to-use menu driven software, cables, power supply, comprehensive manual and Jump-Start™ guide. Works with VGA, EGA or Hercules IBM compatibles with 512K RAM and 8 MHz or faster. Plugs between computer and radio.

MFJ 12/24 Hour LCD Clocks

MFJ-107B

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MFJ-108B dual clock lets you simultaneously read UTC time in 24 hour format and local time in 12 hour format. 4 1/2 x 1 x 2 in. MFJ-107B single clock shows you UTC time in 24 hour format. 2 1/4 x 1 x 2 in.

Highly recommended by "Passport to World Band Radio" -- 3 star rated!

SWL's Guide for Apartment Dwellers

MFJ-36

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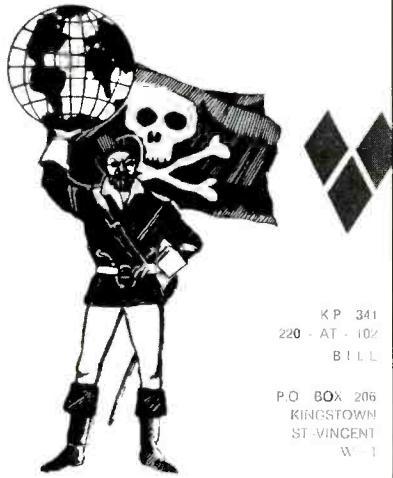
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This is to certify that radio communications were established between your station and

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RADIO PIRAT ST.VINCENT



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W.I.

DX QSL of the month: 22-RP-358, from St. Vincent, West Indies. (Courtesy, Bert, SSB-35F, Texas.)

was a front panel meter, and push-to-talk.

Gone, but far from forgotten.

Channel Cutups

CB'ers often tell us that they experience malicious interference on a local channel. It happens in every area. It's rather a sad commentary, showing how courtesy and consideration for others continues to fizzle out all around us, even as we speak. Not that it's new, it's been going on for years—dead carrier chucks, those who tie up a channel with sound effects or music, people who insert insulting comments into the communications of others, and all the rest.

Readers ask if there are ways of dealing with this type of thing, and if we can discuss them here. That we will gladly do, and can tell you that these methods have usually done at least some good, if not producing complete results until the next clown shows up.

1. Ignore the interfering station. The one thing the person causing the malicious interference or jammer wants and needs to continue is recognition and attention. Maybe jammers are misfits who have spent a lifetime being ignored by everybody. They can't think of any other way to get CB operators to pay attention to them, either. Even if one CB operator responds to their jamming activities, it provides the encouragement and reinforcement they seek. Without an audience, they'll invariably quit. At least

they'll be gone a lot sooner than if people feed their somewhat obnoxious way of becoming noticed.

2. Forget about addressing any remarks directly to the jammer. Don't attempt to be funny, tough, official, indignant, outraged, insulting, sarcastic, threatening, or smart. Don't attempt to reason with the jammer. Don't say you're the FCC, or that you are calling the FCC. Don't say you're tracking them with a direction finder. Don't say you know their identity or exact location. Don't answer any questions they may ask, or respond to their comments. Don't say anything at all to the person causing the deliberate interference.

3. Don't try to retaliate by giving the jammer what you determine to be a taste of his own medicine. It only adds to the confusion and interference. It's against regulations. It's rude, as well as dumb. It plays into the hands of the jammer. It puts you on his level. It accomplishes nothing of any value whatsoever.

4. Don't say anything like, "I copied you 100 percent through the jammer."

5. Don't say anything like, "Can you read me through the jammer?"

6. If there is malicious interference on the channel, make every effort to endure until your contact is completed. You can often pick out enough of what was said by the other station to respond, even if in a brief way. Pretend there is nothing unusual going on, but wind down your contact after a minute or two. You can resume it later. If the jamming is so severe that even partial copy is impossible, comms should be ended without either party attempting an explanation why. Try again later.

7. If you can't do anything else, at least don't forget Rule 1. That's the most important factor.

These techniques are also good for adapting to dealing with the people who jam ham repeaters.

International & Hereabouts

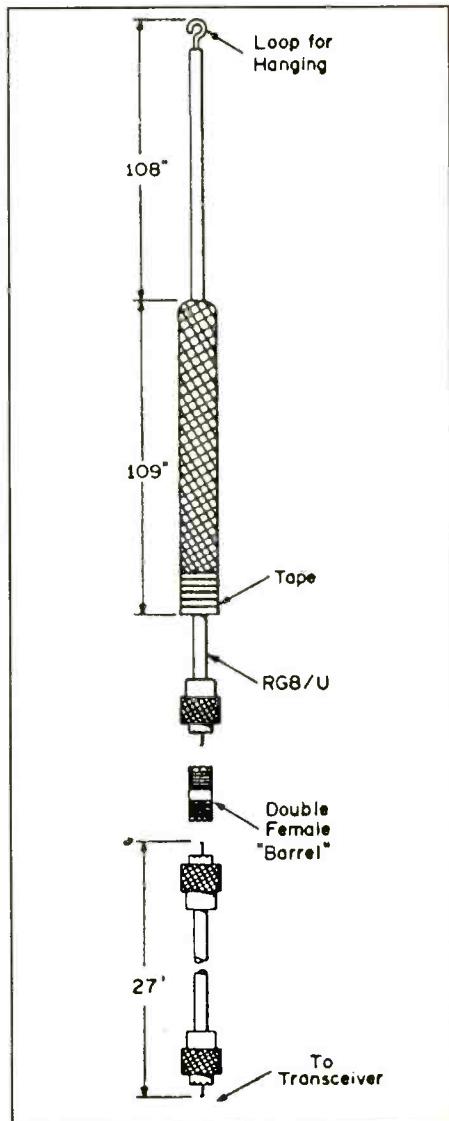
Don, of Grant Park, Illinois, passes along data on a Ukrainian CB'er. That's 315-AT-380, who happens to be Boris Chuistov, P.O. Box 20, Yalta, Crimea, Ukraine.

Spiros, 18-VAT-59/18-GR-03, of Thessaloniki, Greece, wrote us a fine letter and sent a photo of his station, but didn't give us his return address. He's been a POP'COMM reader for more than 2 years. He usually monitors 27.895 MHz (FM mode).

Christian Olele and Greg Smith operate the Young DX'ers International, a group of radio enthusiasts in Nigeria. They have a newsletter called *The SW Digest* that covers various aspects of the

hobby, including SWL'ing. They welcome CB'ers, hams, and everybody else in YDXI and ask for either US\$ 5 or 10 IRC's. The address of the YDXI is P.O. Box 534, Harcourt, R.S., Nigeria.

Tomcat's BIG CB Handbook is now available in Australia and New Zealand. It is being distributed exclusively in Australia/New Zealand by Dick Smith Electronics, Ltd., in their own large chain of electronics stores, and also in other stores they service. Glenn Hendrix, of Ardmore, Oklahoma, told us that he was active on CB many years ago, but he had been off the air for 15 years. He recently got back on the air, and advises that he picked up a copy of *Tomcat's BIG CB Handbook*. It gave him all of the answers. Now he feels as if he had never been away. Readers wishing to get in



Build this simple antenna and you'll be able to have a portable base station wherever you park your vehicle. Good for emergencies, rallies, hotels, motels, vacations, or what have you!

touch with Glenn can contact him at Rt. 3 Box 174 F, Ardmore, OK, 73401.

Another CB'er thinking of getting back into the fold after an absence of many years is Chris Linne, P.O. Box 291, Hackettstown, NJ 07840. He realizes that CB'ers no longer need licenses, and he wonders if his old CB call letters (he thinks they were KOS6795) still have any significance. They serve only as memories, Chris.

Ricky, of P.O. Box 1363, San Carlos, CA 94070, would like to see our little CB corner of POP'COMM made a lot larger. He would also like to know where the present 11-year sunspot cycle is heading, especially insofar as radio propagation is concerned. It's heading along a downward slope, but it has a way to go before it bottoms out and then goes back on the upswing when DX will again increase. Even so, Sporadic-E skip ("short skip") should continue as usual throughout.

Car Trunk Portable Antenna

This isn't anything new or revolutionary in the way of an antenna, but it is handy. I carry one in the back of my truck, but it's suited to being carried around coiled up in a car trunk. It's cheap, and it's easy to make. Sometimes I stop for a while for anywhere from an hour to a couple of days, and I want to have more operating range than I get with my regular mobile antenna. That's where this comes in.

I find a nice high spot, like a tree limb, or the eaves of a house. That's where I hang my portable antenna. I just make sure that, for safety's sake, I don't install it near any electric wires. Then I undo the mobile whip and hook up this one to the mobile rig. Makes a big difference, and turns my vehicle into a portable base station.

Here's what you need: 3 PL-259 connectors and 2 adapters, 1 barrel. Solder gun and resin core solder. Sharp knife and plastic tape. Then 27 ft. of RG-58/U, plus 18 ft. of RG-8/U cable.

Take the black outer insulation off the RG-8/U for 9 ft. Be careful not to damage the coaxial braid. Now push the braid back over the inner insulation until quite loose, then reverse it over itself as illustrated.

Now, cut off the outer braid at 109 inches and wrap the lower end with plastic electrical tape. It's tempting to wrap the entire exposed shield with the tape, but you'll find that it makes the antenna very stiff.

Next, make a loop and solder it firmly at the top of the antenna, leaving on all of the white inner insulation. Solder all connections, then check out all your work.

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BOOKS YOU'LL LIKE

BY R.L. SLATTERY

The Art of Science

Scientific inquiry is a practice known to many POP'COMM readers. It can be done on a professional, scholastic, or hobby level, and it involves research, experimenting, observing, making accurate measurements, keeping records, using statistics, handling and analyzing data, plus other functions, leading up to final conclusions and then a presentation of the results.

Throughout the process, you need to think critically about your own theories and know where to look for fallacies in your reasoning, as well as errors in the way you conducted your experiments, obtained your results, and reached your conclusions.

Even then, you may still need to defend your theories and work against the arguments of others—so you better be good.

Being good at this is what Joe Carr's new book, *The Art of Science* is all about. Joe, who is a POP'COMM columnist, happens to be a systems engineer working in the fields of radar engineering and avionics. He also worked for a number of years in the biomedical instrumentation field. Joe is a real pro when it comes to scientific inquiry, and he presents here a fine guide to show you the way it's done correctly. As the book says, "This isn't a book to read—it's a book to do!"

This is an attractive 365 page book with plenty of charts and tables. But it's Joe's wonderful (and often very humorous) text that makes the book so useful and so brightly conveys to the reader the feeling of pleasure and excitement that goes along with scientific experimentation and discovery.

Whether you are pursuing knowledge in electronics, biology, physics, chemistry, geology, or any other scientific discipline, you'll find Carr's lively book to be of genuine value. Chapters cover topics like math basics, step-by-step experimentation, how to take measurements, data distribution, sampling data, using graphs, using computers, keeping records, scientific thinking, and what is meant by "average." There's a special chapter for younger readers on techniques for winning a Science Fair.

The Art of Science costs \$19.95. Look for it in bookstores, or it can be ordered from HighText Publications Inc., 7128 Miramar Road, Suite 15, San Diego, CA 92121.

Calls of The Wild—Updated

One of the most unusual and talked about scanner and shortwave guides of recent years has been Tom Kneitel's *Tune In On Telephone Calls*. It's the 160 page book that provides details of monitoring (via scanner and communications receivers) telephone calls of all sorts from cars, aircraft, trains, ships, homes, offices, and portable units.

The book has shown up on network TV programs from Jane Pauley's to CBS *This Morning*, in radio talk shows from Sacramento to Miami, and has been written about in dozens of newspapers and magazines from The New York Times to Penthouse. It has become one of the most popular scanner and shortwave books ever published.

Tune In first came out in 1988, going through several large printings during its rise to "bestseller" status. Now it's here in a new updated and revised version that contains hundreds of new frequencies. It's got a new hot-pink cover to make it easy to distinguish.

Undoubtedly the most proficient phone eavesdropper in the world is Uncle Sam, himself. Via the CIA, NSA, and a myriad of other fed agencies, private phone conversations at home and overseas are regularly monitored by radios, hardwire taps, bugs, satellites, and who knows how many other methods. Hard to turn on the TV news at night without hearing someone's federally taped phone conversation played along with the showing of a running transcript so nobody can miss a single fascinating word.

That's why regular citizens have gotten so interested in eavesdropping on calls, so good at it, and why there are so many people now engaged in this monitoring. *Tune In On Telephone Calls* has become the official handbook and reference of these people. It addresses each one of the many different types of phone call monitoring possible using scanners and communications receivers. In 21 chapters, *Tune In On Telephone Calls* discusses the laws involved, explains each phone call monitoring category, then presents specific band and frequency information where people are listening to the calls.

When people talk on their phones, they really let down their hair. They squabble, they cheat, plot and scheme, lie, cry, plead, shout, gripe, ridicule, gossip, accuse, boast, joke, make business

Tune In On Telephone Calls

Scanner & Shortwave Frequency Directory
By Tom Kneitel, K2AES



deals, offer and accept indecent proposals, conduct strange relationships, and much more. These people are your neighbors, also politicians, business people, professionals, members of the news media, celebrities, and you name it. Because so many phone calls now go out over the airwaves and can be easily picked up on scanners and communications receivers, it's no wonder so many people love to tune them in!

As time went on, some of the bands and frequencies where calls are passed have changed. Also, other important bands and frequencies where phone calls take place have either been newly instituted or recently discovered. That's what required *Tune In On Telephone Calls* to now be updated and revised with hundreds of new frequencies.

Covered in *Tune In*'s new material is information on the new "900 MHz cordless telephones," plus data about additional frequencies for the 46/49 MHz band cordless phones. All of the more than 200 frequencies and bands used for HF high seas telephone calls has been totally changed, so this data is completely new in this edition. There's lots of all new data concerning the hundreds of frequencies used for offshore oil drilling rig telephone calls, plus valuable new information on the numerous frequencies used to bring radio telephone service into rural, remote, and wilderness areas beyond the reach of landline phone service. New radio paging frequency information is provided, and the frequency information on airline air/ground phone service

has been substantially changed. Even the ham radio autopatch frequency information has been revised.

This updated and revised new rendition of *Tune In* will keep you on top of the many changes, and in touch with the latest information relating to the frequencies and bands where all of the best phone call action is taking place. Best of all, the new version is the same price as the earlier one!

Tune In On Telephone Calls, Revised Edition, is \$12.95, plus \$3.50 shipping (\$4.50 to Canada). Your favorite communications book dealer may be carrying this popular book. If not, you can order it from CRB Research Books, Inc., P.O. Box 56, Commack, NY 11725. Residents of NY State please add \$1.40 tax.

Countdown to The 21st Century

Well, folks, the 21st Century countdown is almost ready to be done on the fingers of one hand. Remember when it seemed like it was so far into the future that it would never come? That's why we are taking Delton T. Horn's *21-Century Electronic Projects For A New Age* in perspective with the times. It's not a book of theoretical projects for the future, because the future is here now.

21st-century ELECTRONIC PROJECTS FOR A NEW AGE

DELTON T. HORN

Horn has put together 22 intriguing and unusual electronics projects in this new 188-page book illustrated with diagrams and schematics. To be sure, these projects aren't your run-of-the-mill robot clowns, death ray guns, and other similar devices.

Horn's New Age electronics projects include a dual LED visual hypnotic aid; an alpha-wave biofeedback monitor; an ESP tester; a negative ion generator; a biorhythm clock; a circuit for kirlian photography; a magnetic field tester, etc. His text gets into the power of crystals, UFO's, the human aura, and other topics within these areas. I don't want to come across as if I am belittling these topics, or

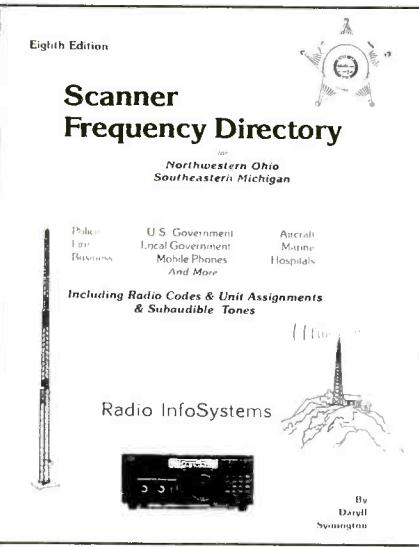
Horn's very interesting discussions about them. He makes a lot of sense, and the projects in his book are intended to give you some insight into these facets of New Age electronics.

As I said, this 21st Century ogre is finally breathing down our necks. Jupiter isn't aligned with Mars any longer. My Hammarlund HQ-110 receiver isn't aligned with WWV any longer. I've now decided that The Age of Aquarius is at last over. Time to take off my fringed buckskin jacket, my headband, my peace symbol, and the jeans with the shredded bottoms. I'm going out and get a haircut and become part of the New Age. This guy's book is hip and interesting. It has put the New Age where I can get a handle on what it's about. You'll find it interesting, too. I recommend it highly.

21st Century Electronic Projects For A New Age is from TAB Books, Blue Ridge Summit, PA 17294-0850. The price is \$16.95. The TAB book number is 4111.

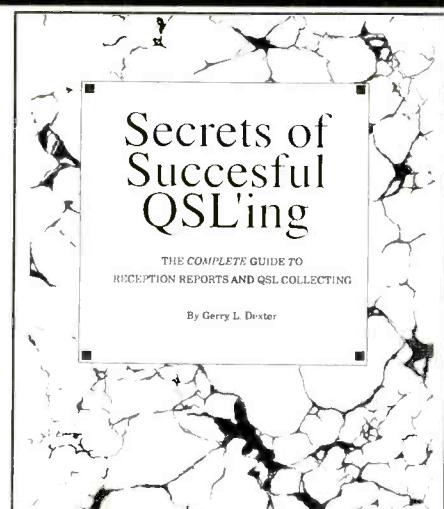
In addition...

Darryl Symington has brought out an 8th Edition of his very fine *Northwestern Ohio and Southeastern Michigan Scanner Frequency Directory*. Darryl's excellent 120 page directory covers 6,000 listings in the popular scanner services, and is completely updated from the last edition. Listings include many 800



MHz systems, plus unit assignments and codes, and a frequency cross-reference. This book is \$10.95, plus \$3 for shipping. Order it from Radio InfoSystems, P.O. Box 339, Holland, OH 43528.

Gerry Dexter's *Secrets of Successful QSL'ing* first came out in 1986 and went on to help SWL's learn the best ways to send reception reports to, and extract veri cards and letters from stations around the world. This is more of an art than a science, with many "do's" and "don'ts" that can spell the difference



between success and failure in your quest for wallpaper. Dexter offers lots of good advice on every possible aspect of the practice of obtaining QSL's from the stations you hear. This is in the first 72 pages of the recently issued latest version of Dexter's book. The book's remaining 48 pages are totally given over to unrelated material apparently provided by an outside source. Dexter's information, in the first 72 pages, is very useful, and good to have if you're a QSL chaser. The book is \$12.95, plus \$2 shipping, from Tiare Publications, P.O. Box 493, Lake Geneva, WI 53147.

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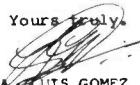
YOUR GUIDE TO SHORTWAVE "UTILITY" STATIONS

I am happy to report that Peter Rouse who writes the SSB Utility Listening column in the *British Short Wave Magazine* has recovered from his bout with illness. Peter is looking forward to the possibility of attending the SWL Winterfest in Kulpsville, PA this year.

This past summer there were a couple of items that I could not work into the column due to space limitations until this issue. The first notice indicated that the RF Communications Group of Harris Corporation had a contract with the Turkish Ministry of National Defense for modernization of the communications systems at COMEDNOREAST War Headquarters, a NATO site located near Ankara. The installation will have a 10 kW HF transmitter/receiver system for ship/shore communications. Included will be Harris R-2368/URR receivers, RF-755 transmitters, a computerized control system and other equipment.

The second notice dealt with the FCC proposal of an overhaul of the Emergency Broadcast System. For many years the FCC had required broadcasters to test emergency-alert equipment at least once a week. Broadcasters may not be in favor of replacing the old equipment because it appears that such upgrading could cost each station approximately \$3,000.

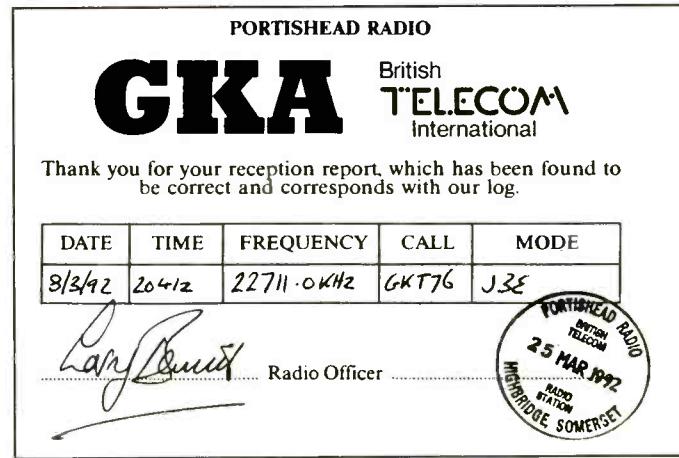
For those interested in background information on the US Air Force, here are two publications available from the Superintendent of Documents. The first title is *Air Force Communications Command* (3rd Edition) which was prepared by the AFCC Office of History at

 ESTADOS UNIDOS MEXICANOS SECRETARIA DE COMUNICACIONES Y TRANSPORTES SENEAM MR. J. STEVEN McDONALD	<small>FORMA CG - 2 - A</small> La Paz B.C.S. a 13 de Febrero de 1992
Dear Sir: <p>We received your report of reception on the La Paz Radiobeacon (300 KHz.), this NDB is operating on - reduced power at present time and has been so since 1985 the nominal output is 400 Watts at present time but the maximum output is 1000 Watts, the antenna type is bipolar within the 40 meters length.</p> <p>In reference with your request as to the location of the NDB it is situated at La Paz International Airport 300 meters west of the runway and 375 meters north of the threshold of runway 36, and the airport is located in a valley open to the north to the sea which is 4 nautical miles, to the east theris a chain of mountains 10 nautical miles as to the south and west there are only low hills, located 18 nautical, the terrain is dry and sandy since this is a desert country and the elevation is 18 meters above sea level.</p> <p>I hope that the above information is of any use for you, I certainly hope to hear from you again if you do receive the signal from the NDB of La Paz.</p>	
<i>Yours truly,</i>  C.T.A. LUIS GOMEZ DIAZ DE LEON CHIEF OF THE CONTROL TOWER.	
CTA. LUIS GOMEZ DIAZ DE LEON APARTADO POSTAL 472 LA PAZ B.C.S. MEXICO, 23000	

Interesting QSL letter received by Steve McDonald, Canada.



Tom Severt, England said he had to wait a while for this QSL but it finally was received.



This QSL card from station GKA was sent in by Ed Rausch, NJ.

HF STANDARD FREQUENCY AND TIME SIGNAL BROADCASTS

Name	Country	Carrier Power (kW)	Broadcast Frequency (MHz)	Days/Week	Hours/Day
ATA	India	8	5, 10, 15	7	24
BPM	China	10-20	2.5, 5, 10, 15	7	24
CHU	Canada	3-10	3.330, 7.335, and 14.670	7	24
HLA	Republic of Korea	2	5	5	7
IAM	Italy	1	5	6	2
IBF	Italy	5	5	7	2.75
JJY	Japan	2	2.5, 5, 8, 10, 15	7	24
LOL	Argentina	2	5, 10, 15	7	5
OMA	Czecho-slovakia	1	2.5	7	24
RCH	USSR	1	2.5, 5, 10	7	21
RID	USSR	1	5.004, 10.004, 15.004	7	24
RIM	USSR	1	5, 10	7	20.5
RTA	USSR	5	10, 15	7	20.5
RWM	USSR	5-8	4.996, 9.996, 14.996	7	24
VNG	Australia	10	5, 10, 15	7	24
WWV	United States	2.5-10	2.5, 5, 10, 15, 20	7	24
WWVH	United States	5-10	2.5, 5, 10, 15	7	24
ZLFS	New Zealand	0.3	2.5	1	3
ZUO	South Africa	4	2.5, 5	7	24

Scott Air Force Base, IL. The cost is \$17.00 and is S/N 008-070-00667-7.

The second title is *Peace Is Our Profession: Alert Operations & The Strategic Air Command, 1957-1991*. The cost is \$5.00 and is S/N 008-070-00668-5.

From Brazil we heard from Marcelo Toniolo Dos Anjos who wrote "I am a chemical engineer, 27 years old and a short wave listener. I'm a DX'er since 14 years ago, but since 1990 I have been listening to utility stations." Marcelo uses a Yaesu FRG-7700 receiver with an inverted L antenna.

Gary Morgan, VA has a modified Sangean ATS-803A connected to a 48' dipole. "The modifications not only beef up the sensitivity, but also allow me to use the 'scan' feature without the audio being muted. This one change alone has helped me greatly in using this radio to chase unusual ute activity."

A letter from Gary Spurway in Australia indicated that due to an illness he can no longer work so he has a lot of time for monitoring. "My receiver is a Drake SSR1, longwire antenna and a CL22 coupler for HF. For VHF/UHF I have a Uniden 100XL scanner a Discone antenna."

Jefe Bradt, Ont., Canada tells us he is 18 years old and has been a SWL for about 7 years. "My receiver is a Sangean ATS-803A and I have hooked it up to a World Probe Antenna."

In Texas, John Given monitors with an ICF 2001 and a DX160, with a homebrewed doublet and a 65' longwire for antennas. John said he is 32 years old and has been "messing" around with SWL for 20 years.

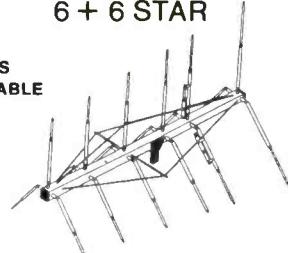
A hearty welcome to all of these first time contributors. Keep those loggings coming!

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Location: CAPE COD MA

Antenna: WHIP 35' Power: 100 watts

Signature: Dan

Ship's stamp:

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USCGC ALERT (WMEC 630)
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Russ Hill, MI shares this PFC with readers.

"Special Facility" station at Mount Weather near Berryville, VA (WGY912) and the co-located military activity (WAR42), there are other such sites. An article in the Washington Post Magazine indicated several of these "hush-hush" installations. The main thrust of the articles was a description of the preparation of a "haven for members of the US Congress in the event of a nuclear war." The site was at the Greenbrier hotel in White Sulphur Springs, WV.

Another location was called "Site R." This was to serve both the Alternate National Military Command Center and the Alternate Joint Communications Center. The site was approximately six miles north of Camp David, along the Maryland-Pennsylvania border. According to the article, Site R was operated by nearby Fort Ritchie.

The North American Aerospace Defense Command Center (NORAD) is located inside Cheyenne Mountain at Colorado Springs, CO. As a result of the end of the Cold War, one can now take a tour of the Cheyenne Mountain site

(with a six month's advance application).

For all those who have requested it, I am including a list of the major stations providing frequency and time signal broadcasts. This list was extracted from NIST Special Publication 559 (Revised 1990) entitled *Time and Frequency User's Manual*.

Use Intercepts. All Times Are UTC.

233: Beacon LG, Long Beach, CA at 0545. (Vaage, CA)

282: Beacon GWF, General Fox Field, Lancaster, CA at 0604. (Vaage, CA)

294: Beacon L, Long Point Lightship, Ontario, Canada at 1832. (Brad, Ont., Canada)

319: Beacon RB, West Jetty Light 3, Redondo Beach, CA at 0622. (Vaage, CA)

335: Beacon K, Waterloo-Wellington, Ontario, Canada at 1835. (Brad, Ont., Canada)

344: Beacon FCH, Chandler Municipal, Fresno, CA at 0626. (Vaage, CA)

348: Beacon NID, China Lake, CA at 0627. (Vaage, CA)

350: Beacon NUC, Sherman Field, San Clemente Island, CA at 0629. (Vaage, CA)

353: Beacon ZES, Cape Scott, BC, Canada at 0631. (Vaage, CA)

359: Beacon BO, Boise Air Terminal, Boise, ID at 0632; Beacon YAZ, Tofino, BC, Canada at 0633. (Vaage, CA)

361: Beacon MT, u/i at 0634. (Vaage, CA) I can't ID it either. (Ed.)

365: Beacon FT, Ft. Worth, TX w/voice wx at 1459. (Low, TX)

368: Beacon L, Toronto, Ont., Canada at 1836. (Brad, Ont., Canada)

370: Beacon PL, Pacoima, CA at 0636. (Vaage, CA)

371: Beacon AI, Anderson, IN at 1723. (Brad, Ont., Canada)

372: Beacon CQD, Erie, PA at 1843. (Brad, Ont., Canada)

374: Beacon EKG, Escondido, CA at 0637. (Vaage, CA)

378: Beacon CPM, Compton, CA at 0637. (Vaage, CA)

397: Beacon LLJ, Challis, ID at 0639; Beacon SB, Norton AFB, San Bernardino, CA at 0639. (Vaage, CA); Beacon A, Hamilton, Ont., Canada at 1724. (Brad, Ont., Canada)

399: Beacon ENSE, u/i. New strong sig all day but dips a little at sunset. (Vaage, CA) Wonder if this is ENES. ex-305 kHz located at Estero de Punta Banda, Baja California, Mexico. (Ed.)

410: Beacon NZJ, El Toro MCAS, Santa Ana, CA at 0645. (Vaage, CA)

413: Beacon OEG, US Army Golden Eagles Proving Grounds, Yuma, AZ at 0646. (Vaage, CA)

526: Beacon RWE, u/i at 0657. (Vaage, CA) Located at Camp Roberts/San Miguel, CA. (Ed.)

820: KPE (KPV?), Hollywood Bowl, w/schedules, parking, and prices at 0142. (Vaage, CA)

2357.5: OUA32 in CW at 1546 w/mkr VVV OUA23/25/32/38 OVK11/13/17/19/22. This is Stevens, Denmark. (Boender, Netherlands)

2500: WWV, Fort Collins, CO w/time sig in AM at 0402. Toniolo Dos Anjos, Brazil.

2753: CKN, Esquimalt, BC, Canada w/VVV mkr at 0410. (Low, TX)

3006: Scrambled speech at 2313. (Severt, England)

3305: Sydney Volmet w/wx for Sydney & Melbourne. Announced by OM/EE in USB 1100-1104. (Spurway, Australia)

3319: MGJ, Faslane Naval, Scotland in CW at 2212 w/mkr. (Boender, Netherlands)

3378: 5 character grps in CW w/unusual chars. at 1906. Dualing w/3501 kHz. Still going at 2154 when msg abruptly ended w/no sign-off. (Severt, England)

3413: Shannon Volmet in USB w/wx reports for European cities at 0339. (Toniolo Dos Anjos, Brazil)

3860: WA3NAN, NASA Goddard Space Flight Center w/Shuttle audio from Atlantis mission at 0351. (Pihale, MN)

4223.5: 9HD, Malta in CW at 2215 w/call mkr. (Boender, Netherlands)

5055: Msg in CW at 2315 w/5 character grps w/unusual chars. Similar to tlc on 3378/3501 kHz. Still going at 0153. (Severt, England)

5320: USCG Cutter Aquidneck in comms w/Group Hampton Roads re position report of ves-

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We are pleased to acknowledge your letter and to verify your reception on:

Date: 09 Jan 92

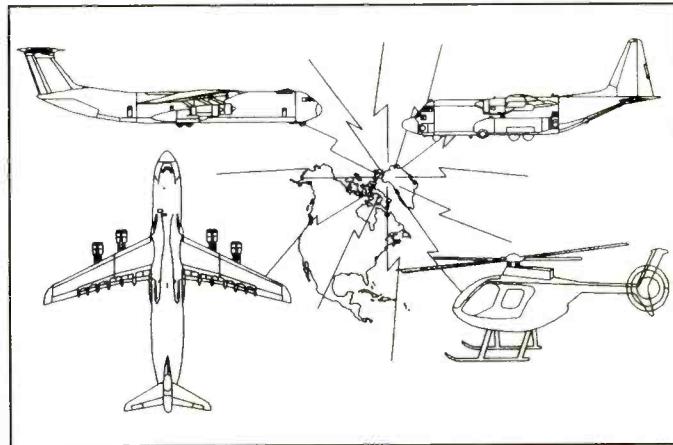
Time: 0140 UTC

Frequency: 13201 kHz

Disclosure of further station information is not authorized by United States Air Force regulations. We thank you for your letter and hope you continue to enjoy your interesting hobby.

Sincerely,

Hoyt K. Stevens
Lead Operator
Thule GCCS



Dan Grote, IL received this QSL from the US Air Base at Thule, England.

Abbreviations Used For Intercepts

AM	Amplitude Modulation mode
BC	Broadcast
CW	Morse Code mode
EE	English
GG	German
ID	Identification/led/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)

sel Foreplay at 0045. At 0200 USCG Station Block Island in comms w/Group Hampton Roads re best freq to contact Group Eastern Shores or Group Cape May. Comms were poor all day. At 0447 USCG Cutter Durable in comms w/Group Corpus Christi re position report & description of u/i vessel. At 0511 USCG Cutter Matinicus in comms w/Group Cape Hatteras re flare sighting. (Rausch, NJ)

5340: Swedish Rhapsody tune at 2202, then YL/GG w/5F grps in AM mode. YL sounded like a child and "Achi" had very metallic ring. (Severt, England)

5598: Canarias Radio/Las Palmas in USB at 0135 in contact w/Air France flight. (Toniolo Dos Anjos, Brazil)

5696: Rescue 1438 wkg Comsta Miami (NMA) w/report of 5 POB & eta info. (Pihale, MN)

6232: AAFR wkg AACK (both u/i), gave position, speed 7 knots, course 045. USB at 0012. (Hill, MI)

6375: URB2. Klaipeda, Latvia in CW at 2245, mssg DE URB2/RWWM. (Boender, Netherlands)

6501: USS Kidd clg Comsta Miami. Kidd in comms w/Cutter Confidence who informed Kidd to xmt 6200 & listen 6501 kHz. (Rausch, NJ) NMN Comsta Portsmouth at 2336 w/Atlantic wx bcast. Also on 8764 & 13089 kHz. (Pihale, MN)

6504: CG Station NMN, Portsmouth, VA in USB 1000-1017 w/wx & new toll free 800 nbr. Announced by OM/EE. (Spurway, Australia)

6646: Unid a/c wkg operations for Quebec wx in USB at 0318. (Hill, MI)

6675: Outlanders in LSB in Ireland at 2205. At 2210 YL/EE w/35278. At 2215 Ready, Ready and into 5F grps. Outlander said "did you hear that?" then they QSY'd to 6673 kHz. (Mason, England)

6679: Vancouver rdo w/Volmet forecasts by OM/EE in LSB at 1027. (Spurway, Australia)

6738: Ofut AFB, NE w/Mainsail best in USB at 2250. Later Incirlik & Lajes w/msg. (Severt, England)

6812: Andrews AFB wkg SAM's 26000 & 33000 for traffic. USB at 1947. (Hill, MI)

6840: YL/SS w/figure grps. Also on 9958 kHz. Hrd at 0230. On another date both carriers stayed up after msg and when checked 1 hour later they still up. (Givin, TX)

7445: KPAZ. YL/EE Mossad stn in RCS rptng KPAZ at 2218. (Severt, England)

7505: GXH1, US Navy Thurso, Scotland in CW at 1900 w/DE NMN/NAM/NRK/GXH/AOK LC MP 2 QRU NUKO. (Boender, Netherlands)

7562.5: SOH256, Polish Press Agency, Warsaw, Poland in CW at 2200 w/nx. (Boender, Netherlands)

8136: YL/SS w/5F grps from 051400515 foll by Final x2. (Margolis, IL)

8139: At 1820 CW stn w/VVV DE IGJ44. Not in my lists. (Mason, England) Not in mine either. It is Italian Naval stn at u/i location. (Ed.)

8145: School of the Air, Broken Hill, Australia. Primary school lessons w/Mrs. Nichols. YL/EE in USB from 0000-0030. (Spurway, Australia)

8465: UJY, Kaliningrad, Russia in CW at 2153

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w/CQ DE UJY ANS 8426.5. (Boender, Netherlands)

8471: UXN Arkangelk, Russia in CW at 2042 w/UXN mkr. (Boender, Netherlands)

8532: LZW, Varna, Bulgaria in CW at 2205 w/call mkr. (Boender, Netherlands)

8545.9: GKA, Portishead, England in CW at 2100 w/fc list. (Severt, England)

8550: TBA5, Turkish Navy, Ankara, Turkey in CW at 224. Sending VVV DE TBA5 mkr. (Boender, Netherlands)

8580: URL, Sevastopol, Ukraine in CW at 0129 w/CQ DE URL ANS 12620. (Boender, Netherlands)

8687.5: URD, Leningrad, Russia in CW at 2055 w/DE URD QSX 4/6/8/12 mkr. (Boender, Netherlands)

8700: YUR, Rijeka, Yugoslavia in CW at 2230 w/mkr. (Boender, Netherlands)

8710.5: UAH, Tallinn, Estonia in CW at 2310 w/DE UAH. (Boender, Netherlands)

8744/8240: USCG Cutter Confidence in comms w/Comsta Miami at 2150 re position report of u/i vessel. At 0115 USCG Cutter Spencer in comms w/Comsta Portsmouth re eta on scene of SAR ops of 4 hours. Upon arrival Spencer to assume on scene command. (Rausch, NJ)

8788: Halifax, NS, Canada Coast Guard in LSB at 0210 w/wx bcast for mariners. (Bradt, Ont., Canada)

8828: New York radio wkg TWA flight 603 at

0133. (Bradt, Ont., Canada)

8867: Sydney ATC wkg Express 160 w/fuel load, wx Selcal & eta position "LOTRA." OM/EE at 2340 in USB. Auckland ATC wkg Qantas 47 w/location wx & Selcal checks. YL/EE at 2334. Sydney & Auckland ATC wkg Ausy 831 to confirm FL140. Nadi also trying contact & relay msgs. hrd at 2345. (Spurway, Australia)

9014: Tribe 81 wkg Raymond 7, Cannon AFB at 0501. (Pihale, MN)

9023: Steam Car wkg various a/c in training mission in USB at 1543. Dragnet Yankee & Dragnet Uniform w/comms in the clear & scrambled. USB at 1556 on another day. (Margolis, IL)

9040: YL rptng Oscar Alfa from 2000-2005 w/electronic tones then 5F GG grps for 122 and 039. (Mason, England)

10051: New York Radio is USB at 0135 w/wx. OM op sounded extremely bored and was doing a W.C. Fields impression at times. Later was chanting the weather. Was very funny. (Severt, England) If he wants to be a comedian why doesn't he go to one of the Comedy Night Clubs? (Ed.)

10060: OM/EE w/RR accent w/415 in AM full carrier from 2115-2120. Then 837 x2, 66 x2, and into 5F grps. (Mason, England)

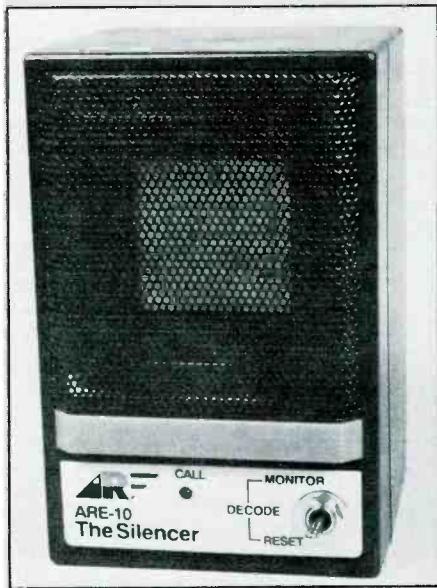
10255: QRA CW mkr KWS78, US Embassy, Athens, Greece at 2005. (Mason, England)

10235: CW sig w/239 x3, 000 form 2110-2115. Rptd 2 days later. (Mason, England)

12353: Vessel Adabelle Lykes in informal

NEW PRODUCTS

REVIEW OF NEW AND INTERESTING PRODUCTS



External Speaker and DTMF Decoder

Amateur Radio Engineering, Inc., introduced a new product. It is an external speaker plus a 2 to 4 digit DTMF decoder for use with VHF/UHF radios. The Silencer (model ARE-10) is user-programmable for a 2 to 4 digit DTMF code which enables (opens) the speaker for approximately 10 seconds when the proper tone is received. When the correct user-programmable DTMF code is received.

The ARE-10 allows the user to set the front toggle switch to MONITOR when they want to hear everything being said on the frequency. The toggle switch also has a momentary position which is used to turn the LED off after a call has been received.

The ARE-10 provides a way for everyone to economically have selective calling. It also allows a family members or co-workers to avoid hearing everything being said on today's busy frequencies. Rather than turn the radio off to eliminate all of the chatter while allowing the user to still receive calls.

To connect the ARE-10 to a radio all that is necessary is to plug the ARE-10 into the external speaker jack on the radio and to connect its power lead to 12 volts DC. Simple and fast.

The ARE-10 includes a very high quality speaker that will improve the audio from today's transceivers. It is compact measuring only 3"(w) x 31/4"(d) x 43/8"(h).

The ARE-10 priced at \$99.95 and is available from your local Amateur Radio

dealer. For more information, contact Amateur Radio Engineering, PO Box 169, Redmond, WA 98073. (206) 882-2837, or circle 103 on our Reader's Service.



HF Radio System Features Remote Control From A Telephone

Now sending and receiving HF radio calls can be as easy as dialing a telephone number.

Harris introduces the RF-3234ALE VIP Radio Control System, which combines the long-range wireless communications capability of HF radio with the convenience and simplicity of a telephone.

The RF-3234ALE uses a remote-control unit which looks and works just like a standard desk telephone. To place a call, the caller simply picks up the handset, dials the number of the station he wishes to call and listens for a ringing or busy signal. At the other end, the station being called will hear a ringing telephone (if it is equipped with a remote unit) or alert tone from the radio's speaker.

Advanced Automatic Link Establishment (ALE) techniques are used to select automatically the best available frequency and channel. When desired, the caller can force the radio to a specific channel. It is possible to call an individual station or a network of stations. Up to 200 individuals and 20 networks can be preprogrammed.

The RF-3234ALE is an option which may be factory installed in any Harris RF-3200 series radio transceiver. It consists of an ALE controller, which is installed inside the RFC-3200 transceiver, and a remote control telephone unit, which may be located up to 300 meters from the radio equipment with a four-conductor cable connection.

The new Harris product is interoperable with any MIL-STD-188-141A or FED STD 12045 ALE radio, including Harris RF-3272, RF-5122ALE or RF-7200 based systems.

Harris RF Communications Group is in Rochester, New York

comms w/vessel Sheldon Lykes. OM's were discussing playing chess. Hrd at 1750. (Rausch, NJ); YL/EE w/5F grps in AM at 0225 and at same time next night. (Hill, MI)

12356: Two OM's in Greek language, arguing, both hot under the collar. At times both could be heard talking at the same time. USB at 0147. (Hill, MI)

12690: NMN, CommSta Portsmouth, VA in CW at 1815 wkg USCG Chesapeake, t/c w/NUKO. (Boender, Netherlands)

12748: Cerrito, Uruguay w/CQ DE CWA in CW at 2032 (Mason, England)

12777: Luanda, Angola w/CQ DE D3E51 at 2030. (Mason, England)

12803: UDK2, Murmansk, Russia in CW at 1850 w/mgs (Boender, Netherlands)

12856: XSG, Shanghai, China in CW at 1450 w/CQ DE XSG. (Boender, Netherlands)

12863: XSW, Kaohsiung, Taiwan in CW at 2015 w/CQ mkr. (Mason, England)

12946: UFB, Odessa, Ukraine in CW at 2015 wkg several vessels. (Boender, Netherlands)

13207: USAF, Thule/Greenland in USB at 2115 w/d & contact w/LN59. (Tonio Dos Anjos, Brazil)

13240: OM/RR w/167 x3, 00000 from 2030 2035. (Mason, England)

13270.5: Gander in USB at 0250 w/Meteos for Halifax, Montreal, Toronto, Ottawa & Gander. (Benson, Germany)

13387: YL/GG at 2055 w/1-0 count and "Ende." At 2110 205, 205, 205, 000 in AM. Rptd on 12224 kHz at 2120. (Mason, England)

13567: OM/RR at 1920 w/615 x3 000 in AM mode. (Mason, England)

14295: STS-50 comms at 2150 via WA3NAN, Greenbelt, MD. (Low, TX)

14445: In CW at 1900: 555 555 817 817 817 45 rpid several times then 32 32 45 45 toll by 5F grps (cut nbrs) w/T=0. (Margolis, IL)

14467: USS Virginia wkg MARS t/c w/NNN0NRJ at 2110. The USS Virginia MARS call is NNN0CNX. (Rausch, NJ)

14977: CW stn sending VVV DE OLX from 0955-1000. Then YL/Czech rptng 786 & into 5F grps. Also kon 8142 kHz. This is callsign of CETEKA Press, Czechoslovakia. (Mason, England)

15933: Unit RPV requesting flight clearance at 2138 and said "launch clock at T minus 3. At 2143 another unit came on and said "have RPV tracking 180." (Low, TX) RPV is used by the military as an abbreviation for Remotely Piloted Vehicle (a radio controlled drone a/c or missile) (Ed.)

16000: VNG, Australian TSS at 0420. (Low, TX)

16245: OM/EE w/RR accent rptng 821 frm 1920-1925. Then 569 x2, 34 x2 & into 5F grps. Rptd at 2020 on 12245 kHz. Hrd every Friday. (Mason, England)

16434: YL/EE w/rpid jones at 1329. 4F grps commenced at 1330. At 1333 a squealing signal came up and all but blotted out the numbers station (a jammer of some type?) I don't recall hearing anything quite like this before. The jammer dropped out for about 3 or 4 secs several times during the best but started right up again. At approx 1342 the numbers left the air but jamming continued until 1345. Several Hams had opened up in SSB voice on top of the numbers and the jammer. (Morgan, VA)

16528: Tanker OMI WABASH (WGWC) wkg KHT, Cedar Rapids, IA for pp to OMI Corp in NY. USB at 1944. (Hill, MI)

17161: Olinda, Brazil w/VVV DE PPO in CW at 1920. (Mason, England)

17195: SVB7, Athens, Greece in CW at 1855 w/DE SVB7 mkr. (Boender, Netherlands)

17420: Suspected Vietnamese diplomatic stn sending call in CW at 1417. Possibly the call is HISG but also sent SSG many times. In comms w/unhrd stn. (White, ME)

17925: Aero Mexico LDOC, Mexico City in USB wkg Mexico 456 at 0241. (Tonio Dos Anjos, Brazil)

18019: Navy J1845 clg MacDIII w/no joy. USB at 1608. (Hill, MI)

23642: KWS78, US Embassy Athens in CW at 0946 w/QSX 7/10/14/18/23 mkr. (Boender, Netherlands)

YOU SHOULD KNOW

INTERESTING THOUGHTS AND IDEAS FOR ENJOYING THE HOBBY

BY HARRY HELMS, AA6FW

Secret Information From Station WWV

Some of the best DX information around is available free from station WWV at 18 minutes past each hour and from its sister station, WWVH in Hawaii, at 45 minutes after the hour. This information is about current propagation conditions and a forecast for the next 24 hours. If you're chasing rare DX, this is essential information that you can't easily get from other sources.

But the propagation forecast given over WWV can be baffling the first time you hear it—it talks about solar flux, the Boulder "A" and "K" indices, solar-terrestrial conditions, and other things that sound like gobbledegook. What does it all mean? This month, we'll take a look at WWV's propagation forecasts and how to interpret them.

Solar Flux

The solar flux reading broadcast by WWV is a measure of radio energy emitted from the sun at a frequency of 2800 MHz. It is measured at the same time at an observatory in Ottawa, Ontario. The solar flux is widely considered to be the best overall measure of solar activity that affects radio propagation. A good rule of thumb is this: the higher the solar flux number, the higher the maximum usable frequency (MUF) and the better the overall propagation conditions.

During the peak years of a sunspot cycle (like 1989 and 1990), solar flux readings of well over 200 are common. At the bottom of a sunspot cycle, solar flux readings can fall in the sixties or even below. However, there can be short periods of high solar flux readings even at the bottom of a sunspot cycle, and during those periods high frequency propagation can be almost as good as during years of peak sunspot numbers. For example, a flux reading of over 100 at the bottom of the sunspot cycle will usually be enough to produce propagation at 28 MHz via the F-layer of the ionosphere. Flux readings of 200 will be enough to put the MUF above 40 MHz for F-layer propagation, and readings of over 250 will be enough to make F-layer DX possible on the 6-meter ham band and TV channel 2.

The solar flux reading broadcast by WWV is made at 1700 UTC at the Ottawa observatory and is updated daily on WWV. This means you can keep a running record of the solar flux values. A sudden increase in the solar flux over val-

ues of preceding days usually means that propagation conditions on the higher frequencies will be significantly improved.

The A and K Indices

The A and K indices are measures of how active the Earth's geomagnetic field is. The A index is a number from 0 to 400, and the number given by WWV is based on measurements made over the preceding 24-hour period. The K index is similar, but the number given by WWV is updated every three hours. The K index is generally expressed as a number less than 10.

An A index value of 10 or less indicates that the geomagnetic field is quiet, without ionospheric storms or other disturbances that can disrupt shortwave propagation. As the A index value rises, so does signal absorption in the ionosphere, especially on high latitude paths (such as from New York to London or Seattle to Tokyo). As the A index approaches 100, high latitude paths are severely disrupted and a visible aurora is often seen in northern areas. These are known as *auroral conditions* among DX'ers. Auroral conditions are most noticeable on lower frequencies, usually below 10 MHz.

The K index uses a different measurement scale. A value of 0 indicates the geomagnetic field is normal. A value of 1 or 2 means the geomagnetic field, and reception conditions, are unsettled. K index values of 3 or higher indicate conditions will be auroral. The K index value broadcast by WWV is measured at Boulder, Colorado, and this value will not be the same across North America. If you're located north of Colorado (as in Seattle or Toronto) the K index will be higher; if you're located to the south, as in Atlanta or Los Angeles, the value will be lower.

Let's suppose you're listening to 49 meters during the evening hours in North America. At that time during normal reception conditions, there will be numerous powerful signals from Europe on 49 meters. However, if the A index is high (say over 100), then those high latitude signals from Europe will be absorbed in the ionosphere instead of propagated to your listening post. This doesn't mean that 49 meters will be empty of signals. When conditions are auroral, the area of greatest ionospheric disturbance is around the poles. The

amount of disturbance decreases toward the equator, meaning that signals from Central and South America can be received in North America during auroral conditions on frequencies where European signals are normally dominant.

Solar Activity and Geomagnetic Field Conditions

There are two other measures of solar activity given by WWV and WWVH. Solar activity describes the general level of solar activity, and WWV/WWVH uses the terms "very low," "low," "moderate," "high," or "very high" to describe it. The geomagnetic field is described as being "quiet," "unsettled," or "active."

The last part of the WWV/WWVH propagation bulletin is a forecast of expected solar activity and geomagnetic field conditions for the next 24 hours.

Putting It All Together

So how to interpret all this data from WWV/WWVH? It's really simple: if the solar flux reading is high or rising, while the A (or K) index is low and the geomagnetic field is quiet, DX will be good. This is especially so if the A or K index has been low for several consecutive days. If the A or K index is at a moderate level and the geomagnetic field is mildly unsettled, then DX conditions will be mediocre. And if the A or K index is high and the geomagnetic field is active, then you'll be stuck with auroral conditions or other crummy propagation.

If you keep a logbook, record the data broadcast by WWV or WWVH for each day you listen. You'll soon see patterns developing in the propagation data from WWV/WWVH and the DX you can hear. You'll see how several consecutive days of A or K readings at a certain level or a particular value of solar flux will indicate which type of DX will be possible from different parts of the world.

The WWV/WWVH propagation bulletins are also a great way to save time. If I hear the A and K indices are high, the solar flux is low and the geomagnetic field is unsettled, then I forget serious DX'ing for the evening and go down to the local video store and rent a good movie directed by Edward Wood. You know, *Plan 9 From Outer Space*, *Glen Or Glenda*—good stuff like that! ■

SATELLITE VIEW

BY DONALD E. DICKERSON, N9CUE

INSIDE THE WORLD OF SATELLITE COMMUNICATIONS

Satellite Survey

The whole earth is literally smothered in layer after layer of earth orbiting satellites. Most are satellites carrying some sort of communications. Other so-called satellites are space junk: spent second and third stages of launch vehicles, old satellites and small objects that have been lost in space through the years. We're going to take a look at the layers of satellites that encircle the earth. This survey is abbreviated, especially in the area of TV satellites. I will recommend some large and lengthy specialty books that will give you detailed information on various satellite systems. The diagram will give you some idea of where each type of satellite resides in some detail.

We will start our survey by looking at the lowest satellite orbits.

A. Altitude 100 to 300 miles.

1) Shuttle (180mi): 145.550, 243, 259.7, 279, 296.8 MHz, 1,755.7, 1,831.8, 2041.9, 2,106.4, 2,265.0, 2,217.5, 2,250.0, 2,287.5 MHz (1.7, 1.8, 2.0 GHz respectively) on the TDRS satellites.

2) MIR (210mi): 121.75, 143.417, 143.625, 145.550, 166.0 (TLM), 10.820, 11.320, 13.520, 13.700 MHz (10, 11 and 13 GHz respectively).

3) US NavSats: 150 and 400 MHz.

4) Soviet NavSats: 148.91, 149.97, 388.84, 399.79, 399.92, 399.97 MHz.

5) SpySats: Photoint satellites find this altitude agreeable. Both US and Soviet satellites can reveal extraordinary detail in both plain photos, negatives and infrared images. Ocean radar intelligence satellites also operate at this altitude.

B. Altitude 300 to 600 mi.

1) Landsat: 2 GHz range (US Geodetic).

2) Spot: 2 GHz (French Geodetic).

3) NOAA: US Wx, 137.62, 137.500 MHz.

4) Meteor: CIS Wx, 137.300, 137.400, 137.850 MHz.

C. Altitude 600 to 1,200 Mi.

1) SpySats: Electronic Intelligence (ELINT), Signal Intelligence (SIGINT), Radar Intelligence (RADINT) US and Soviet military communications satellites and Amateur Radio satellites occupy this ring. Both US and Russia have milsats at this altitude that are much like the Amateur satellites most Satellite View readers are familiar with. They have capability to Store-dump Packet type messages and voice communications.

D. Altitude 3,000 to 6,000 Mi.

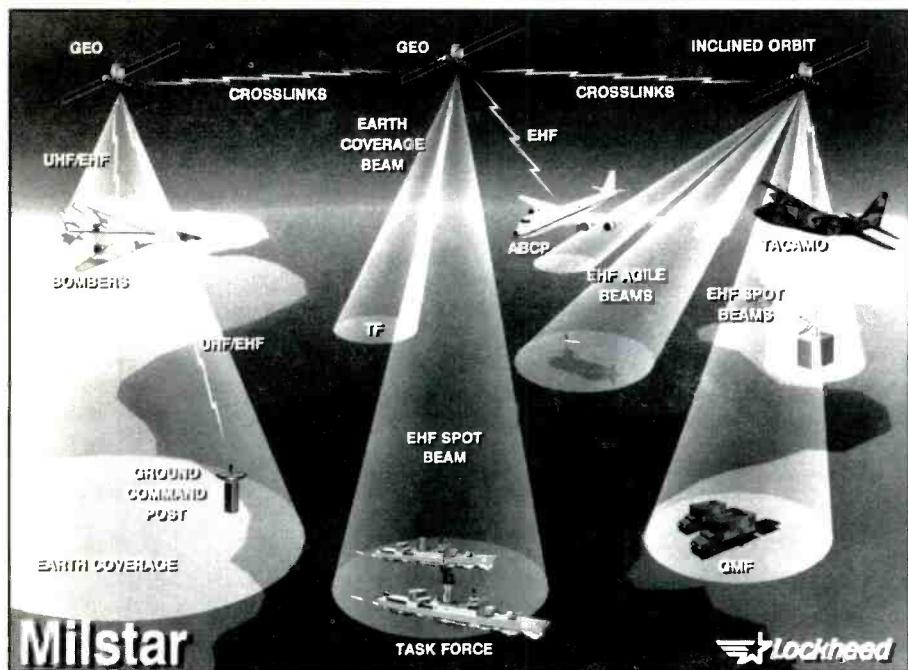
1) Scientific Research satellites are the

Satellite Bands			
Band	Frequency	Service	Satellite
HF	21.160-21.250 MHz 29.300-29.500 MHz	Amateur	Sputnik Sputnik
VHF	145.500-146.000 MHz	Amateur	
UHF	240-328/335-399 MHz 435-436 MHz	Military Amateur	Fltsat Oscar
L	1,269.350-1,269.650 MHz (1.2 GHz) 1,458.0-1,542.0 MHz (1.4 GHz) 1,535.0-1,543.0 MHz (1.5 GHz) 2,400.660-2,400.711 MHz (2.4 GHz)	Amateur	Aero-Mobile
C	3.7-4.2/5.9-6.4 GHz	Amateur	Marisat
X	7.2-7.7/7.9-8.4 GHz	Military	Maritime Marisat
Ku	10.9-11.7/14.0-14.5 GHz	Military	DSCS/Skynet
Ka	17.7-21.2/27.5-31.0 GHz	Military	Tele/TVsats
Q	40.0-41.0/43.0-47.0 GHz	Military	Milstar
V	50.0-51.0 GHz	Military	Experimental
Space Shuttle		Direct	Satellite
		145.550 MHz 243.0 MHz 259.7 MHz 279.0 MHz 296.8 MHz	2287.5 MHz (2.2 GHz) 2217.5 MHz (2.2 GHz) 15,003.4 MHz (15 GHz)
MIR Space Complex			
		121.75 MHz 142.417 MHz 143.625 MHz 145.550 MHz	10.820.0 MHz 11.320.0 MHz 13,520.0 MHz 13,700.0 MHz

Note: WA3NAN Shuttle Rebroadcast: 3.862 MHz, 7.185 MHz, 14,295 MHz, 21,395 MHz, 28.650 MHz

Satellite	Location	Frequency	
Fltsat	177°W 145°W 105°W 100°W 72°W 75°W 77°W	240-399 MHz 240-399 MHz 240-399 MHz 240-399 MHz 240-399 MHz 240-399 MHz 240-399 MHz	7/8 GHz 7/8 GHz 7/8 GHz 19/20/30/44 GHz 20/44 GHz 7/8 GHz 7/8 GHz
Marisat	015°W 176.5°	240-399 MHz 240-399 MHz	
Milstar	148°W 120°W 90°W 19°W 30°W 55.5°E 90°W 133°W 150°W 152°W	240-399 MHz 240-399 MHz 240-399 MHz 240-399 MHz 240-399 MHz 240-399 MHz 240-399 MHz 240-399 MHz 240-399 MHz 240-399 MHz	2/20/45 GHz 2/20/45 GHz 20/45 GHz 2/20/45 GHz 2/20/45 GHz 2/20/45 GHz 2/20/45 GHz 2/20/45 GHz 2/20/45 GHz 2/20/45 GHz

Note: Milstar locations are assigned positions. Only 2 or 3 are known to be in orbit at this time. There could of course be more.



Milstar communication capabilities are similar to current Fltsat and Gapsat systems with the addition of EHF/SHF. (Courtesy Department of Defense).

sole residents of this area. Some of the satellites are passive: they have no radar or other electronic emissions associated with their mission other than TLM. The US, Russia, and Europe have independent and joint mission spacecraft here.

Research bands are as follows: 400.15-402 MHz, 1,400.0-1,429.0, and 2,655.0-2,700.0 MHz.

E. Altitude 6,000 to 12,000 Mi.

1) Navigation satellites: This is an area where only NavSats operate. The US

GPS operate on 1,575.420 MHz and 1,227.600 MHz Spread Spectrum.

2) Soviet GLONASS satellites use 1,597.0, 1,617.0, 1,250.0 & 1,603.0 MHz.

F. Altitude 22,300 Mi. Geo Stationary.

1) TDRS: (Technical Data Relay Sat) is a NASA satellite used for shuttle communications on the following frequencies: 2,217.5, 2,287.5 and 15,003.4 MHz. This satellite also relays data for deep space and research spacecraft as well as other satellites.

2) SDRN: (Satellite Data Relay Network) is the Soviet (CIS) counter-part to TDRS. Downlink on 10.8, 11.3, 13.7 GHz. (10.800.0 MHz, etc).

3) Milstar: is a US military com satellite. A series of these spacecraft will be placed in orbit to provide a global network. They will use the 20 & 40 GHz bands.

4) DSCS (Defense Satellite Communications System) are NATO satellites that use 7.2 to 7.7 GHz downlink.

5) Fltsatcom are the most popular satellites for listeners as they use the UHF satellite band and have some unencrypted FM channels. Most active run between 261 and 263 MHz and another section between 269 to 270 MHz. To supplement this fleet additional commercial satellites have been leased. Known as Lesat, Gapsat and Marisat, they use

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All ICOM radios significantly exceed FCC regulations limiting spurious emissions. 781188.

POP'COMM'S World Band Tuning Tips

January – 1993

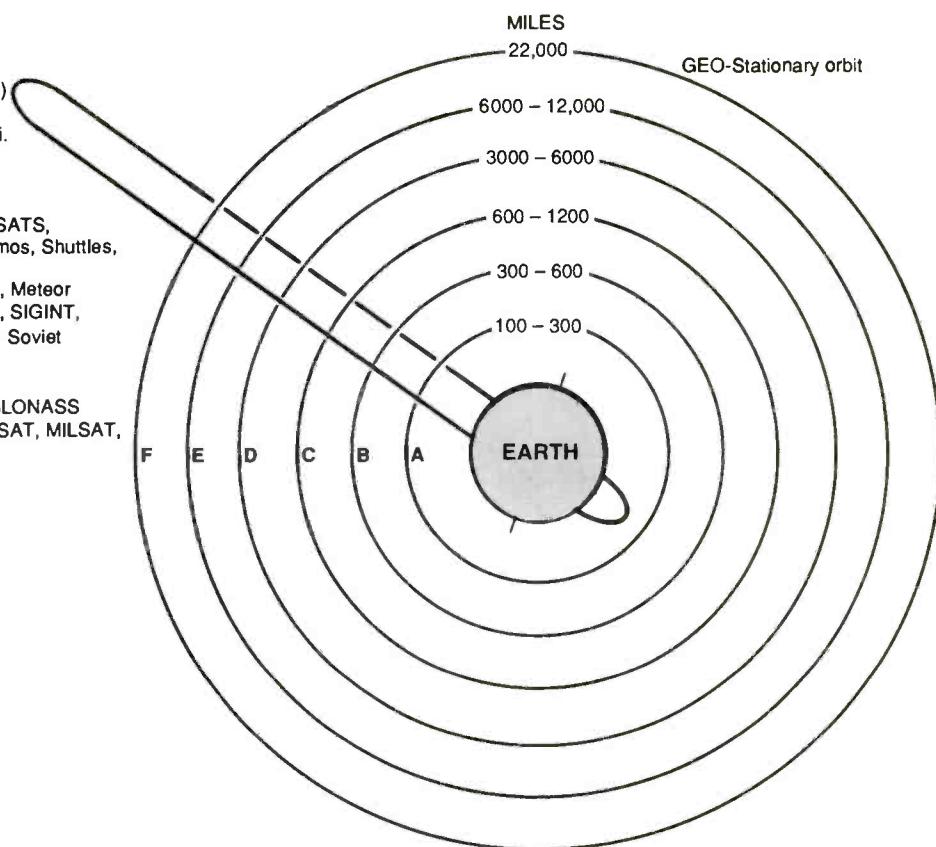
Freq	Station/Country	UTC	Notes	Freq	Station/Country	UTC	Notes
2390	LV de Atitlan, Guatemala	0300	SS	6015	R. Austria Int'l	0530	via Canada
2490	R. Oito de Setembro, Brazil	0059	close, PP	6025	R. Amanacer, Dominican Rep.	2300	SS
3200	Trans World Radio, Swaziland	0300		6030	R. Globo, Brazil	0000	PP
3205	R. Sanduan, Papua New Guinea	1000	Pidgin	6045	R. Polys, Russia	0400	RR
3215	R. Orange, South Africa	0300	EE/Afk	6050	R. Nigeria, Ibadan	2230	
3221	Rdf. Togolaise, Togo	0530	s/on, FF	6055	R. Sweden	2200	
3245	R. Gulf, Papua New Guinea	1200	pidgin	6060	R. Universo, Brazil	0600	PP
3250	R. Luz y Vida, Honduras	0230	SS	6060	R. Nacional, Argentina	0600	SS
3260	R. Madang, Papua New Guinea	1100		6085	Deutsche Welle, via Canada	0530	GG
3270	Namibian Br. Corporation	0300		6115	R. Universidad, Mexico	0500	SS
3275	R. So. Highlands, Papua New Guinea	1200		6120	R. Japan	1130	via Canada
3295	INBS, Iceland	0630,	Icelandic	6130	CHNIX, Canada	24 hrs	
3300	R. Cultural, Guatemala	0200	SS	6135	R. Aparecida, Brazil	2330	PP
3315	SLBS, Sierra Leone	0600		6135	Swiss Radio Int'l	0230	
3320	R. Orion, South Africa	0245		6150	Caracol, Colombia	0100	SS
3335	R. Alvorada, Brazil	0300	PP	6165	Swiss Radio Int'l	0415	
3360	LV de Nahuala, Guatemala	0305	s/off, indian	6180	R. Nac. Amazonas, Brazil	2200	PP
3377	R. Nacional, Angola	0500	PP	6180	R. Havana Cuba	0400	EE
3380	R. Chortis, Guatemala	0230	SS	6210	European Christian R., Italy	0630	
3385	R.E. New Britain, P/New Guinea	1100	pidgin	6210	Croatian Radio	0000	Croatian/EE
3395	R. Eastern Highlands, P/New Guinea	1200		6230	TWR, Monaco	0340	GG
3500	LV de Guainia, Colombia	1030	SS	6300	R. Venceremos, El Salvador	0230	SS
3880v	R. Free Bougainville	0800		6560	Iraq Republic Broadcasting	0130	AA
3955	BBC, England	0400		6560	R. Pyongyang, N. Korea	1000	JJ
4000	RRI, Kendari, Indonesia	1100	II	6754	R. La Merced, Peru	0130	SS
4331	R. Horizonte, Peru	1100	SS	6803	Ondas del Mayo, Peru	1000	SS
4409	R. Eco, Bolivia	0100	SS	6910	R. Africa 2000, Eq. Guinea	2200	close
4509	R. Horizonte, Peru	0830	SS	7105	RTVC, Congo	0600	FF
4649	R. Santa Ana, Bolivia	0100	SS	7110	V of Ethiopia	0330	local lang.
4697	RKIP, Surabaya, Indonesia	1200	II	7115	V of Pujiang, China	1130	CC
4712	R. Abaroa, Bolivia	0230	s/off, SS	7125	Rdf. Guineennee, Guinea	0630	FF
4719	RRI, Ujung Pandang	1200	II	7150	R. Australia	1330	VV
4760	R. Frontera, Venezuela	0130	SS	7155	La Voix du Sahel, Niger	0600	FF
4765	RTVC, Congo	0355	s/cn, FF	7190	Rep of Yemen Radio, Aden	0300	sign on, AA
4770	R. Nigeria, Kaduna	0500		7200	R. Omdurman, Sudan	0300	AA
4790	R. Atlantida, Peru	0230	SS	7220	All Union Radio, Russia	0100	RR
4795	R. Douala, Cameroon	0500		7230	R. RSA, South Africa	0500	FF
4800	Radio Lesotho	0300	Sesotho	7235	Deutsche Welle, Germany	0400	AA, via Malta
4832	R. Reloj, Costa Rica	0100	SS	7240	R. Australia	0800	pidgin
4835	R. Buenaventura, Colombia	0930	SS	7255	V of Nigeria	0500	s/on
4845	ORT, Mauritania	0600	FF	7260	Sudwestfunk, Germany	0100	GG
4850	CRTV, Cameroon	0430	FF/EE	7265	VOA Relay, Botswana	0300	sign on
4855	R. Capital, Venezuela	0230	SS	7275	ELBC, Liberia	0652	sign on
4865	LV del Cinaruco, Colombia	0300	SS	7290	R. Nacional, Angola	0500	PP
4875	V of Jinling, China	1100	CC	7315	Croatian Radio	0000	via WHRI
4879	Ondas del Ortega, Colombia	1000	SS (ex-4975)	7380	V of Broad Masses of Eritrea	0327	sign on
4890	R. France Int'l, Gabon relay	0400	FF	7400	R. Yerevan, Armenia	0338	
4890	NBC, Papua New Guinea	1100		7400	R. Belarus, Belarus	0030	Byelorussian
4900	R. Centinela del Sur, Ecuador	1100	SS	7450	V of Greece	2330	GG/EE
4904.5	R. National, Chad	0427	sign on, FF	7460	WJCR, USA	0300	
4915	R. Cora, Peru	1000	SS	7465	Reshet Bet HS, Israel	0100	Hebrew
4915	R. Anganguera, Brazil	0030	PP	7475	RTV Tunisienne, Tunisia	0400	AA
4915	GBC, Ghana	0600		9190	R. Omdurman, Sudan	0255	sign on, AA
4927	R. Tropicales, Colombia	0130	SS	9265	Icelandic Ntl Bc Svc	0730	EE
4945	R. RSA, South Africa	0357	sign on	9280	Voice of Asia, Taiwan	1000	CC
4955	R. Cultura, Brazil	0200	PP	9345	R. Pyongyang, N. Korea	1300	
4960	R. Federacion, Ecuador	0059	close, SS	9395	V of Greece	1900	GG
4975	Super Radio Tupi, Brazil	0000	PP	9425	KFBS, Saipan	1500	RR
4980	Ecos del Torbes, Venezuela	0200	SS	9445	Voice of Turkey	2330	TT
4990	R. Nigeria, Lagos	2230		9475	R. Australia	0900	
4990	Hunan PBS, China	1200	CC	9475	R. Cairo, Egypt	0200	
5005	R. Libertad, Bolivia	0100	SS	9480	TWR, Monaco	0645	
5020	LV de Sahel, Niger	0500	FF	9505	R. Record, Brazil	2300	PP
5020	Ecos del Atrato, Colombia	0330	SS	9510	KJES, New Mexico	1800	not daily
5030	AWR, Costa Rica	0100		9510	R. New Zealand	0930	
5047	RTV Togolaise	0600	FF	9525	Polish Radio	1930	
5050	R. Tanzania	0300	Swahili	9535	Trans World Radio, Bonaire	0300	
5055	Faro del Caribe, Costa Rica	0330	EE	9540	R. Educadora da Bahia, Brazil	0930	PP
5075	Caracol, Bogota, Colombia	0400	SS	9545	R. Tirana, Albania	0530	sign on
5280	R. Guiaba, Brazil	0330	PP	9555	R. Portugal	0230	
5700	R. Netherlands	0030		9560	FEBC-Russia	0900	RR
5850	R. Patria Libre, anti-Colombia	0030v	SS+	9560	R. Japan	0100	
5882	Vatican Radio	0000		9565	R. RSA, South Africa	1630	
5955	LV de los Centauros, Colombia	0900	SS	9570	R. Portugal	0230	
5960	R. Japan	0100	via Canada	9580	R. Yugoslavia	0130	
5975	BBC relay, Antigua	0400		9580	R. Tirana, Albania	0230	
6000	R. Guaiba, Brazil	0930	PP	9585	HCJB, Ecuador	0600	German
6010	R. Inconfidencia, Brazil	0700	PP	9595	R. Tanpa, Japan	1000	JJ

Freq	Station/Country	UTC	Notes	Freq	Station/Country	UTC	Notes
9600	R. UNAM, Mexico	0300	SS	11980	R. Aum Shinrikyo, Russia	0400	
9605	Vatican Radio	0230		11985	UAE Radio, Dubai	2100	AA
9610	R. Norway Int'l	0200		12005	RTV Tunisienne, Tunisia	2200	AA
9615	KNLS, Alaska	1400	sign on	12050	R. Cairo, Egypt	0300	AA
9615	R. Cultura, Brazil	2330	PP	12075	R. Aleph, Russia	1600	RR
9630	R. Netherlands	0745	via Bonaire	13620	R. Kuwait	2000	
9645	Faro del Caribe, Costa Rica	0400	SS	13625	KHBI, Saipan	1400	
9655	R. Australia	0920		13635	Swiss Radio Int'l	2130	
9670	Deutsche Welle, Germany	0530	via Antigua	13640	Croatian Radio	0130	EE
9685	RTV Algerienne, Algeria	2100	FF	13650	R. Pyongyang, N. Korea	0000	
9700	R. New Zealand	1030		13655	BRT, Belgium	2330	
9705	R. Portugal	0230		13660	R. Havana Cuba	0200	USB, EE
9720	SLBC., Sri Lanka	1230		13680	Rep. of Iraq Radio	2030	AA
9725	Adventist World R., Costa Rica	1250		13685	Swiss R. Int'l	0700	
9735	R. Oman	1945	AA	13730	R. Austria Int'l	0130	
9735	R. Nacional, Paraguay	2300	SS	13755	R. Australia	1600	
9745	R. Cairo, Egypt	0200		13830	Croatian Radio	2100	EE/Croatian
9746	R. Bahrain	2000	AA QRM-HCJB	15030	RFPI, Costa Rica	1200	
9750	R. Korea, So. Korea	1200		15070	BBC	1400	
9750	R. Kiev, Ukraine	0300		15084	VOIRI, Iran	0430	Farsi s/on
9755	R. Monte Carlo, Monaco	0400	AA	15090	Vatican Radio	2245	
9760	R. Tirana, Albania	0130	Albanian	15095	R. Damascus, Syria	2130	
9760	VOA relay, Philippines	1330		15115	R. Pyongyang, N. Korea	0000	
9770	R. Japan	0500	via BBC	15125	AWR, Kuybishev, Russia	1700	
9810	R. Czechoslovakia	0300		15135	R. Ukraine Int'l	2100	
9830	Croatian Radio	0600		15150	Iraq Republic Radio	0030	
9830	Voice of Hope-Asia, Palau	1100		15180	Rep. of Iraq Radio	2300	AA
9830	R. Jordan	1930	AA	15185	R. Finland Int'l	2300	
9850	FEBC, Philippines	0955	/on	15195	R. Japan	0500	
9870	R. Ukraine	0100		15200	R. Bangladesh	1230	EE
9877	R. Santiago, Dom. Rep.	0356	s/off, SS	15208	R. Bangladesh	1230	
9885	Swiss Radio Int'l	0200		15215	R. Veritas Asia, Philippines	2300	Japanese
9900	R. Cairo, Egypt	2200		15220	R. Budapest, Hungary	0200	
9930	BRT, Belgium	2355	close	15260	VOIRI, Iran	0230	sign on
9950	All India Radio	2200		15265	Radiobras, Brazil	1800	
9980	Rep. of Iraq Radio	2200	AA	15305	UAE Radio, Abu Dhabi	2300	
11520	R. Ukraine	0200		15330	R. Sofia, Bulgaria	1830	
11550	RTT Tunisia	1800	AA	15340	Iraq Rep. Broadcasting	0230	EE/AA
11570	R. Pakistan	1600		15340	R. Iraq Int'l	0230	AA
11620	All India Radio	2000		15345	Trans World Radio, Bonaire	1230	
11620	Vatican Radio	0145	SS	15345	RTM, Morocco	1400	Berber
11635	R. Netherlands via Madagascar	0100		15350	R. Luxembourg	0100	
11645	V of Greece	0140		15355	R. Czechoslovakia	0400	
11650	KTWR, Guam	1500		15360	Deutsche Welle, Germany	2100	
11680	R. Netherlands	1130	SS, Bonaire	15375	VOA relay, Botswana	0500	Hausa
11685	R. Ala, Russia	0200	RR	15400	UAE Radio, Dubai	0345	
11705	R. Sweden	2330		15400	Radio Finland Int'l	1500	
11710	RAE, Argentina	0100		15410	R. Austria Int'l	0500	GG
11715	R. Beijing, China	0330		15415	R. Jamahiriya, Libya	2000	AA
11715	R. Korea, S. Korea	1030	via Mali	15425	ABC, Perth, Australia	0700	
11720	R. Sofia, Bulgaria	0300	via Canada	15480	V of the UAE	1600	s/on, AA
11725	R. Korea, S. Korea	1000	SS	15495	Ukrainian Radio	0600	Ukrainian
11735	R. Pyongyang, N. Korea	1330	CC	15505	R. Kuwait	2245	AA
11745	R. Norway Int'l	2300	EE/NN	15530	R. France Int'l, via Hungary	0630	FF
11750	BBC Singapore relay	1200		15580	R. Vilnius, Lithuania	2300	
11755	R. Finland Int'l	0130		15580	R. Yerevan, Armenia	0230	
11760	R. Tbilisi, Georgia	2130	RR/EE	15610	KSDA, Guam	2300	
11765	R. Beijing, China	2100	SS	15640	Kol Israel	2130	
11780	R. Vilnius, Lithuania	2300		15750	R. Russia	1800	RR
11790	R. Ukraine Int'l	0000		15770	ISBS, Iceland	1945	Icelandic
11795	R. Denmark, via Norway	2300		17515	V of Greece	1230	
11800	RAI, Italy	0100		17650	R. France Int'l, via China	1430	
11805	R. Globo, Brazil	0900	PP	17690	R. Minsk, Belarus	0030	
11810	R. Jordan	1400	AA	17715	R. Alma Ata, Kazakhstan	2030	
11815	Trans World R., Bonaire	1130		17725	V of the Great Homeland, Libya	2100	AA
11820	KNLS, Alaska	0945		17730	Vatican Radio	0628	s/on
11830	Radio Romania Int'l	0158	sign on	17730	R. Alma Ata, Kazakhstan	1830	
11830	R. Tirana, Albania	0230	v/freq.	17740	R. Yugoslavia	1200	
11830	New Wave Radio, Russia	0700		17740	R. Sweden	1300	EE
11850	R. Tbilisi, Georgia	0445		17760	BSKSA, Saudi Arabia	0500	AA
11855	R. Beijing	1300		17770	R. New Zealand Int'l	0445	
11870	R. Yugoslavia	0040		17770	R. Havana Cuba	1800	SS
11880	R. Galaxy, Russia	2130		17775	R. Jamahiriya, Libya	2300	AA
11890	R. Oman	2100	AA	17815	R. Tashkent, Uzbekistan	1200	EE
11905	RAI, Italy	0230	II	17815	RTV Marocaine	1700	
11910	R. Budapest, Hungary	0200		17840	BBC	1400	
11920	RTV Marocaine, Morocco	1930	FF	17860	Qatar Bc Service	1300	AA
11925	R. Bandeirantes, Brazil	0000	PP	17870	R. Nacional, Colombia	0200	SS
11945	R. Space, Russia	1500	RR	17880	R. Finland Int'l	1300	
11945	Iraq, Republic Broadcasting	0030	AA	17890	Spanish National Radio	1200	
11955	Voice of Turkey	0400	TT	17895	HCJB, Ecuador	24hr	SSB
11955	BBC relay, Oman	0130		21505	BSKSA, Saudi Arabia	1530	AA
11960	R. Sweden	1130		21515	Radio Portugal	1630	
11960	RTV Malienne, Mali	0900	FF	21675	R. Kuwait	1600	AA
11965	V of the UAE	1800	AA	21740	R. Australia	0100	
11970	R. Havana Cuba	0130		21810	BRT, Belgium	1300	
11980	R. Ukraine Int'l	0230	Ukrainian				

Molniya orbit (highly elliptical)
Perigee to 250 mi.
Apogee to 60,000 mi.

LEGEND:

- A Transit and polar bear NAVSATS, SPYSATS, Photo INT, Cosmos, Shuttles, MIR
- B LANDSAT, SPDT, NIMBUS, Meteor
- C SPYSATS: ELINT, RADINT, SIGINT, COMSATS, Amateur SATS, Soviet MILSATS
- D Scientific research satellites
- E NAVSATS only, GPS and GLONASS
- F TV SATS, WXSATS, TELE SAT, MILSAT, TDRS, GOES, MILSTAT



the same frequencies as Fltsatcom—240 to 399 MHz.

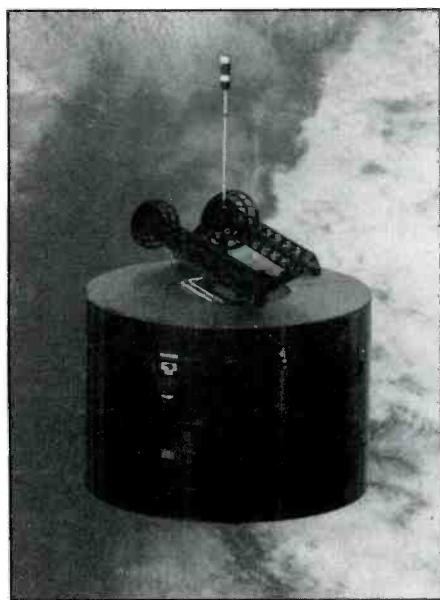
6) Goes/Meteosat: These two weather-sats can be found using 1,691.0 and

1,694.5 MHz.

7) Marisat carry transponders for maritime mobile and aeronautical communications. Maritime Mobile use 1,535.0-1,543.0 downlink and a 1,636.0-1,645.0 MHz uplink. Aero use 1,4458.0-1,542.0 downlink and a 1,644.0-1,660.0 MHz.

8) Intelsat telephone communication satellites use 3.7 to 4.2 GHz and 10.9 to 11.7 GHz downlink and a 5.9 to 6.4 and a 14 to 14.5 GHz uplinks.

9) TVsats: There are far too many TV satellites to list here. It should be said that there are C, Ku and 12 GHz Direct Broadcast satellites in the Clark belt as Geo orbit is also known as. I strongly suggest a copy of Mark Long's *World Satellite Almanac* for a complete listing of international and domestic TV and telecommunication satellites. Write or call Baylin Publications for this and many other satellite titles at 1905 Mariposa, Boulder, Colorado 80302 or call (303) 939-8720. For a detailed look at Military satellites I suggest Larry Van Horn's *Communications Satellites*. It is carried by Universal Radio, 1280 Aida Drive, Reynoldsburg, OH 43068 or call 1-800-431-3939 and be sure to tell them that POP'COMM sent you.



Here is a military communication satellite. (Photo courtesy NASA).

The Molniya Orbit is a highly elliptical orbit. That means that during the satellite's orbit, it comes extremely close to the earth's surface (as close as 200 mi) on perigee and can reach 60,000 mi. on apogee. The Soviets were the first to use such an orbit, that explains the orbit's name. The Molniya comes in two models, Molniya 1 which uses 800 MHz and 1 GHz and the Molniya 3 which uses 4 and 6 GHz. These satellite broadcast TV as well as carry military and manned space voice communications.

Early Warning Satellites, which warn of a launch of nuclear weapons, and some spy communications use this orbit.

The layers of satellites that encircle the planet are not like the rings of Saturn, all in the same plane, which you might mistakenly think from looking at the diagram. Each type of satellite, with the exception of the Geo-stationary, are in different planes. Each will orbit the earth at a different angle or degree of inclination. This leaves the planet trapped in an invisible web of orbiting spacecraft.

I welcome questions, comments, ideas and photos. Send all info to: c/o POP'COMM, 76 N. Broadway, Hicksville, NY 11801. See you next month. ■

HOW I GOT STARTED

Popular Communications invites readers to submit, in approximately 150 words (more or less), how they got started in the communications hobby. They should be typewritten, or otherwise easily readable. If possible, a photo of the submitter should be included.

Each month we will select one entry and run it here. You need submit your entry only once, we'll keep it on file. All submissions become the property of Popular Communications, and none can be acknowledged or returned. Entries will be selected for use taking into consideration if the story they relate is especially interesting, unusual, or even humorous. We reserve the right to edit all material for length and grammar, and to improve style.

The person whose entry is submitted will receive a one-year gift subscription (or one-year subscription extension) to Popular Communications.

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



Bobbie C. Howard started DX'ing on a tropical island.

Our January Winner

This month our winner is Bobbie C. Howard, of Riverdale, Georgia. Bobbie told POP'COMM:

"My interest in radio began when I was a teen-ager. I lived on a lovely, but sparsely-inhabited Caribbean island. My father ran the only hotel on the island. The evenings overlooking the tropical sea were beautiful, but things were quiet.

"I soon discovered that our Phillips radio was my link to the world beyond the shores of our little island. I would spend my evenings trying to see how many stations I could hear, nations I could visit via the magic of my imagination. Turning the dial ever so slowly, I was amazed at how many stations I could hear from distant lands. That was all I needed to start my interest in radio.

"Today, more than thirty years later, I am more enthusiastic than ever. My grown daughter laughs at my devotion to sitting at a radio listening to stations thousands of miles away. I look forward to the day when I can devote even more time to my hobby."

DELTACOMM™ DSS

Digital Signal Strength Option For Your ICOM™ R7000

DELTACOMM™ I-7000 and your MS-DOS computer integrated with the Delta Research custom CI-V interface and optimized software will not just control but will maximize the potential of your ICOM™ IC-R7000's monitoring capability.

- CYBERSCAN function allows scan file tracking control of systems employing frequency hopping techniques.
- Spectrum log at speeds in excess of 1300 channels a minute, generate a real time histogram of activity and create scan database file automatically.
- Birdie log during frequency search automatically characterizes your R7000, then locks out those frequencies.
- Activity log function continuously monitors and logs all frequencies of a scan database while displaying active, was active and never active channels.



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CIRCLE 126 ON READER SERVICE CARD

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CIRCLE 125 ON READER SERVICE CARD

January 1993 / POPULAR COMMUNICATIONS / 43

THE HAM COLUMN

BY KIRK KLEINSCHMIDT
AMERICAN RADIO RELAY LEAGUE HQ

GETTING STARTED AS A RADIO AMATEUR

Contesting For The 90's

Few Amateur Radio operating activities compare with the intensity, excitement and challenge of contesting. Have you ever wondered what your amateur station can really do or how sharp your operating skills are? A hotly contested radio free-for-all is the time and place to find out! The high-tech sport of radio contesting is fun. Warning: It can also be very addicting!

In this month's column, guest author Robert Halprin, K1XA, shares some of his "secret weapons" for winning Amateur Radio contests. (Believe me, every contestor harbors a few secrets...)

From the earliest days of the hobby, hams have always tried to see how far they could transmit and receive signals. This deep-rooted desire to work distant stations (DX) has been a mainstream activity in Amateur Radio since the beginning. Contesting gives a structure to that desire.

Contest contacts are quick, since the data exchange is brief, so you have an excellent chance of working a new country or state without enduring typical slower-paced Amateur Radio ragchews or leisurely DX pileups.

Contesting is fast-paced activity in which amateurs exchange specific pieces of information (called a contest "exchange") with other amateur stations during a fixed period of time (almost always over a weekend and typically running from 0000 UTC Saturday to 2359 Sunday).

Contesters are those folks you've heard on the bands calling "CQ Contest" (or "CQ Test" on CW). The object is to work as many different stations and multipliers as possible during the contest period. Depending upon the contest rules, multipliers may be DXCC countries, states, ARRL sections, CQ zones, US countries, and so on. After all is said and done, your final score is generally the total number of QSO's or QSO points times the number of multipliers.

Participating is relatively simple: Find a station calling CQ Contest, send your callsign once, when he comes back to you, copy his report (the exchange), then send your exchange once, and off you go!

There is no requirement to calculate your score if you don't feel like it—and you are under no mandate to submit a formal log to the sponsoring organiza-



Osvaldo Fernandez, LU5EW, a CQ World-Wide CW contest operator.

tion, either. The idea is for you to have fun, so play the game any way you want.

Even with a modest antenna setup, you can make more contacts in one contest weekend than in months of ordinary operating. If you seek a less labor-intensive way to build up your awards totals, to improve your operating finesse (including code speed), to check the integrity of your radio or antenna system, to learn about worldwide band openings, or merely to express your sporting instincts by seeing how fast you can fill up a log sheet with all kinds of callsigns, then contests are definitely for you.

Unlike, say, the local marathon run, there are no pre-registration requirements to enter a contest other than an amateur license. And it's perfectly fine to sit down at the rig and work a few stations, then take a break or call it quits. It's all up to you; you're free to choose when, where, and how long. There's absolutely no requirement to go all out. You decide whether you will be a contender, a pretender, a casual participant or anything in between.

I get a kick out of hams who work me in the contest and punctuate the QSO by saying, "I'm not in the contest, but you're 59 in the state of _____. Guess what? At that moment, they're in the contest!"

So it's not the "hard-liners" but the casual, part-time participants, who are the foot-soldiers for the contest environ-

ment. And if you are a casual sort, remember that there will be many stations eager to contact you for QSO points as soon as you put your signal on the air.

Contests come in all shapes and sizes. Each one is a unique adventure, with the challenge of the unexpected potentially lurking on every frequency. (For an up-to-date list Amateur Radio contests and their rules, see the contesting columns every month in *QST* and *CQ* magazines.) All you need to do is fire up your rig and your imagination—and your computer if you have one (a definite secret weapon).

Although the basic premise of contesting (working as many stations as you can) has not changed over the years, the technology certainly has. It's the '90's, and ham radio is solidly entrenched in the computer age. Contesting has become a whole new ballgame. If you own or have access to any IBM-compatible personal computer, and you find yourself sliding into "contesting mode" more and more often, you'll quickly find that a computer is an essential element of your contest station. Prices have tumbled to the point that almost anyone can afford an entry-level IBM-compatible machine. And logging software liberates you from burdensome paperwork before, during and after the contest.

With the advent of the computer revolution, paper-and-pencil contest logging has gone the way of the Berlin Wall. User-friendly and inexpensive logging

software such as *CT* (developed by Ken Wolff, K1EA) makes real-time contest logging, scoring and callsign checking a breeze. In the *CT* environment, your video monitor displays a running, real-time logsheet and a tally of your score. As you keyboard each contact and multiplier, you get immediate positive feedback as your score grows with each QSO made.

Among a host of other features that are easily invoked, *CT* keeps track of all the multipliers you've worked and those you still need, and prompts you when you are about to contact the same station over again ("dups" do not count for contest credit).

Further, computerization means that the all-important endgame—assembling an accurate, finalized contest log package to submit on disk to the sponsoring organization—has become dramatically streamlined. A few keystrokes and your log is ready to send in to the sponsor. The drudgery of the time-consuming post-contest bookkeeping has been eliminated. A two-day contest is just that; it's no longer two days (or less) on the radio followed by a week of IRS-style paperwork. So in the '90's, when the contest is over, it's really over. The fat lady is singing loud and clear!

There is a wide variety of ham radio logging software on the market today, most of which provides overall data base information management, that is, your entire amateur operating history is centralized in an all-purpose electronic logbook. In terms of contest-specific software, however, *CT* (and its cousin *NA*) has become the *de facto* standard (fortunately, most logging programs accept *CT* files for integrated record keeping). For details on *CT*, contact K1EA Software, PO Box 803, Hudson, MA 01749.

Newcomers quickly find that contesting by computer is a riveting, if not seductive, sensory experience. So whether your own personal approach is to operate a radio contest with a PC assistant or to play a video game with your ham transceiver as a peripheral device, the important thing is to have fun while exploring an exciting new area of the Amateur Radio art.—Robert J. Halprin, K1XA.

If you're hungry for information about getting started in ham radio contesting, see Bob's excellent article, "Contests and you—Perfect Together," in January 1989 *QST*, or get a copy of his new book, *Ham Radio Contesting*. It's written for the first-time contesteer and is available from your local dealer or from the publisher, Tiare Publications, PO Box 493, Lake Geneva, WI 53147.

As always, send your photos and letters to me at ARRL, Department PCN, 225 Main St., Newington, CT 06111. See you in the contest!

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Aug. 21, 1987

Wilson Antenna Company Inc.
3 Sunset Way, A10
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Henderson, Nevada 89015

Subject: Comparative Gain Testing of Citizen's Band Antennas
Ref: Rye Canyon Antenna Lab File #870529

We have completed relative gain measurements of your model 1000 antenna using the K40 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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COMMUNICATIONS FOR SURVIVAL

Low Frequency For Better GPS Position Finding

The global positioning system has now become a primary navigation and position finding tool for emergency teams throughout the world. Now that GPS receiver prices have dipped below \$800 for palm-sized, 5-channel, brand new units, emergency responders throughout the globe are adding GPS to their communications equipment arsenal.

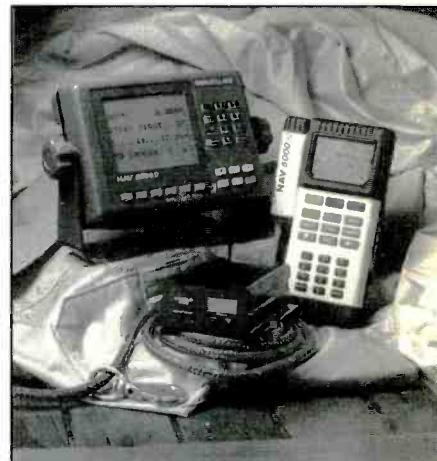
Although the GPS system is not 100 percent declared "operational," there are now 19 satellites out of a planned 24 satellites that will give us 24-hour-a-day position fixes and almost 24-hour-a-day altitude readouts.

The GPS NAVSTAR system was developed and is operated by the U.S. Department of Defense. Orbiting satellites make a round-trip circuit around the earth twice a day. This gives us as many as 4, 5, and 6 satellites in view at any instant, providing you have a clear shot at the sky and the horizon. Needless to

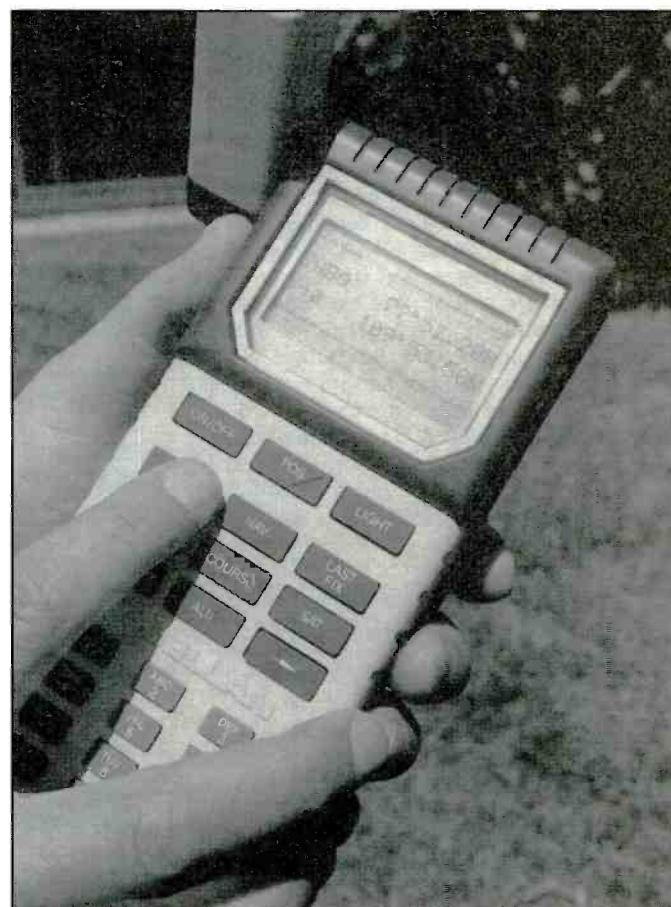
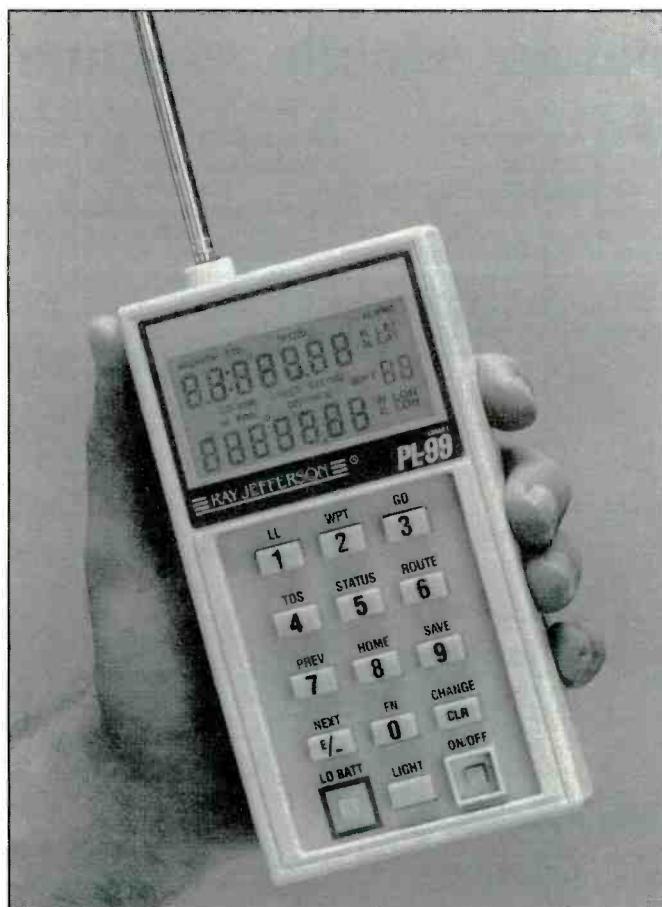
say, if you're trying to position find using GPS while going down the Colorado River, there indeed might be some times that your receiver might blank out.

Under-\$1,000 civilian receivers operate spread spectrum at around 1,500 MHz, decoding signals from as many as 5 or 6 incoming channels. Using the Standard Positioning Service (SPS) capabilities, our little receivers may read out our exact land or sea location down to a circle 90 feet in diameter. This is close enough to get you back to the scene of any major emergency that you might be handling communications at.

But the Defense Department presently degrades our position finding accuracy using selective availability (S/A) to give us our location on earth or sea only down to a circle 300 feet in diameter. This 3 times decrease in position accuracy is a built-in deterrent for the enemy to use conventional receivers for a precise drop



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The portable GPS (right) is smaller than the portable Loran (left).



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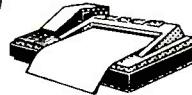
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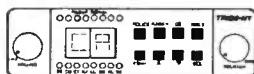


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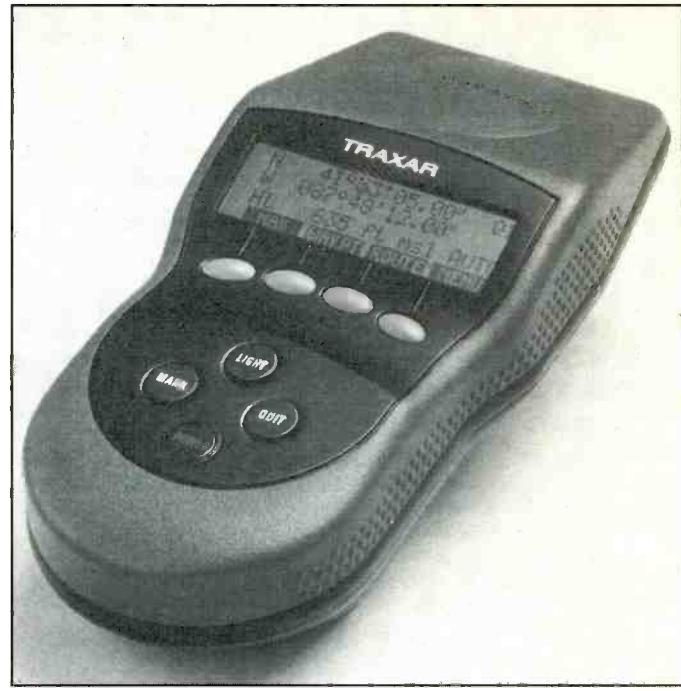
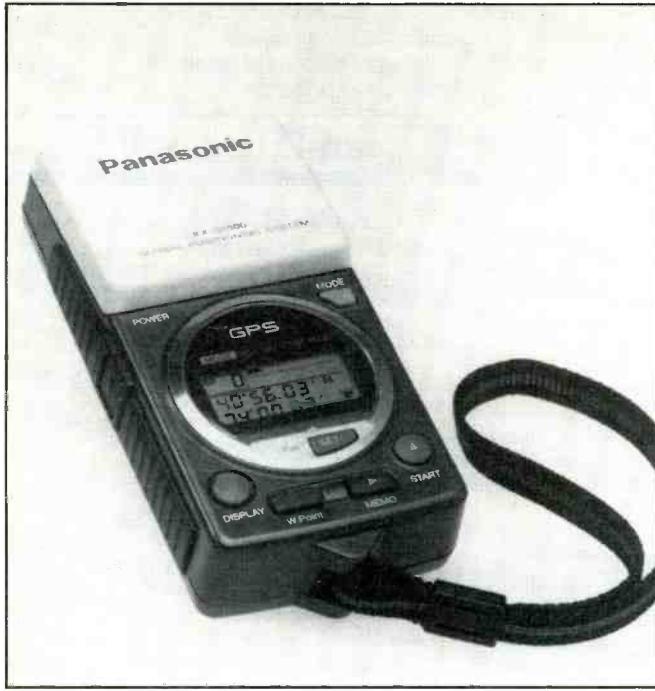
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Two new GPS arrivals—the \$1300 Panasonic and the \$1300 Motorola units.

of a bomb or whatever they're going to do, smack dab on target. And while the military and designated agencies may possess equipment for precise positioning service (PPS), you won't find any of it at the civilian level that could allow us to position find down to a 50-foot circle.

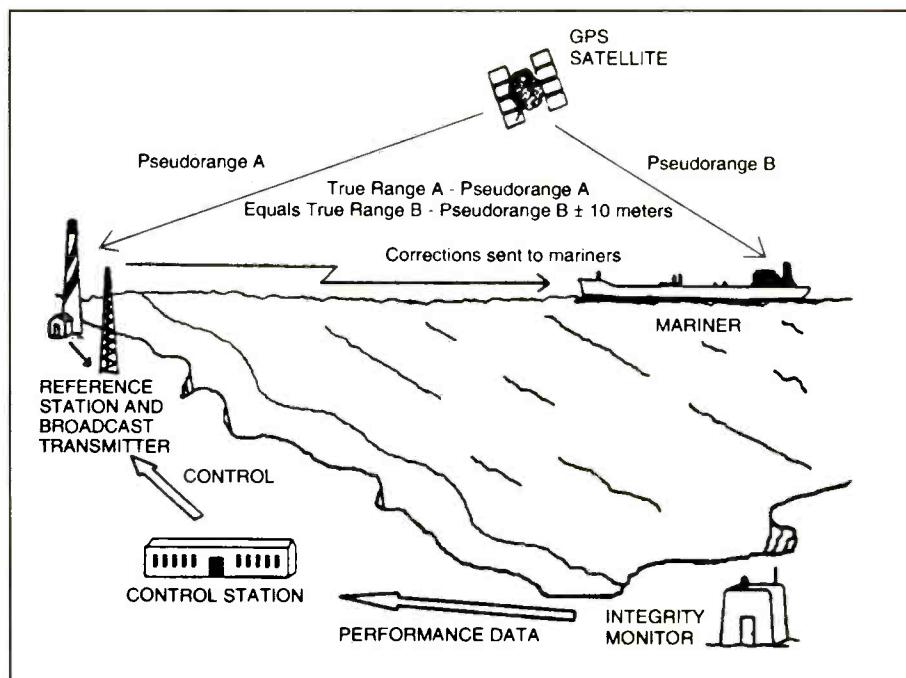
But good news—if you live near the sea coasts, a system called *differential GPS* is just coming on line—with position accuracy down to a circle less than 30 feet in diameter! Using differential GPS could allow you to not only position find the location of a downed aircraft, but also accurately position-record major pieces of wreckage scattered throughout the crash area.

Differential GPS correction signals are presently on the air throughout the East Coast shore lines—out to sea, and inland, approximately 100 miles from participating DGPS transmitting sites. These sites are renovated U.S. Coast Guard radio direction finding beacon stations, transmitting between 285 kHz to 325 kHz with overlapping range up and down the East Coast. Soon, DGPS will blanket the Gulf, Great Lakes, and all of the West Coast. Ultimately (don't hold your breath) differential GPS stations may also pop up throughout inland areas of the United States, or by that time, the military may shut off selective availability, and differential GPS could then bring us down to sub-meter accuracy.

The differential GPS radio beacon station will send out correction codes on the beacon's sub-carrier to remove the effects of selective availability to recreational users. Newer portable and fixed GPS sets will plug into a DGPS low-frequency decoder box, and the readout will indicate DGPS position accuracy well

	Requirements	Harbor/ Harbor Approach	Aids to Navigation Positioning	Vessel Traffic Services	NOAA Offshore Surveying
Services	Accuracy (meters, 2drms)	8-20	10	10	60
SPS with S/A	100	No	No	No	No
SPS without S/A	30	No	No	No	Yes
PPS	17.8	No	No	No	Yes
DGPS	< 10	Yes	Yes	Yes	Yes

Differential GPS is even more accurate than the military PPS system. (Photo courtesy US Coast Guard)



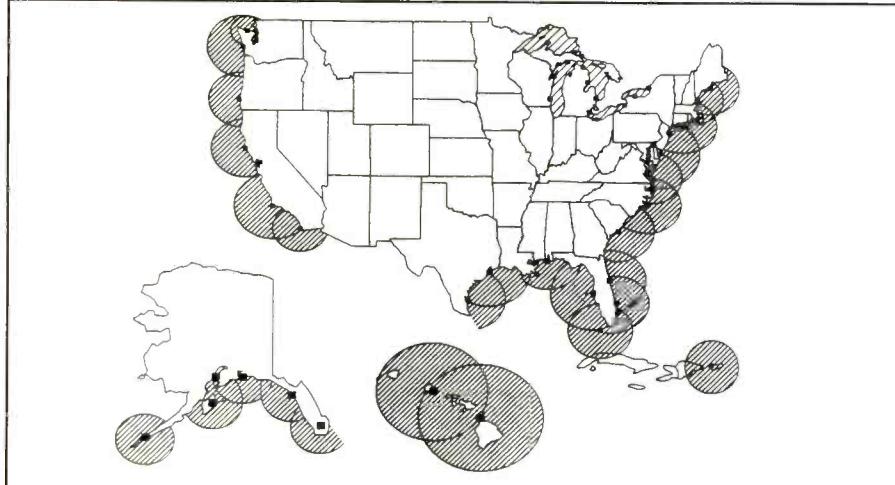
Here is how differential GPS works.

DGPS BROADCAST SITES							
NAME	LAT.	LONG.	RANGE	NAME	LAT.	LONG.	RANGE
GREAT LAKES REGION				CHARLESTON, SC	32 45.5	79 50.6	150mi
EAGLE HARBOR, MI	47 27.7	88 09.5	220mi	FORT MACON, NC	34 41.5	78 41.0	130mi
WHITEFISH PT., MI	46 46.3	84 57.6	80mi	CAPE HENRY, VA	36 55.6	76 00.5	125mi
LOOKOUT 4, MI	46 17.1	84 12.7	30mi	CAPE HENlopen, DE	38 46.6	75 06.3	175mi
SEUL CHOK PT. MI	45 55.3	86 54.7	120mi	TBD - NY HARBOR	TBD	TBD	TBD
STURGEON BAY, WI	47 47.7	87 18.6	60mi	MONTAUK PT., NY	41 04.0	71 51.8	125mi
MILWAUKEE, WI	43 01.6	87 52.9	140mi	PORTSMOUTH, NH	43 04.3	70 42.5	TBD
PRESQUE ISLE LT. MI	45 21.4	83 29.5	80mi	TBD - CEN. MAINE	TBD	TBD	TBD
GRAVELY SHOAL, MI	44 01.2	83 32.3	40mi	PACIFIC COAST, ALASKA, & HAWAII			
FORT GRATIOT, MI	43 00.3	82 52.4	140mi	BARBERS POINT, HI	21 18.0	156 08.5	170mi
DETROIT(BELLE IS.), MI	42 20.4	82 57.6	70mi	UPOLO POINT, HI	20 14.8	155 53.2	170mi
SANDUSKY, OH	41 30.0	82 40.5	130mi	POINT LOMA, CA	32 40.0	117 14.6	150mi
BUFFALO, NY	42 52.2	78 54.2	120mi	POINT ARGUELLO, CA	34 34.7	120 38.6	180mi
ROCHESTER, NY	43 15.4	77 36.2	100mi	SF BAY, PT. BLUNT	37 51.2	122 25.2	30mi
TIBBETS PT., NY	44 06.1	76 22.2	40+mi	POINT ARENA, CA	38 57.3	123 48.6	125mi
ATLANTIC AND GULF COASTS				CAPE BLANCO, OR	42 50.3	124 33.6	130mi
ARANSAS PASS, TX	27 50.0	97 03.5	175mi	GRAYS HARBOR, WA	46 54.2	124 07.6	150mi
GALVESTON, TX	29 19.7	94 44.3	175mi	EDIZ HOOK, WA	48 08.4	123 24.1	70mi
MOBILE PT. AL	30 13.6	88 01.4	165mi	ROBINSON POINT, WA	TBD	TBD	TBD
TBD - NEW ORLEANS	TBD	TBD	TBD	GUARD ISLAND, AK	55 26.6	131 52.6	300mi
EGMONT KEY, FL	27 36.0	82 45.7	210mi	CAPE SPENCER, AK	58 12.0	136 38.3	300mi
KEY WEST, FL	TBD	TBD	150mi	C. HINCHENBROOK, AK	60 14.3	146 38.5	TBD
TBD - PUERTO RICO	TBD	TBD	TBD	POTATO POINT, AK	61 03.	146 42.	TBD
JUPITER INLET, FL	26 56.9	80 04.9	125mi	COOK INLET, AK	TBD	TBD	250mi
CAPE CANAVERAL, FL	28 27.8	80 32.6	250mi	KODIAK, AK	60 00.	158 30.	275mi
				COLD BAY, AK	TBD	TBD	300mi

within a 100-foot circle. During recent sea trials on the East Coast, we found ourselves with the Magellan DGPS system well within a 35-foot circle, 90 percent of the time!

What all this means to emergency communicators is those of you fortunate enough to live along a sea coast may soon have an added dimension to the global positioning system that will allow

you to position find 3 times more accurately than a conventional GPS position readout. But not to worry—even though you may be inland, and nowhere near a DGPS system, a position readout well within a 300-foot circle, including altitude, is nothing to sneeze at when all this information comes on a tiny handheld receiver that runs all day on penlight batteries, and costs well below \$900 brand new! ■



Proposed Conus, Alaska and Hawaii DGPS coverage. (Photo courtesy US Coast Guard)

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- * ICOM R-71, * TS-450, TS-711, TS-950
- * R-7000, R-9000 * YAESU FRG-757GX, FRG-9600

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- * Scan by ANY increment & delay
- * Built-in TNC comm program
- * Share ANY radio's file



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CIRCLE 123 ON READER SERVICE CARD

BROADCAST DX'ING

BY ROGER STERCKX, KVT1JH

DX, NEWS AND VIEWS OF AM AND FM BROADCASTING

Batman Liked The Call Letters: If you went to see the film *Batman Returns*, you may have noticed that Gotham City's radio station was called WXRX. Radio buffs know that happens to be the callsign of an actual broadcasting station in Rockford, Ill.

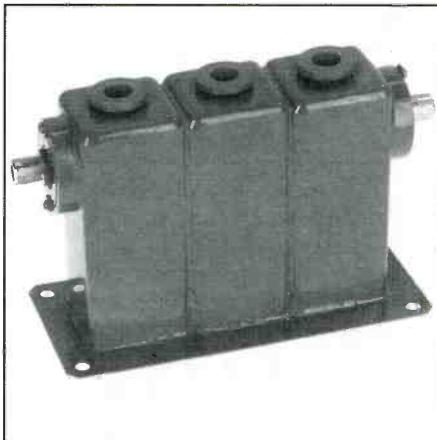
For whatever reasons, Warner Brothers decided they wanted to use those particular call letters in the film. The studio contacted the Rockford station and asked if they minded. The station said they didn't mind, although at first they thought it was a joke. No joke though, and Warners asked the station to sign a release form giving permission for the use of the call letters in the film. WXRX didn't get paid for the use of its call letters, except in terms of the publicity it received in the film and also on the McDonald's promotional drinking cup featuring the Penguin.

The film turned out to be the biggest box office success of last summer, so WXRX listeners were doubly proud of their station and thought it was tops. Thanks to Elmer Wallesen, La Grange Park, Ill., for letting us know.

On The Other Hand: Sometimes listeners get annoyed with their local broadcasters. In Oak Park, Mich., 18 residents of the community filed a \$180,000 suit against the owners of a local 800-ft. high radio tower and radio stations WLTI, WQRS, WJZZ, and WDFX, all of which use the tower.

The residents complain that the tower went up in 1984 and that resulted in a loss of security, a drop in their property values, and has resulted in severe RF interference to their stereos, VCR's, garage door openers, and other electronic equipment. The residents suspect that the tower may also be related to their health problems. In addition to the money, they want a the RF level reduced, plus a survey to check on the potentials for health problems within the RF field around the tower. We appreciate this information from Brian Blight, Flint, Mich.

Profile: Station KNDN/960, in Farmington, New Mexico, is a 5 kW broadcaster that started sending out programs in the Navajo language in 1957. Since 1978, all KNDN programming (news, music, commercials, etc.) has been in Navajo. The primary coverage of this station radiates over more than half of the 25,000 sq. mi. Navajo Reservation, reaching 85 percent of the population. The Navajo population is about 160,000 on this Reservation, which extends into New Mexico, Arizona, Utah, and Colorado.



The Model 8855 bandpass filter from Microwave filter. If you've seen one, you've seen 'em all.

This information passed along by Bob Combs, Tome, N.M.

Not Your Normal Pirate: The term "pirate" is usually applied to unlicensed

broadcasters, even though today these stations are not actual pirates since they don't usually take over frequencies used by licensed broadcasters. In the early days of radio, pirates got that name because they would set up on frequencies assigned to local broadcasters and fight the licensed stations for control of those frequencies.

A taste of this happened recently in Milford, Conn. Religious station WFIF/1500 found that, beginning in January of 1990, when WFIF signed off the air at the end of the day, another station would come up on 1500 kHz frequency and begin making slanderous remarks about the station and its staff members.

In September of 1991, WFIF went to court and obtained a permanent injunction against the man the station claimed was making the broadcasts. But the broadcasts continued. In August of 1992, the court handed down a decision against

New FM Call Letters Issued

KBAQ	Phoenix, AZ
KMKE	Grand Junction, CO
KPVS	Hilo, HI
KPVT	Idaho Falls, ID
KPVV	Dillingham, AK
KPVW	Aspen, CO
KPVX	Florence, OR
KPVY	Amarillo, TX
KPVZ	Bulah, ND
KRRD	Dickinson, ND
KVTF	Williams, AZ
KVTO	Rayne, LA
KVYA	Decorah, IA
KVYF	Wilson Creek, WA
WVYM	Chester, NE
KVYS	St. George, UT
KVYT	Basalt, CO
KVYU	Springfield, MO
KVYV	Vinton, IA
KVYZ	Thousand Palms, CA
WJFM	Lebanon, TN
WNJP	Sussex, NJ
WSGM	Coalmont, TN
WUFA	Byesville, OH
WUFB	N. Cape May, NJ
WUFC	Baldwin, FL
WUFG	Providence, RI
WUFH	Lexington, KY
WUFJ	Marquette, MI
WUFP	Ashtabula, OH
WWBG	Greensboro, NC
WYSG	Maumee, OH
WZLK	Virgie, KY

WVUD-FM	WLQT	Kettering, OH
WVYY	WTND	Grafton, NC

Call Letter Change Request Withdrawn

Now	Wanted	
WSEQ	WXEZ	Reidland, KY

Changed FM Call Letters

Now	Seeks	
KASY	KIDI	Albuquerque, NM
KATM	KBEE-FM	Modesto, CA
KBEV	KCIZ	Springdale, AR
KCCV-FM	KVUQ	Olathe, KS
KCKC-FM	KBON	Lake Arrowhead, CA
KFSO-FM	KFSO	Visalia, CA
KGFT	KATM	Pueblo, CO
KHWI	KIPA-FM	Hilo, HI
KINT-FM	KEZB-FM	El Paso, TX
KIXT-FM	KIXT	Grover City, CA
KJLU	KLUM-FM	Jefferson City, MO
KLAX-FM	KSQK-FM	Long Beach, CA
KMXX	KBTS-FM	Killeen, TX
KOSP	KZDC	Willard, MO
KQPM	KMRJ	Ukiah, CA
KSDL	KCBW	Sedalia, MO
KZON	KMXX	Phoenix, AZ
WBCT	WJFM	Grand Rapids, MI
WCMK	WRHE	Kingston, NY
WHYB	WCJL-FM	Menominee, MI
WKNN	KFAV	Cordele, GA
WLVB	WWDR	Hardeeville, SC
WMAX	WUNI	Bay City, MI
WMKS	WVPI	Macon, GA
WMRR	WQWQ-FM	Muskegon Hts., MI
WNEU	WMKG	Eden, NC
WRLJ	WQHF	Freehold Twp., NJ
WTXQ	WTCG	Andalusia, LA
WVRV	WLUB	Roanoke, VA
WWCP-FM	WVKZ-FM	Clifton Park, NY
WXLE	WVYD	Mechanicsville, NY
WXOF	WPDS	Beverly Hills, FL

Requests For FM Call Letter Changes

Now	Seeks	
KKTY-FM	KWOG-FM	Douglas, WY
WDOT-FM	WDEV-FM	Warren, VT
WDFX	WOWF	Detroit, MI

the man awarding almost \$13,000 in damages to WFIF.

We appreciate this information, submitted by Kenneth J. Reuben, Hamden, Conn.

Jump Up: Congratulations to CJSR/88.5, operated on the campus of the University of Alberta, in Edmonton. In August, the station jumped from 45 watts to 900 watts, thus giving a substantial boost to the station's signal. CJSR plays lots of off beat music, and presents activist, political, and alternative lifestyle information, and other provocative programming unavailable on commercial stations around town. People like the station, but 45 watts gave it too weak a voice to reach all who wanted to listen.

CJSR has a mostly volunteer staff, but there are 5 full-time employees. The station has an annual budget of \$200,000, raised from student fees, on-air fund-raisers, and government grants. But things like the new \$50,000 transmitter are extras that must be paid for separately by bingo games and other special events. Let's say that money has been a problem at CJSR ever since the station began back in 1984. We wish these good folks lots of luck! And thanks to Trevor Fletcher, of Edmonton, for telling us about CJSR.

Wanna Buy A Duck?: Karen Thor, of Knoxville, Tenn. tells us that she enjoys hunting down AM stations that feature rebroadcasts of old radio programs. She knows that Los Angeles' KNX/1070 and Chicago's WBBM/780 run old time programs regularly. Karen wonders if readers know of other AM stations that do likewise, and would like to send the information in to this column.

We can add that WICC/600, Bridgeport, Conn., runs these programs every

Sunday at 7 p.m. Eastern. Readers with additional information are invited to jot the information on a postcard and send it to us.

New Tower: Back a few issues we mentioned that the AM and FM signals of Norfolk's WCMS were knocked off the air by a storm last March. The 5 kW 1050 kHz AM signal was out until July 31st when the two new 230 ft. AM towers were completed. The FM outlet was operating with reduced power from loaned facilities, thanks to the generous cooperation of WFOG-FM. Station WNVZ-FM was also most helpful during the stressful period. Thanks to 15 engineers from the Hampton Roads area, WCMS-FM had missed only 6 hours on the air throughout the entire ordeal.

On August 13th, WCMS-FM/100.5 got back on the air with 50 kW from its own new 539 ft. tower.

This information submitted by Stew Tyler, WA4JUO, of Suffolk, Virginia. Thank you, Stew!

Filter: Microwave Filter Co., 6743 Kinne St., Syracuse, N.Y. 13057, offers the Model 8855 special bandpass filter intended to eliminate interference (from nearby cellular and other transmitters) that gets into STL receivers. Center frequency is 951.5 MHz (about 5 MHz bandwidth), although it can be designed for other frequencies. Max. loss is 2 dB, rejection is at least 30 dB below 932 MHz. Impedance is 50 ohms. This is for indoor use and features Type N female connectors. Check with the company for additional details and availability.

Poor Man's TV: We have heard of radios that play tunes, and now there's KFOR/1240, Lincoln, Neb., offering toons. The station hired cartoonist Paul Fell to draw and describe for listeners weekly cartoons relating to local Nebraska issues, which he also discusses. If listeners want to get a look at each of Fell's works, they may ask the station to FAX them copies of the toons. Almost as soon as the station offered to FAX the toons, they received more than 200 requests for the service from local residents. The toons are FAX'ed out on Tuesday nights (at no cost to listeners), and include advertising. Fell's program describing the toon and the issue involved follows on Wednesday morning. People like the idea, and it has created a lot of talk. We liked the idea, too! Very original and creative.

Whither EBS?: The FCC plans to give a complete overhaul to the Emergency Broadcast System. Every year, EBS has been activated numerous times in connection with earthquakes, severe weather, toxic leaks, chemical fires, dam breaks, and other situations dangerous to the public at large. Since early 1976, EBS has been activated more than 14,000 times. The system generally works well, and has done so for more than 40 years, when the concept began



You have to love this hilarious sticker from Toronto's CHOG/640. The 50 kW station is ex-CFGM, but changed their call letters when they went to a new format. (Courtesy Jeff Richardson, VE3HNP, Bramalea, Ontario, Canada.)

under the name CONELRAD, then evolving into EBS in 1963. But now there are new technologies available. The FCC feels that their potentials should be put to use to keep EBS current and operating with maximum effectiveness, reliability, and efficiency.

Indecent Issue: The FCC and the Dept. of Justice initiated enforcement proceedings against Chicago's WLUP/1000. This was in the form of a monetary forfeiture in the amount of \$6,000 for violation of the section of the Communications Act relating to utterances of "any obscene, indecent or profane language by means of radio communication." Inasmuch as WLUP's owners have said that they aren't going to cough up the \$6,000, after two FCC demands for same, it looks as this one is going to court.

The two alleged violations date back to 1987 and 1989 and relate to material broadcasts between 2:30 and 5:30 p.m. The FCC feels that these hours cause the indecency issue to be raised because children might be listening. We figure that during those hours, the kids are out in the streets playing and being exposed daily to words and ideas much tackier than whatever it is the FCC claims was in those two WLUP broadcasts. C'mon, FCC. Grow up and stop trying to be the lunchroom monitor to the nation.

You Won't Believe This One, Either: Some man filed a complaint with the FCC against WCSC-TV, of Charleston, S.C. He complained that during a charity auction, a WCSC-TV employee offered herself for a bid as a date but then did not honor the offer.

The auction was a "bachelorette ball fund raising auction" sponsored by the Arthritis Foundation. There were 28 entities, including 7 different broadcasting stations, sponsoring the event.

Seeking Changed AM Call Letters

Now	Seeks	
KKTY	KWOG	Douglas, WY
WAPR	WKHF	Avon Park, FL

Changed AM Call Letters

Now	Was	
KBEE	KOOK	Modesto, CA
KCNR	KCPX	Salt Lake City, UT
KFSO	KEYQ	Fresno, CA
KGBS	KUII	Dallas, TX
KIXT	KKCB	San Luis Obispo, CA
KLZX	KCNR	Salt Lake City, UT
KMSL	KQDI	Great Falls, MT
KRGQ	KZQQ	W. Valley City, UT
KSVE	KEZB	El Paso, TX
KXED	KSKO	Los Angeles, CA
WABN	WBBI	Abingdon, VA
WASO	WARB	Covington, LA
WASY	WPNN	Gorham, ME
WGPL	WMJM	Cordele, GA
WJIM	WWEA	Cambridge, MA
WQWQ	WWEZ	Muskegon Hts., MI
WTYM	WACB	Kittanning, PA
WZNZ	WZZN	Jacksonville, FL

Permits Granted To Build New AM Stations

AZ	Tempe	1060 kHz	5 kW
NC	Greensboro	1470 kHz	5/3.5 kW
PR	Sabana	1250 kHz	

Applications Filed For New FM Stations

AR	Mariana	105.3 MHz	6 kW
AR	Waldo	99.1 MHz	6 kW
CA	San Luis Obispo	88.5 MHz	3 kW
FL	Otawa	88.9 MHz	3 kW
IL	Maroa	107.3 MHz	6 kW
IN	Edinburgh	102.9 MHz	
MO	Boonville	93.9 MHz	6 kW
NC	Harkers Island	103.3 MHz	
NC	Pine Knoll Shrs.	102.3 MHz	6 kW
NM	Los Alamos	107.5 MHz	100 kW
NY	Herkimer	91.5 MHz	350 watts
NY	Lake George	98.5 MHz	360 watts
SC	Williamston	88.5 MHz	50 kW
TN	Tiptonsville	101.3 MHz	25 kW
WA	Ephrata	92.3 MHz	50 kW
WI	Appleton	91.9 MHz	3.3 kW
WV	Ravenswood	93.1 MHz	3.3 kW

Permits Granted To Build New FM Stations

AZ	Flagstaff	89.9 MHz	
AZ	San Carlos	103.7 MHz	3 kW
AZ	Wickenburg	93.7 MHz	1.4 kW
CA	Earlimart	93.5 MHz	3 kW
CA	Yermo	105.3 MHz	560 watts
MT	Columbia Falls	95.9 MHz	6 kW
NC	Wilmington	90.5 MHz	1 kW
ND	Bismarck	101.5 MHz	100 kW
NH	New London	99.7 MHz	840 watts

OH	Maumee	89.3 MHz	6.3 kW
SC	Hartsville	98.5 MHz	3 kW
TX	Jasper	107.3 MHz	3 kW
WV	Ripley	90.7 MHz	3 kW
WY	Laramie	104.5 MHz	3 kW

Permits/Licenses Forfeited; Call Letters Deleted

KBFS-FM	Belle Fourche, SD	95.9 MHz	3 kW
KGRW	Friona, TX	95.1 MHz	3 kW
KWQN	Arcadia, LA	92.5 MHz	3 kW

Applied To Change AM Facilities

KAMO	Camden, AR	610 kHz	Seeks drop 1 kW/125 w.
KEZF	Beaverton, OR	1040 kHz	Seeks increase to 20/2.2 kW.

Changed AM Facilities

KFIT	Lockhart, TX	1060 kHz	Moved to Sunset Valley.
KPHP	Lake Oswego, OR	1290 kHz	Use 3.5 kW days.
KSTB	Breckenridge, TX	1430 kHz	Dropped to 700 watts.
KZPM	Bakersfield, CA	1100 kHz	Increased nites to 5 kW.
WAMN	Green Valley, WV	1040 kHz	Dropped to 200 watts at nite.
WCIN	Cincinnati, OH	1480 kHz	Dropped to 144 watts at nite.
WSYA	Montgomery, AL	950 kHz	Dropped to 44 watts at nite.

Applied To Changed FM Frequencies

KOCD-FM	Columbus, KS	98.3 MHz	Seeks 105.3 MHz.
WXZY	Ruckersville, VA	92.1 MHz	Seeks 101.9 MHz.

Changed FM Frequency

KIWA-FM	Sheldon, IA	105.5 MHz	Moved to 105.3 MHz.
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The FCC tossed out the complaint, which was filed as being a violation of the licensee-conducted contest rule. They said that this rule didn't apply here because it didn't relate to auctions, even had an auction been conducted by a single licensee (which this one wasn't, anyway). An auction is different than a contest. The rule states that a contest is a scheme in which a prize is offered or awarded, based upon chance, diligence, knowledge, or skill to members of the public. The FCC said nothing indicated that this was a contest, or that, even if it were a contest, the event was conducted by WCSC-TV.

We guess that only a real doofus could file a complaint like this. You can imagine one possible scenario, although we don't know if it's true. Conjure up in your mind an image of a slobbering, grunting, leering, goon, with eyebrow collision, and knuckles scraping the floor. He thought he had at last discovered a sure way to get a date. Figure that after meeting this character, the WCSC-TV employee had second thoughts. At that point, she decided that she'd rather be drawn and quartered than really go through with this date, even for a charitable cause.

Now we have a date. It's a date with the copy deadline for this issue of POP'COMM. Let us hear from you with AM/FM station doings, bumper stickers, decals, station activities, news clippings, your questions and comments. Have a happy '93!



KNDN/960 announces "All Indian, All The Time" for its Navajo language format.
(Courtesy Bob Combs, Tome, N.M.)

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CIRCLE 11 ON READER SERVICE CARD

LISTENING POST

BY GERRY L. DEXTER

WHAT'S HAPPENING: INTERNATIONAL SHORTWAVE BROADCASTING BANDS

Your receiver, if it's on at the moment, may well be vibrating its way across your desk, reacting to the power of another set of 500 kilowatt transmitters. WEWN, a religious station operated by the Eternal Word Network, should be in operation from nearby Birmingham, Alabama by now. The station plans to broadcast to a worldwide audience, though it is not targeting Asia. It does, however, hope to cover Asia through a time-share arrangement with a broadcaster in that area at some later time. Programs will air in more than a dozen languages. Check these frequencies: 5825, 7465, 7520, 7540, 9350, 9410, 9870, 11735, 11885, 11970, 13615, 17760, 17890, 18930, 21670 and 21735. Reception reports go to Bob German, WEWN Transmitter Site, 1500 High Road, Vandiver, AL 35176.

Somewhere in the lost back rooms of the Voice of America we imagine there must sit a wizened little old man who, like the guard at the door of Jack Benny's vault, probably never sees the light of day. He simply sits there, pouring over his maps and atlases deciding where the next relays should go. We know he's getting old because he's made a couple of bad calls in recent years (Israel and Puerto Rico). His latest finds: Kuwait (there's a surprise, right?) and Sao Tome. The latter site will serve as a replacement for the destroyed facility in Liberia and will use four 100 kW transmitters and a 600 kW mediumwave transmitter. A temporary 100 kW mediumwave transmitter will go on the air in March, 1993 and the shortwave units in 1994. The relay is intended to improve the VOA's coverage of west and central Africa.

The Kuwait relay will use as many as ten transmitters on shortwave. Kuwait is providing land at no charge. Radio Kuwait will have access to the transmitters when the VOA is not using them.

Radio Canada International is buying a trio of 250 kilowatt transmitters for its Sackville site. They'll replace the old units there. Once these are in we'll bet Canada will be renting more Sackville time to other broadcasters.

Radio Sweden is also getting new transmitters. Three 500 kilowatters are destined to replace the 350 kW units now in service.

Here's yet another relay to try and keep track of. The BBC is now being relayed by Radio RSA, South Africa. In use at the moment are 15420 from 1745-1900 and 17790 at 0700-0730.

Radio Lesotho, which has been active only periodically, at best, is back on the



Programming from the Canadian Forces Network can be heard over RCI. It's intended for Canadian/UN troops in the former Yugoslavia. (Thanks to Chris London, MN)

air. If you need this one check 4800 for the station's 0300 sign on.

Radio Czechoslovakia has begun relaying its home service programming, in Czech and Slovak for Czechs and Slovaks in other countries. We, in North America, shouldn't have any trouble hearing this on 5930, beginning just prior to 0400.

Looks like Radio Sofia's future is very much in doubt. Lack of funding from the government for the shortwave service may force the station to close. You can check the situation by tuning for the North American service at 2145 and 0000 on 11660, 11720 and 15330 and 0300 on 9850, 11720 and 15160.

At the moment we're still awaiting the arrival of Radio Miami International on shortwave. It's due to show at any time on 9955. The beam is mainly for Latin America so expect a lot of the programming to be in Spanish.

Marie Lamb of New York has been in touch with the head of Radio Argentina al Exterior's English Department, John Anthony Middleton. He is very aware of the interference problems RAE's English programming is confronted with. Mr. Middleton would very much appreciate receiving detailed reports of reception of the English language programs. These are on the air for North America at 0100 on 11710 and to Europe at 1800-1900 on 15350 (both are on the air one hour later during our summer months.)

Send your reports to Mr. John Anthony Middleton, English Department, RAE, C.C. 555, Correo Central, 1000 Buenos Aires, Argentina.

Marie has also had some correspondence with the folks at RAI, Italy. She says RAI has a new Director For Programs Abroad, Giorgio Brovelli, who is attempting to make improvements in the RAI operation. The transmitters,

which date back to Mussolini, have been repaired and Marie says she can hear the improvement. Apparently RAI hopes to obtain funding for further technical and programming improvements as well. RAI is looking for listener feedback in both the programming and technical areas. Write to Direzione Servizi Giornalistici e Programmi per l'Estero, Radio Roma, Centro Corrispondenza, Casella Postale 320, 00100, Rome, Italy. OK. Here's one suggestion right off the bat: shorten your address!

Marie says she can't prove it, but she thinks she may have had a hand in helping rid the shortwave world of the notorious "dead lady" who used to read the news in the 0100 North American transmission. Marie says that she heard an excellent English news reader on Italy's Radio Uno service (6060) and made a point of praising him in one of her reports to the station. Sometime later he showed up doing 0100 news. Marie thinks his name is Richard Barringer.

Some reports say that the Radio Havana Cuba-Radio Moscow relay exchanges have ceased. Although we've not been able to confirm this, if it's true it wouldn't be much of a surprise.

Radio Havana Cuba itself is reported to have cut back on some of its programs and frequency usage due to Cuba's energy crisis.

Let's hear from you! We are always glad to receive your contributions in the form of log reports, station schedules and other material, spare QSL cards to include as illustrations and comments, questions. We continue to seek more shack photos (what a shy bunch we have out there!).

Please note that log reports should be listed by country and include your last name and state abbreviation after each item. We cannot use reports which don't



Radio Sweden is replacing its 350 kW transmitters with 500 kW models. The reindeer may not even need those "antennas." (Thank H.S. Stohecker, CA)



Radio RSA transmitters now carry the BBC for a couple of hours each day. (Thanks H.S. Stohecker, CA)

include name/state on each individual log. Please double or triple space between items—it makes them much easier to cut and sort. Thanks for your cooperation and support!

Here are this month's logs. All times are UTC (0000 UTC equals 7pm EST) Broadcasts are assumed to be in English unless noted otherwise (RR = Russian, SS = Spanish, etc).

Abbreviations 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/
SS	Spanish
UTC	Coordinated Universal Time (ex-GMT)
v	Frequency varies
w/	With
WX	Weather
YL	Female
//	Parallel Frequencies

SWBC Loggings

Alaska: KNLS. on 11580 with 1300 sign on, IS. ID. (Moser, CA) 1330. (Johns, TX)

Albania: Radio Tirana. 9580 at 0232 with national news commentary, Albanian music (Overman, MO) 2200 on 11825. (London, MN)

Antigua: BBC relay. 5975 at 0447. (Moser, PA) 17840 at 1522. (Zamora, CA)

Deutsche Welle relay on 6040 at 0147. (Moser/2, PA) 15105 at 2130 sign on in PP. (Zamora, CA)

Argentina: Radio Nacional. back on 6060 and noted in SS at 0604 with frequent IDs. tangos, commercials, news. (Lamb, NY) 0700. (Johns, TX)

RAE, 9690 at 0100-0200 in PP and 11710 at 0200 to 0300 in EE. (Barry, CA)

Ascension Island: BBC relay at 1400 on 21660. (Carson, OK)

Australia: Radio Australia. 6060, under Radio

Nacional, Argentina, at 0627 sign on. (Lamb, NY) 1416 on 9580//11800. (Moser, PA) 17715 to the Pacific at 0334. (Zamora, CA) Here and parallel 17795 at 0307. (Jensen, IA)

ABC, Brisbane, 4920 at 1316 with ID: "Across Queensland, this is ABC Radio." Into pops. (Zamora, CA)

Austria: Radio Austria International. 9870 at 0336. (Low, TX) 9875 at 0130. (Johns, TX) 15410 at 0504 in GG. (Lamb, NY)

Radio Canada International, via the Moosbrunn site on 15275 at 0421 with "Spectrum." ID, IS and into AA at 0430. (Lamb, NY)

Belgium: BRT on 9930//13655 at 2330 in EE. (Moser, PA; Johns, TX)

Benin: ORTB, 4870 at 0502 in FF with African music, talks. EE ID at 0514: "You are tuned to the Benin Radio Station, broadcasting from Cotonou." (Lamb, NY)

Bolivia: Radio Fides. 4845 and 6155 at 0530 to 0600 sign off. in SS. (Johns, TX)

Botswana: Radio Botswana, 7255 at 0247 with IS to 0259 when anthem. Lost to VOA QRM at 0300. (Moser, PA)

VOA relay. 15375 at 0459 with IS, ID and into program in Hausa. (Lamb, NY) (Think you're right, Marie, and hausa 'bout that! Editor)

Brazil: Radiodifusoras Amazonas, 4805 at 0124 in PI with sports, screaming announcers and crowds. IDs. (Lamb, NY)

Radiodifusora Maranhao, 4755 at 0204 in PP with James Bond theme, ID. Brazilian music, commercials. (Lamb, NY)

Radio Nacional da Amazonia, 11780 in PP with music and local phone calls 2350 to 0025.

Radiobras, 15445 at 1200. (London, MN) 1226. (Carson, OK)

Swiss Radio International relay. 17730 at 0005. (Low, TX)

Bulgaria: Radio Sofia, 11660//15330 at 2250 with news and Eastern European folk music (Overman, MO) 11720 at 2123 with music and ID. (Moser/2, PA)

Canada: Canadian Forces Network, via RCI, to Canadian UN troops in former Yugoslavia. EE and FF at 1900 on 13650//15325 and 17875. (London, MN) RCI. 13650 at 1956 closing to Europe and 13720 at 0202 to Latin America with transmitter problems. 15305 to Europe, ending at 1928. (Jensen, IA) 15325 at 1248. (Vaage, CA) 17875 at 2130. (Low, TX)

CKZU, 6160 at 1017 with music program "Nightlines". (Fox, AK)

CHNX, 6130 at 0940 with ID, commercials. (Lamb, NY)

CBC Northern Quebec Service, 9625 at 1414. (Moser, PA) 2130. (Borsch, IL)

Chad: RDF Tchadienne, tentative. 4905 at 0438 in FF with African music, mentions of

N'Djamena. rooster crow. (Lamb, NY)

China: Radio Beijing. 7470 at 1846 in Italian. (Foss, AK) 11840, via Canada, at 0300. (Vaage, CA) 11855 at 1348 to 1356 close and 15170 with sign off routine at 2057. (Carson, OK)

Colombia: Radio Nacional, 11822.5 in SS at 2330. (Johns, TX)

Caracol. 5075 in SS at 0500. (Johns, TX)

Congo: RTV Congolaise, 4765 at 2316 in FF with African music, IDs, talks. (Lamb, NY)

Costa Rica: RTPI, 7375 at 0328. (Carson, OK) 13630USB at 0119 with UN Women's program and "F>I>R>E>" (Lamb, NY)

Adventist World Radio, 9723 at 1231. (Carson, OK) 9725 at 0053 "For Your Info". Off at 0059. (Zamora, CA)

TIFC, Faro del Caribe. 5055 in EE at 0305 with religious programs. (Borsch, IL) 9645 at 0419 in SS. (Lamb, NY)

Cuba: Radio Havana Cuba, 9620 at 2245. (Zamora, CA) 7950 at 0142; 11950 at 0234; 11970 at 0232 and 13710 at 0200. (Jensen, IA)

Czechoslovakia: Radio Czechoslovakia. 7345 at 0300. (Low, TX) 9580 at 0107. (Moser/2, PA) 7345 and 11990 at 2358 with IS from Dvorak's 9th Symphony and ID "You are listening to Radio Czechoslovakia" and "This is Radio Czechoslovakia." Closing IS at 0026 and off. (Overman, MO) 11990 at 0226 with instrumental music, multi-lingual IDs, start of Czech/Slovak program. Also 15355 at 0419. (Lamb, NY)

Cyprus: BBC relay. 15575 at 0538. (Lamb, NY)

Denmark: Radio Denmark, via Norway, 17795 at 1429 in Danish. (Carson, OK) 21705 at 1930 with EE ID, news in DD. (Vaage, CA)

Ecuador: HD2IOA time station at 0505 in SS on 7600. (Lamb, NY)

Radio Federacion, tentative. 4960 at 0044 in SS with folk music, possible ID, anthem and off at 0058. (Lamb, NY)

HCJB, 9745//15155 at 0044. (Jensen, IA) 11730 at 0730 and 15270 at 1903. (Carson, OK) 17535 with USB test in FF at 0014. (Lamb, NY) 17890 at 1328. (Zamora, CA)

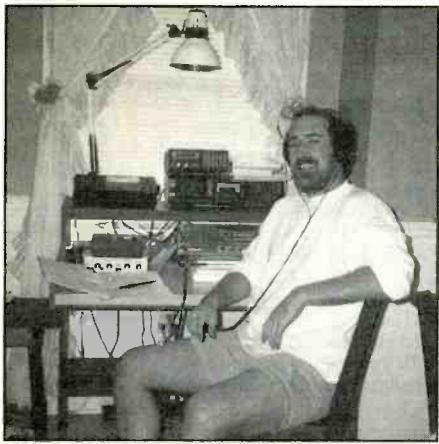
England: BBC on 3955 at 0410 with news, "Waveguide." (Lamb, NY) 6110 at 0242 and 12095 at 0230. (Carson, OK) 9915 at 2314. (Moser/2, PA)

VOA relay on 7200 at 0429 and 17640 at 1402. (Low, TX)

Egypt: Radio Cairo. 9475 at 0201. (Overman, MO) 12050 at 0326 with AA relay of home service, Koran and ID. (Lamb, NY)

Equatorial Guinea: Radio East Africa. 7595 at 0530 on a Sunday with religion. (Johns, TX) (This is weekends only. Editor)

Finland: Radio Finland. 11755 at 0130. 0525. (Johns, TX; Lamb, NY) 15400 AT 1250. (Low, TX)



This DX'er uses a Kenwood R2000 and a DX440. But who is he? There was no name on the back of the picture.

21550 at 1409. (Moser, PA)

France: Radio France International. 17650 at 1418 (Moser, PA) 17695 at 1400. (Borsch, IL)

French Guiana: Radio France relay. 11800 at 0644 in FF. (Moser, PA) 17860 at 1225 and 21645 at 1220, both in FF. (Northrup, MO)

Gabon: Radio Japan relay at 2155 on 11735 (Low, TX)

Germany: Deutsche Welle. 5960 at 0518 (Moser, PA) 6040 (via Antigua, editor) at 0111; 6085 (Sackville, editor) at 0306. 6145 at 0149. (Jensen, IA)

Ghana: GBC Radio One. 4915 at 0606 with ID and news in EE to 0616 when into African language (Zamora, CA)

Greece: Voice of Greece. 9420 at 0137 in EE to 0140 when into Greek. (Moser/2, PA) 15650 at 1230. EE ID. (Northrup, MO)

Guam: KTWR. 11805 at 0948 with "Insight For Living," address and ID. (Lamb, NY) 15200 at 0800. (Moser, PA)

Hawaii: WWVH time station. 15000 at 0229 with time. ID. (Jensen, IA)

Honduras: Radio Luz y Vida. 3250 at 0255 in EE with ID, address, religious talk. Now has an increased EE schedule. (Lamb, NY)

Hong Kong: BBC relay. 7180 at 1315. (Zamora, CA)

Hungary: Radio Budapest. 6110//9835// 11910 at 0233. (Lamb, NY) 9835 and 11990 at 0215. (Overman, MO)

India: All India Radio. 11620 at 2102 with news. (Moser, PA)

Iran: VOIRI. 15260 at 1901 with news or comment, ID, local music and man reading "articles." (Moser, PA)

Iraq: Radio Iraq International. 15210 at 2048 with political commentary. (Carson, OK) 15340 at 0245. (Johns, TX)

Israel: Kol Israel. 11605 at 2130 with sign on. ID, "Israel Newsmagazine." Also 15640 at 1905 with interview. (Moser, PA) 15640 at 1928 switching to FF. (Jensen, IA) 17683 in unknown language at 1235. (Northrup, MO)

Italy: RAI on 11800 at 0102 with news, ID, address, music. (Overman, MO) 17780 at 1659 in II with IS, bells, ID, anthem, news. Also 21560 at 1358 with IS, bells, ID, news in II. (Lamb, NY)

Japan: Radio Japan. 5960 (via Canada, editor) at 0105 with news. (Jensen, IA) 11865 at 1904. (Vaage, CA) 17810 at 2332. (Foss, AK)

Jordan: Radio Jordan at 2219 in AA with music. (Low, TX)

Kuwait: Radio Kuwait. 13620 at 1811 with news about Iraq. (Jensen, IA)

Lesotho: Radio Lesotho. 4800 at 0500, in EE (Johns, TX)

BBC relay. 11940 at 0603 with African news and "Postmark Africa." (Lamb, NY)

Luxembourg: Radio Luxembourg. 15350 at 2103 with news and into music 2105. (Moser, PA)

Madagascar: Radio Netherlands relay. 15150 at 1444 with "Newsline" and "Research File." (Carson, OK)

Malta: Deutsche Welle relay. 15205 at 0343. (Lamb, NY)

Mali: RTV Malienne. 5995 at 0630 in FF. (Johns, TX)

Mauritania: Radio Mauritanie on 4845 at 0638 with man in presumed AA. mideast music. (Moser, PA)

Mexico: Radio Educacion. 6185 at 1230 in SS. (Northrup, MO)

Monaco: Trans World Radio. 9480 at 0700 in EE. (Johns, TX)

Morocco: Voice of America relay. Tangier. on 15205 at 1540 with "VOA Radio One." (Borsch, IL)

Namibia: Namibian CB heard at 0450 in EE on 3290. (Johns, TX)

Netherlands: Radio Netherlands. 13700 at 0029 sign on. (Carson, OK) 17580 at 1333 in Dutch. (Zamora, CA) 17610 at 1406 and 21590 at 1855. (Borsch, IL)

Netherlands Antilles: Radio Netherlands relay. 6165 at 0121. (Jensen, IA) 9590 at 0353 (Low, TX) 11835 at 0041. (Moser/2, PA) 21515 at 1813. (Carson, OK)

Trans World Radio. 11815 at 1113 with DX show. (Carson, OK)

New Zealand: Radio New Zealand International. 9700 with news at 0803. (Moser, PA) 17770 at 0249 with music and news. (Jensen, IA)

Nigeria: Voice of Nigeria. 7255 at 0638 with African news. (Moser, PA)

North Korea: Radio Pyongyang. 11335 at 1115 with news in EE. (Moser, PA)

Norway: Radio Norway. 21705 at 1901 with EE ID, news and music in NN. (Vaage, CA)

Northern Marianas: KHBI on 17555 at 1141 with letters program. (Moser, PA) Here and parallel 17780 at 0557 with IS, site ID, news. (Lamb, NY)

Pakistan: Radio Pakistan. 15550 at 1715 with "I Seek Refuge in Allah." (Moser, PA)

Papua New Guinea: NBC. 4890 at 1326 with time check, soft pops. (Zamora, CA)

Paraguay: Radio Nacional. 9735 at 2314 with man in SS. (Moser, PA)

Peru: Radio Union. 6115 in SS at 0430, music and commentary. (Barry, CA)

Radio Tarma. 4775 at 0446 in SS with folk music, ID, address, frequencies. (Lamb, NY)

Philippines: Radio Pilipinas. 17760 0303 with local country music. (Zamora, CA)

FEBC on 9875 at 2212 with IS, sign on to southeast Asia. (Low, TX) 11995 at 1005 in listed Minangnese with religious talk. EE ID at 1030 sign off. (Lamb, NY)

VOA relay. 15425 at 1144 with country-western. (Moser, PA)

Portugal: Radio Portugal. 9705 at 0230 with news, mostly of Portugal. (Barry, CA)

Romania: Radio Romania International. 11940 at 2103 with world news. (Moser, PA)

Russia: Radio Aum Shinrikyo, via Radio Moscow. 12070 at 2055 with ID in EE and address, then Radio Moscow IS and announcement. (Borsch, IL) (Believe this is the station you are hearing. Todd. Address is 381-1 Hitoana, Fujinomiya, Shizouka, Japan 418-01. Editor)

Radio Ala. 11685 at 0200 in RR with IS, ID, folk music. (Lamb, NY)

Radio Galaxy. 11880 at 1900 with pops. EE IDs. (London, MN)

Radio Moscow. 7605 at 0445. (Low, TX) 9655//9755 at 1500. (Zamora, CA) 15225 at 0620. (Moser, PA) 15355 at 2111, 15425 at 0014, 15485 at 0042 and 17735 at 2105. (Jensen, IA) 15375//17695 at 1705. (Lamb, NY) 15460 via Krasnoyarsk, 0647 in RR. (Foss, AK) 17765 at 1423. (Carson, OK)

Rwanda: Deutsche Welle relay. 7225 at 0404. (Moser, PA) 15270 at 2200 in GG. (Carson, OK) 17860 at 1758 with IS, site ID in FF, and into GG. (Lamb, NY)

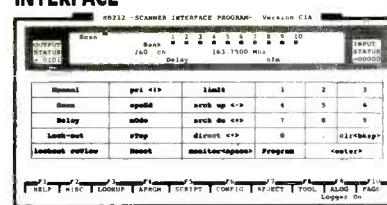
Singapore: SBC, Radio One. 11940 at 1325 with US pops. (Zamora, CA)

South Africa: Radio RSA. 9695 at 0500 and

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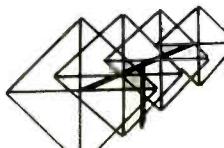
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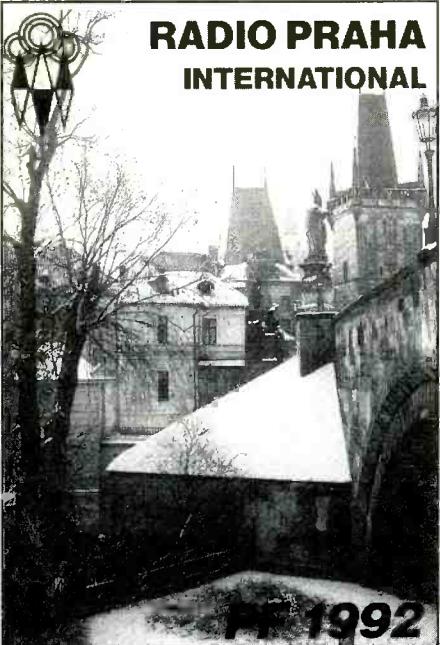
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RADIO PRAHA INTERNATIONAL



PR 1992

Radio Czechoslovakia now carries the national home service on shortwave

15220 at 0600 to Southwest Africa, both EE. (London, MN)

Radio Orion, 3320 at 0016 in EE and Afrikaans with IDs. pops. (Lamb, NY)

Radio Oranje, 3215 at 0351 in EE and Afrikaans with IDs. news. commercials, music. (Lamb, NY) 0300 in Afrikaans. (Johns, TX)

Radio Five, 3320 at 0200. (Johns, TX)

South Korea: Radio Korea, 9750 at 1311 with

interview. (Moser, PA) 15375 at 2219 in RR to East Asia. (Low, TX)

Spain: Radio Exterior de Espana. 9530 at 0030 and 0500. (Low, TX) 12035 and 15110 at 2220 with SS pops. (Barry, CA)

Sri Lanka: VOA relay on 15250 at 0200. (Borsch, IL)

SLBC at 1250 in EE on 9720. (Johns, TX)

Swaziland: Swazi Radio. 6155 at 0500 with program in EE. (Johns, TX)

Sweden: Radio Sweden. 11705 at 0106 with ID. phone interview with US listener. (Lamb, NY) 17870 at 1505 with music program. (Borsch, IL)

Switzerland: Swiss Radio International. 6135 at 0217 to North America and into SS at 0230. 9650 at 0220 and into FF at 0230. 7480 and 11690 via China, to Southeast Asia at 1325 with ID and into FF at 1330. (Zamora, CA) 9885 at 0153. (Moser, PA) 12035 at 0216. (Carson, OK) 17635 at 1725, into FF at 1730. (Borsch, IL) 17730 at 0000. (Barry, CA)

Syria: Radio Damascus 12085//15095 at 2100. (Borsch, IL)

Taiwan: Voice of Free China, 5950 via WYFR at 0331. (Vaage, CA) 11745 via WYFR in CC to East Asia at 1231. (Low, TX) 17750 via WYFR at 2226. (Carson, OK)

Turkey: Voice of Turkey. 9445 at 2130. 2230. (Moser, PA; Borsch, IL)

Ukraine: Radio Ukraine International. 1790//11980//12040//12060 at 0232 in Ukrainian with IDs. choral music. (Lamb, NY) 12040//12060 at 0014. (Zamora, CA) 15580 at 0003. (Jensen, IA)

United Arab Emirates: UAE Radio. Dubai. 13675//15400 at 0330. (Johns, TX) 21605 at 1631 with news. ID and off at 1640. (Lamb, NY)

UAE Radio. Abu Dhabi. 15305 at 2215. (Johns, TX) Capitol Radio relay at 2230 with pop music. commercials. (London, MN)

United States: KJES. Mesquite, New Mexico. 9510 at 1800 with religious chants in EE. (London, MN)

Vatican: Vatican Radio. 11620 in SS at 0345. (Lamb, NY) 15090 with IS at 1755. (Jensen, IA) 2000 in EE to Africa. (Borsch, IL)

Venezuela: Radio Rumbos. 4970 at 0458 with sign off announcement in EE-SS-FF. Address given as P.O. Box 2618. Caracas. Asked for \$1 for QSL card. Off with national anthem. (Zamora, CA)

Ecos del Torbes. 9640 at 1142 in SS with station promo. merengue music. (Lamb, NY)

Vietnam: Voice of Vietnam. 9840//12020//15010 in listed Indonesian with electronic music, talks. (Lamb, NY) 15010 at 1335 in EE. (Borsch, IL) 1800 in EE. (Johns, TX)

Yugoslavia: Radio Yugoslavia. 11780 at 0125 "This is Radio Yugoslavia broadcasting to North America on 11870 kHz." (Overman, MO) 0045 with ID. political commentary. They did not ID as Radio Federal Yugoslavia. (Lamb, NY)

That does it for this time. Raise your glasses in a toast to the following reporters this month: Marie Lamb, Brewerton, NY; Marty Foss, Pitkas Point, AK; Todd Borsch, Princeton, IL; William Moser, New Cumberland, PA; Bill Moser (Moser/2), New Cumberland, PA; John Spencer Carson, Norman, OK; Larry R. Zamora, Highland, CA; Paul Jensen, Mason City, IA; Andy Johns, Mansfield, TX; John Overman, MD, Independence, MO; Chris London, Princeton, MN; Patrick J. Barry, Mission Viejo, CA; Mark A. Northrup, Gladstone, MO; Bjorn F. Vaage, Granada Hills, CA.

Thanks to all. Until next month, good listening!

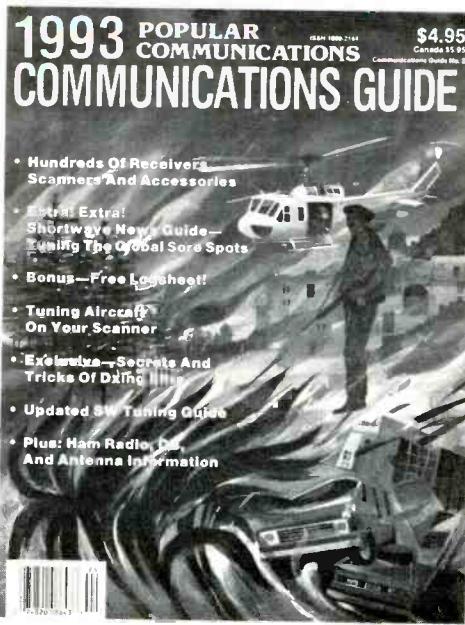
1993 POPULAR COMMUNICATIONS COMMUNICATIONS GUIDE

Completely updated with the latest information on new receivers, scanners and amateur transceivers, the Winter Communications Guide has something for everyone!

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PIRATES DEN

FOCUS ON FREE RADIO BROADCASTING

BY EDWARD TEACH

For the first time in quite a while pirate activity seems to have dropped off a bit. Here's what the guys have come up with this month:

Michael R. Schmehl in Pennsylvania heard a new one—to this column, at least. Radio Free Euphoria was logged on 7415.8USB at 0113 with a talk on the benefits of marijuana on the environment and economy, etc. Announced the Wellsville maildrop (P.O. Box 452, Wellsville, NY 14895) and left the air about 0130. Pat Murphy in Virginia also had them to sign off at the same time.

Skip Harwood in California had WEED Radio on 7415 USB at 0445-0512 and the next day at 0525-0550. He also logged them at 0206 to 0228 and 0300 to 0330. One slogan was "broadcasting from California to New York." On another occasion they claimed to be "broadcasting from underground in the great Southwest." Another station pushing pot, it seems. Skip says they request reports in care of the "Signals" shortwave program, but I doubt that route will generate a QSL!

Along the same lines, Schmehl had KNBS on 7413 from 0207-0245, saying it was owned and operated by the "California Marijuana Co-op" and "dedicated to the legalization of marijuana." Mostly talks favoring marijuana. Also mentioned their "sister" station, CNBS, in Canada and gave maildrop information. You didn't specify what the drop is, Michael. Most recent info I have is that it is Wellsville.

Schmehl also heard WARI, Alternative Radio International, 7417 with an ID by "Dr. Lobotomy." Michael thinks the maildrop mentioned was Wellsville. Harwood found this one at 0130 to 0235 on 7415 USB mode.

Mike also had an unidentified on 7415 at 0051 with themes from Indiana Jones movies and a discussion about "alternative archeology." Sorry, Mike, but I can't do "please QSL" requests in this column. If I did it wouldn't be long before that's all we'd have in these pages!

Robert Ross, Ontario, had WVOL, The Voice of the Loon, at 2319 on 7416USB with listener's letters, Radio Free Euphoria interview, talks about drugs and "High Times" magazine. Wellsville address.

Bob also had Radio USA, on 7413 at 0223 with punk music, humorous commercials and health tips to 0245 sign off. This one also announces the Wellsville address.

Schmehl had a station called Uniden,

LIVE WIRE RADIO

QSL # 391



Ed Rausch in New Jersey got this QSL from Europirate Live Wire Radio.

on 7414.7 USB at 0130 with segments of Beatles hits "Revolution" and "P.S. I Love You." Skip had a call from the operator, tipping him off about this test transmission and asking him to check the signal.

Harwood had both of the "anarchy" stations. Radio Anarchy showed on 4816 at 0445 to 0510 with Indian flute music and an ID announcement. The also announced 4760. Anarchy One was heard on 7415.2 USB at 0320 to 0340 with Captain Anarchy and rock music.

He also had them on 7414.4, 7414.5 and 7418 (all USB mode) at various times between 0300 and 0400 and heard Captain Anarchy warning listeners of government plans to form a food cartel. He urged everyone to learn how to grow their own food. Skip says this has a mail drop of 770 Sycamore Ave #J-193, Vista, California, 92083. Skip's QSL letter from this station says they use an SB-33 transmitter feeding a half wave dipole with an output of about 50 watts. The station's purpose is "to let people know that it is possible, and necessary to change the way we have been living, and that such change can begin with the individual; we don't need to wait for someone to lead us."

Pat Murphy logged EBO radio on 7415 USB at 0248-0301 with a Bing Crosby number and "unusual musical selections." Another station giving the Wellsville address. They were having some technical difficulties during the broadcast. Mike Schmehl's QSL from this one (which I don't think is reproducible, unfortunately) indicates that the

station is "of interest to those who like the bizarre." Harwood had this one at 0145 with an ID and mail drop info.

The Lobotomy Radio Network was another Murphy log, on 7413 at 0230-0251 sign off. Back to back rock music and identification, "This is the Lobotomy Radio Network."

Pat also logged Radio Free America on 7415 from 0145 to 0210 with a funny "star spangled banner" song, a lesson on the constitution and an offer of free pocket constitutions, humorous commercials. The station was eventually lost in QRM, says Pat.

Michael Schmehl had a unidentified on 7415.9USB at 0149 with the "radio song"—Mike's own name for this tune which he says he can never hear plainly enough to identify.

Ed Rausch of New Jersey sends an info sheet from European pirate Live Wire Radio which indicates they'll be running some nighttime broadcasts on weekends, using such frequencies as 3909 and 3933, in addition to 15050 which some listeners here have heard, as well as 6290, both variable. Might be a good idea to watch those spots on weekend evenings.

When reports indicate 7415USB, it's rarely clear to me whether you mean the station was transmitting in upper sideband or you simply used the USB mode as an aid to hearing the thing more clearly. It would help if you could specify.

That does it for this time. Keep those pirate logs coming and, you operators, drop a line now and then about what you are doing! ■

ANTENNAS & THINGS

BY JOE CARR, K4IPV

SIMPLE ANTENNAS AND ACCESSORIES FOR SIGNAL IMPROVEMENT

Shielding Loop

Loop antennas are a perennial favorite with DXers because of several factors. First, they are compact. A loop antenna doesn't require a multi-acre lot, rather they can be happy as clams on a table top. Second, they are highly directional. A loop produces a "Figure-8" pattern (Fig. 1A) with two nulls (direction of no reception) and two maxima (direction of maximum reception sensitivity). This feature allows the loop to be used to suppress cochannel and immediate adjacent channel (if your receiver lacks selectivity) by correct loop alignment. Third, loop antennas (especially square loops) are easily built by anyone with ordinary manual skills and "Harry & Harriet Homeowner" tools. Finally, depending on the design loops can be used on frequencies from ULF (unbelievably low frequencies) to the upper end of the HF region of the spectrum (e.g. 10-meter ham band or 11-meter Citizen's Band). This column looked at loop construction in the November issue.

But there are some problems associated with loop antennas, and these need to be addressed in order to achieve best performance. One problem is that capacitance which always exists between conductors that are separated by an insulator between the wire of the loop and both ground and local conductive objects (e.g. the wiring or aluminum siding in your house) distorts the pattern at least a little bit (Fig. 1B). This phenomenon is called the antenna effect. The distortion can be so severe that the loop pattern becomes either cardioidal (Fig. 1C) or even nearly omnidirectional (Fig. 1D) like a vertical.

A second problem, especially in the low frequency bands (i.e. medium wave, VLF and below), where loops are most useful, is electrical interference. AC power line problems, dimmer switches in homes, fluorescent lighting, television sets, VCRs, computers, etc., etc., ad nauseam, all conspire to trash your reception. The lower frequencies are littered with electrical noise signals and their harmonics, and these raise a constant roar on those frequencies.

There is one cure for both problems: electrically shield the loop. Figure 2 shows the proper way to shield a loop antenna. The entire conductor is shielded except for a small break of two inches or so along one edge.

Shield the loop? Are you nuts? Won't that prevent signals from being received?

The answers to these questions, in order are: yes, maybe, and no. A radio wave is technically called a "transverse electromagnetic wave" (TEM), and contains both electrical and magnetic fields at right angles to each other, but travelling in the same direction. Loop antennas respond to the magnetic component of the radio signal, while conventional antennas (e.g. dipoles and verticals) respond to the electrical field. Noise is primarily an electrical field phenomenon, so shielding the antenna to electric fields, while permitting magnetic fields to get in, will make the antenna's reception quieter. The shielding scheme shown in Fig. 2 meets the requirement. The loop is completely surrounded by a conductive shield except for a small break (about 2 inches) along one edge. The break is what makes the shield pass magnetic fields, so is absolutely critical.

Building the Shield

Over the years I've built a number of loop antennas, including about seven different loops when I recently wrote a book on receiving antennas for Harry Helms DX/SWL Press, so I have tried any number of methods for shielding loops. One method that worked semi-well was the use of the kind of 25-conductor cable used by computerniks for printer and RS-232C serial communications cables (note: not all such cable is shielded, so caveat emptor). The problem comes when one tries to neatly interrupt the shield, but that problem is usually overcome with good workmanship. Another approach, which can be used on loops from about 15 MHz and up, is to make the loop with a length of coaxial cable. The outer conductor of the coax is removed at the point where the break is desired.

The process that we'll discuss in this article is the use of copper stock to fashion the shield. My first attempt at using copper sheets was a less than spectacular success. I chose 24 and 22 gauge copper roofing flashing. Although most "do-it-yourself" roofing flashing is aluminum (and hence unsolderable), roofing supplies and metals distributors sell the copper variety. But it's expensive, and is much too thick to use easily. One needs heavy tools and a hammer to push that stuff around. Sigh, what to do?

The solution to the problem was

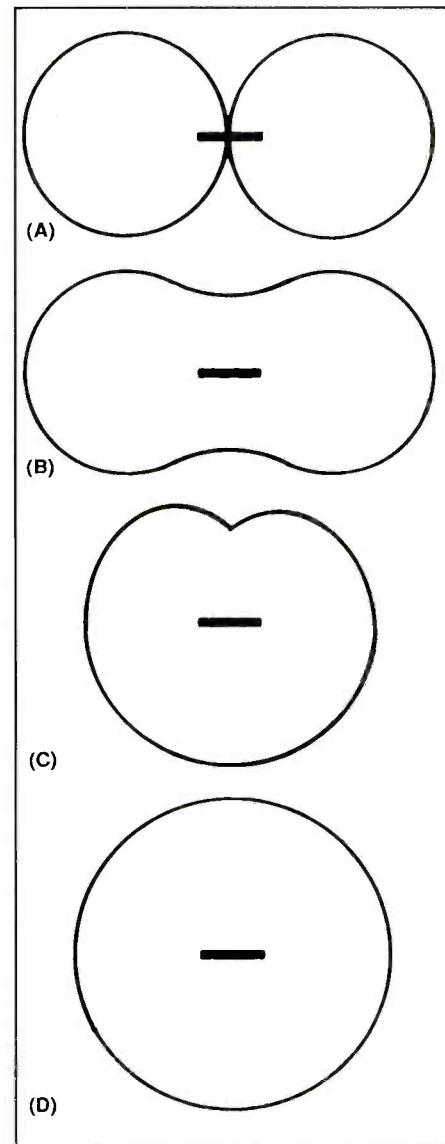


Figure 1: Loop patterns: A) Ideal "figure-8" B) loop distorted by "antenna effect" C) Cardioidal distortion D) Omnidirectional distortion

found in, of all darn places, a store that sells doll house supplies and kits. It seems that the doll house builders of the world simulate copper roofing with 36 gauge (real thin!) copper sheets. These sheets are also used by artists who tool it to press images into the copper surface. In fact, the particular form used by me is called 36 ga. tooling copper. It comes in 12" X 36" sheets, and can be bought at most hobby shops (or be special ordered,

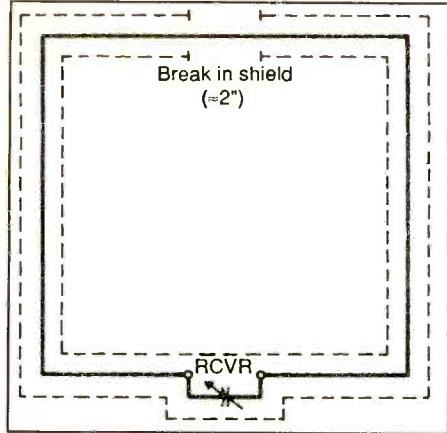


Figure 2: Shows the proper way to shield a loop antenna.

as was true in my own case).

Another product used by the doll houses is a thinner gauge of copper. This material is foil, and is backed by a non-metallic surface that facilitates gluing to surfaces (such as the wooden slats used to make the loop antenna).

Either form of copper can be fashioned as in Fig. 3. In the case of Fig. 3A, the loop conductors consist of either parallel single conductors would continuously close together, or computer "ribbon cable." A piece of copper foil that is wider than the wire by little more than two times is needed. The wire is placed on the copper about one-half inch from

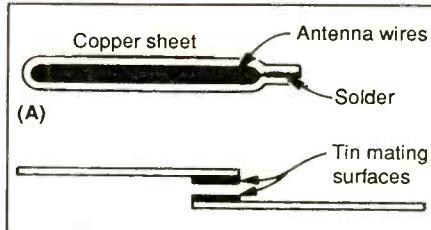


Figure 3: The sweat soldering method to shield the loop antenna a) the ends of the copper wire are heated together b) two copper wires are heated and joined together.

one edge. The remainder of the copper is then folded back over the wire and soldered in place.

The soldering skill needed is called sweat soldering (see Fig. 3B). Regardless of whether the soldering is done on the edges (as in Fig. 3A), or to join two pieces of copper to complete the shield, the technique is the same. First, tin the edges of the copper along the surfaces that are to be mated together. Bring the two pieces together and heat the joint with a soldering iron (I had no difficulty with a 50-watt pencil iron, but a larger iron may be needed in some cases). Finally, draw a thin bead of solder along the joint "just to be sure."

Loop antennas have some remarkable properties that are made even better when the loop is shielded. But no antenna ever worked as well as one invented by editor Tom Kneitel. If you get the chance, ask Uncle Tom to tell you about

the infamous Vampire Bat antenna...a truly remarkable design that works as well on the wall of your room as it does on the top of a 100-foot tower!

Designing Loop Antennas

Loop antenna inductance is not easy to calculate. If you look up the equations in the various handbooks you will find they're enough to snap your mind clean out of its socket. An executable BASIC program is available that will calculate the inductance of the loop (you set the size), and tells you the capacitance needed to resonate the loop to a frequency that you select. It's priced at \$20, and can be obtained from me at P.O. Box 1099, Falls Church, VA 22041. The program will come along with the other antenna calculations as well. It's call Antlers.

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THE EXCITING WORLD OF RADIOTELETYPE MONITORING

NAM, the U.S. naval air station at Norfolk, VA, ceased radiofax broadcasts on 8080.0 kHz last May, and WOO, Ocean Gate Radio, NJ, ended a 6-year-long RTTY experiment on 8050.0 kHz in August. POP'COMM has learned.

Until last May, NAM had used 8080.0 kHz to rebroadcast the radiofax transmissions of GXH, the U.S. Navy facility at Thurso, Scotland. The Thurso base was closed that month in the wake of the collapse of the Soviet Union and as part of extensive budget cuts by the Pentagon. NAM remains on call on 8080.0 kHz via COMMSPOT, according to Petty Officer Robert Tyo at Naval Eastern Oceanography Center (NAVEASTOCEANCEN), Norfolk, VA.

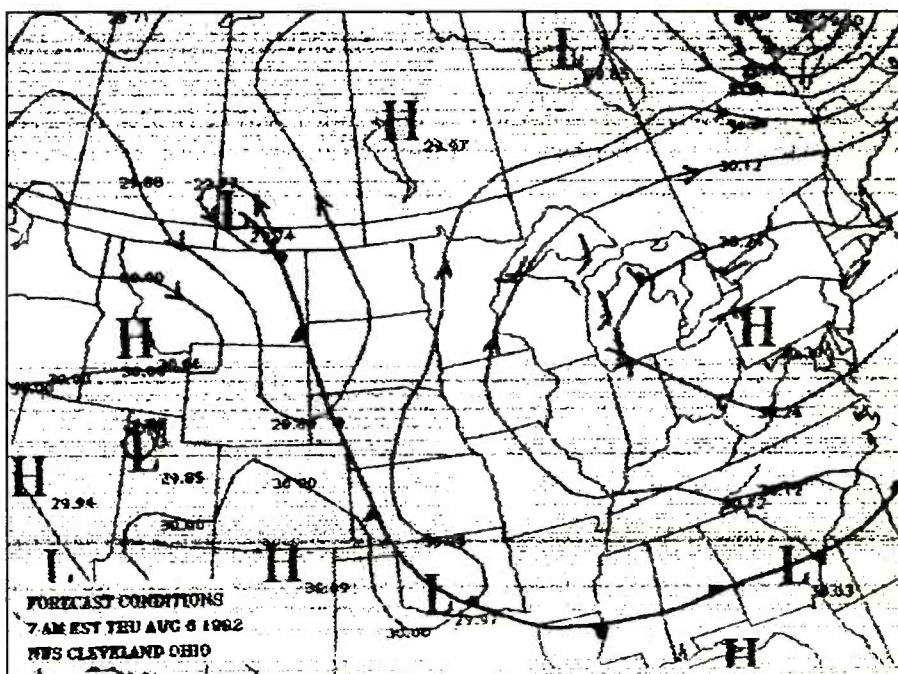
All of NAM's radiofax operations will be switched to satellite sometime during 1994 or 1995. The Navy's radiofax stations in other parts of the world, including Hawaii and Guam, also may be transferred to satellite at the same time, Tyo said.

WOO had been using 8050.0 kHz as an experimental RTTY channel since 1986 to determine how well the station could be heard. When the testing period ended in mid-August, WOO moved to channel 405 on 4212.5 kHz; channel 629 on 6328.0 kHz; channel 834 on 8433.0 kHz; and channel 1307 on 12632.0 kHz, according to WOO Communications Technician Steve Rosenfeld.

By the end of this year, WOO expects to have full duplex SITOR-A Telex service on its RTTY channels. At present, WOO runs automated continuous RTTY traffic lists. RTTY weather forecasts are at 20 minutes past the even UTC hours, after the traffic list. At 20 minutes past the odd UTC hours, WOO sends AT&T high seas frequency lists and other information.

Four more frequencies for radiotex service will be in operation once WOO gets all its equipment and antennas set up, Rosenfeld said. Those channels and frequencies are channel 1727 on 16869.5 kHz; channel 1822 on 19691.5 kHz, sharing the frequency with WLO, Mobile Radio, AL, which is presently using this channel; channel 2301 on 22426.5 kHz; and channel 2519 on 26110.0 kHz.

WOO is licensed for radiofax operations on four frequencies, 4500.0, 4800.0, 7750.0, and 8050.0 kHz, but they currently are not in use. Rosenfeld said there are no immediate plans for radiofax broadcasts. He also says that sister station KMI, Dixon Radio, CA, is



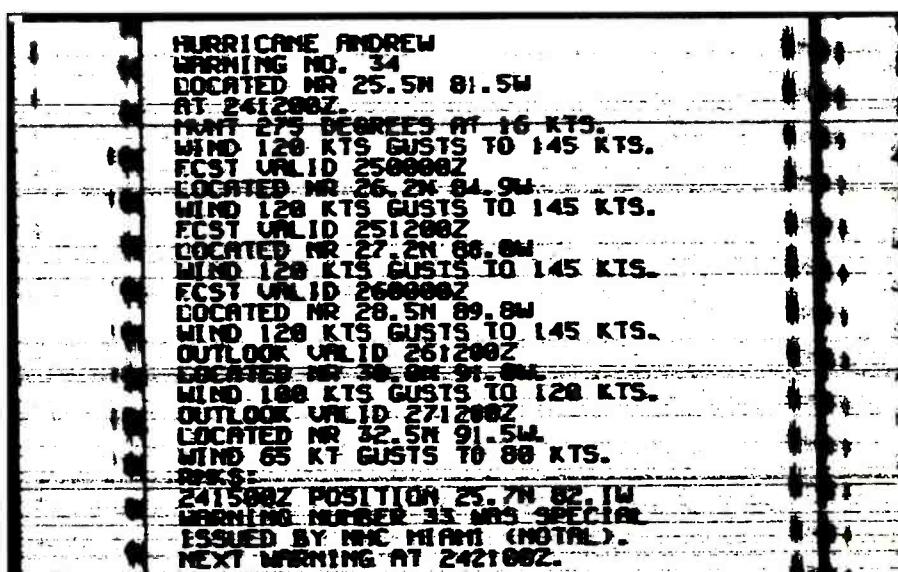
Weatherfax chart sent by WLC, Rogers City Radio, MI, on Aug. 5, 1992 at 1742 UTC, on 5900.5 kHz, 120/576. (From Robert Margolis)

FCC licensed for experimental radiofax transmissions, but he wasn't sure if another sister station, WOM, Fort Lauderdale Radio, FL, has such a license.

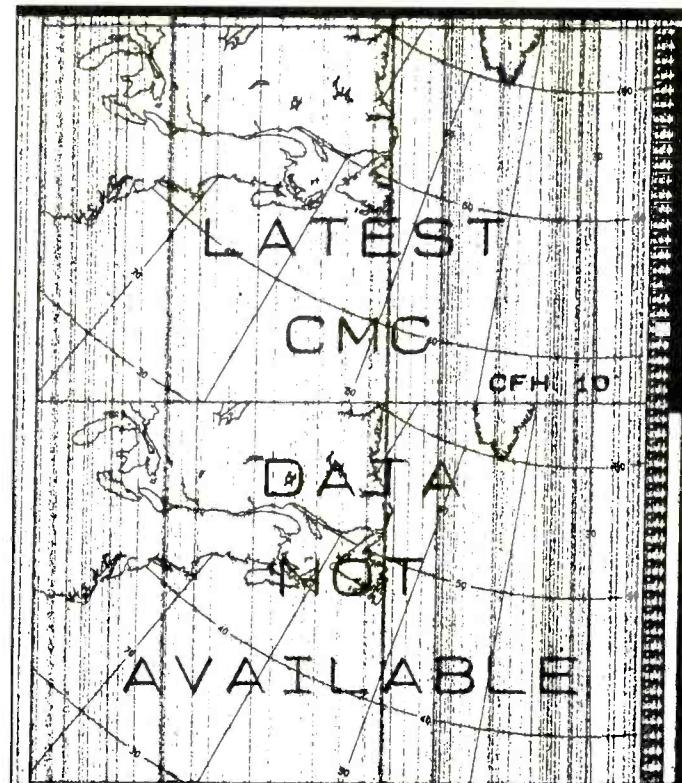
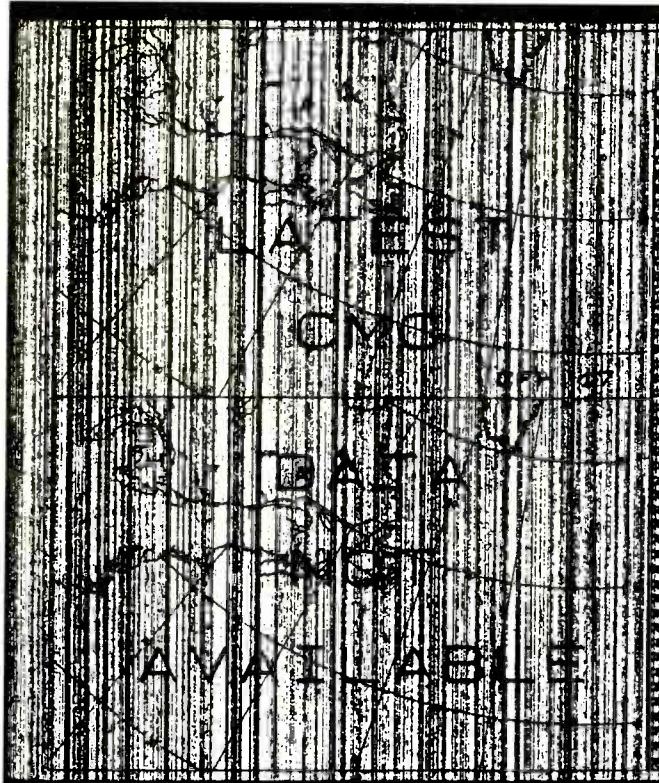
By the way, some utility guidebooks list WOM as being Miami Radio, FL, or Pennsuco Radio, FL, but Rosenfeld and

the station engineers work in Fort Lauderdale, which is the location listed in AT&T's house directory.

WOM's marine radio services were severely disrupted by Hurricane Andrew last August. Telex service was knocked off the air and remained silent well into



Hurricane Andrew was over Southern Florida when NAM, U.S. Navy, Norfolk, VA, issued this radiofax warning on Aug. 24, 1992 at 1544 UTC. (From Robert Margolis)



Two unavailability charts from CFH, Canadian Forces Meteo Center, Halifax, NS. The chart on the left (CFH 17) was sent at 2000 UTC on Sept. 9, 1992. Five hours earlier, a major geomagnetic storm occurred. The geomagnetic storm caused the bad streaking on the chart. The chart on the right (CFH 10) was sent at 1424 UTC on Sept. 12, 1992. Atmospheric conditions were somewhat better at this time. (Charts from Robert Margolis)

September. Single sideband voice comms were also severely affected by the Category 4 storm.

All the electrical power to WOM's transmitter site in Pennsuco, FL, was knocked out. Bill Hald, communications technician for WOM, said that when the power failed, the station went to turbo diesel generators to provide electrical power. Those generators, however, went "kaput," he said, and another generator had to be brought to the site. All 28 of WOM's transmitters were put out of commission by the force of the hurricane's winds, affecting all of the station's services.

WOM returned to limited service, but only for voice comms, within three days after the hurricane hit southern Florida. The station's main objective at the time was to fully restore voice comms with ships. Restoration of Telex traffic was not considered a high priority because it consisted only of traffic lists and weather forecasts, Hald said. Nine of the 28 transmitters were back in use as this column was being written, but Hald said he did not know when service would be fully restored. The nine omni and directional antennas each put out 10,000 watts of power, he added.

The main station facility in Fort Lauderdale "did not get severely hit" by the hurricane, Hald said, adding that most of the damage suffered there was

caused by falling trees.

The eye of the hurricane went over Gould, FL, where WOM has a microwave tower. The tower was destroyed, Hald said.

WOM also had an underwater telephone cable from Southern Florida to Cuba, and it was severed by the hurricane. In the aftermath of the storm, WOM tried to find an alternate route for telephone service to Cuba. It tried rerouting calls through Spain and two other countries, Hald said, but the Cuban government wouldn't allow the calls to enter the island. Hald claimed there was an argument over which country was to pay for replacing the underwater cable, with Cuba insisting that it wasn't going to pay even one peso. A decision was then made to not replace the cable, Hald said.

The Cuban Embassy in Beijing, China, was monitored with encryption after ZZZZZ on Sept. 2 at 2329 UTC, on 16333.0 kHz, at 425/75R. After the encryption, an ident was given in a message listing the amount of cable traffic sent on Aug. 24. The embassy's callsign, CLP19, which was mentioned in the message, is not listed in the standard frequency guides. You may want to jot it down for future reference.

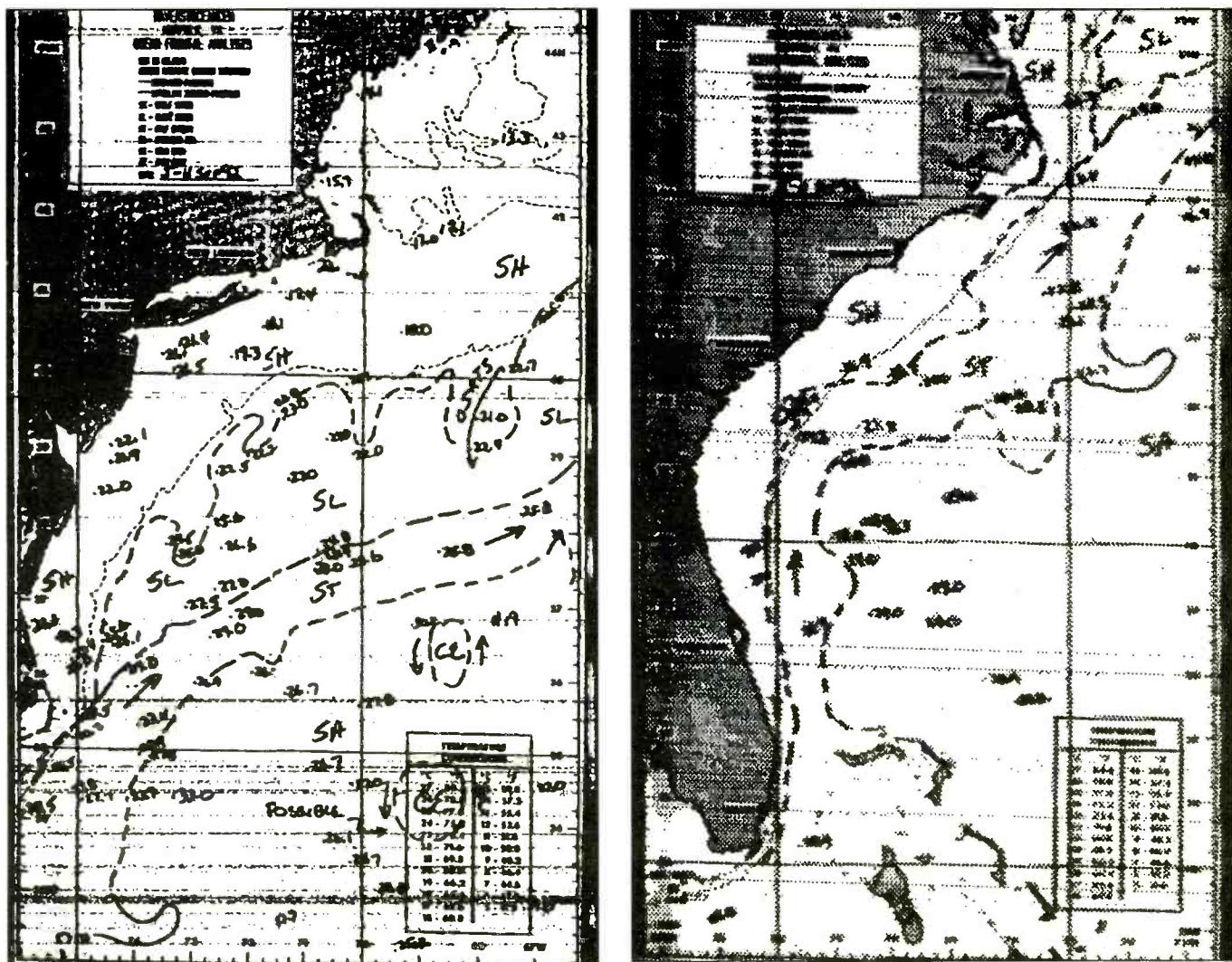
KPH, San Francisco Radio, California, runs a labor union press broadcast on Sundays after the 0400 UTC FEC traffic list. The header to the

first of two news broadcasts reads, "ARA free press...the weekly union newspaper of the sea, is prepared by the American Radio Association for all our shipmates..." The second broadcast begins with, "ARA Pro-Coalition press, a weekly report prepared by the American Radio Association/Pro-Coalition for all radio officers and our shipmates. Please post on bulletin boards." The Seattle, Washington-based Pro-Coalition ends the news broadcast in a sort of folksy manner, "Come back here next week—same time, same freqs—bon voyage..."

A packet radio BBS net in Havana, Cuba, was heard for several days around Labor Day last September on 14432.5 kHz. "Pepe" and "Tito" were chattering in Spanish at around 1327 UTC when I tuned in during the holiday.

"Someone told me that you're going to have breakfast next Saturday at my house and say, look, you are a glutton," Tito said, adding that Cuban President Fidel Castro was going to make a speech on Radio Havana, Cuba, that Saturday, with a repeat of the speech on Sunday.

Pepe said he was going to Tito's house to hear the speech because the electricity was shut off at his house. Pepe also said he was wearing his wife's eyeglasses which made him see better. Banter such as this was sent back and forth for three days. No official-looking messages was seen until four days later.



During naval exercises held on Sept. 11, 1992, NAM, U.S. Navy Norfolk, VA, sent two special weatherfaxes, one at 1530 UTC (left), the other at 1545 UTC (right). A Wavecom W-4010 decoder was used to obtain the left hand chart, and an M-800 fax converter, using the grey-scale format, was used to get the right hand chart. (Charts from Robert Margolis)

when a coded message using data streams was sent.

This month's puzzler involves RTTY traffic copied off of 20156.5 kHz at 1758 UTC, in the ARQ mode. Some of the words are French, but what language is the other words?

"...nakanisuaki lettre ya merestop po na bilok o oyo muasi aan apesaki mere stop lokolabatiaki ya uches..okokok lors a onoff na 23.440 osa o na phonie + 23.440 ++ kk+?)

"Okokok toleka nanu na it svp ++ okokok bn recu ars toleka nanu na phonie nayebi te soki nakoyoka bino stop question na ngai ezalaki boye stop liste oyo jules asalaki ezalaki ya ba documents recu stop alors ba documents yango bapesaki nani bbbb stop po beau re ya mr kazadi alobi azui ri stop alors bodya cfm er +"

For the past couple of years I've been recording in the RTTY Intercepts section some unidentified stations using various frequencies to send encrypted messages that are separated by RY's and the letters

string "VMGTCNJBH."

One of these reports was read by "John Doe" of England, who writes concerning the station: "Your unidentified station on 8493 in the August issue is in the U.K. and is almost certainly Royal Navy. It is one outlet of a broadcast; the freqs are 2810.9, 3434.9, 4245.9, 6434.4, 8492.9, 12739.9, and 16936.9 kHz, the shift is 200 Hz and the speed is 100 baud; and, as you say, each message begins with VMGTCNJBH.

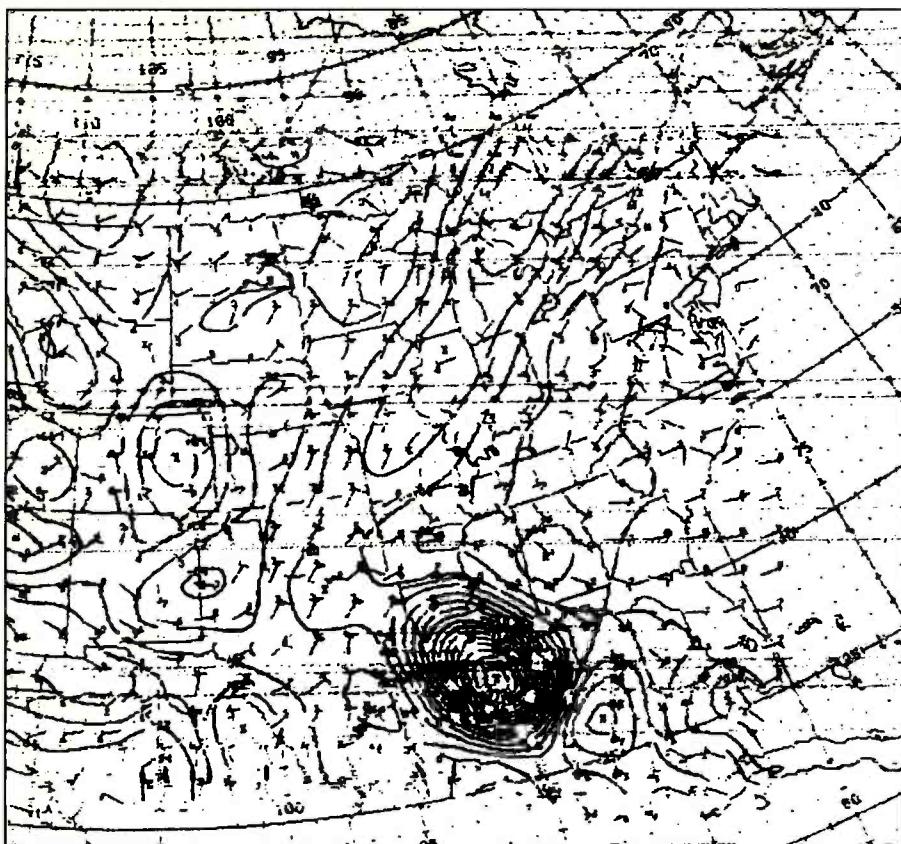
"These freqs each used to be 2.2 kHz removed from the freqs used by the Royal Navy at Northwood for their meteo FAX broadcast, but about a year ago the FAX freqs were changed, leaving the RTTY transmissions where they were. As a matter of interest, the new FAX freqs for RN, Northwood, are 2374.0, 3652.0, 4307.0, 6446.0, 8331.5, 12844.5, and 16912 kHz. (Yes, 3652.0. The 3.5 MHz amateur band is 'shared' with the military and coast stations over here.)

I have also heard messages beginning with VMGTCNJBH on 13370 (850/75) and 19350 (85/75 and 170/75 at different times) in parallel despite the different shifts, and at other times on 16270 (850/75)."

In a previous column I said that the "GYA" callsign seen in test transmissions on many frequencies had been supplanted last year by the callsign "MTO," supposedly belonging to the Royal Navy, Rosyth, Scotland. Mr. "Doe" says he believes the MTO callsign "is probably just a change of callsign, not of location," a view also expressed by Fred Hetherington of Florida to me at about the time the change was made.

"Rosyth Naval Base is either about to close or may actually have closed," Mr. "Doe" said, "and the MTO callsign has accordingly become spare and available for use by other stations." (The base closed last May, as was mentioned earlier in this column—Ed.)

"The freqs are chosen from 2892.3, 4258.3, 5427.0, 6336.3, 8672.8,



Looking like a huge thumbprint, Hurricane Andrew is vividly shown over Louisiana in this weather chart from KGWC, Offutt AFB, Elkhorn, NE. This chart was issued at 1815 UTC on Aug. 26, 1992. (From Robert Margolis)

12905.9, 14634.0, 16866.5, 16918.1, 18016.0, 19860.0, 22550.3, and 25012.3 kHz, depending on time of day and propagation conditions," says Mr. "Doe."

"The corresponding Dutch freqs with a PBB callsign are 2845.0, 3764.5, 6421.5, and 8149.0 kHz; and using the callsign PBC3, 2474.0, 4280.6, 6358.5, 8439.0, and 12840.5 kHz," he adds.

Mr. "Doe" also writes in his letter about the British military multiplex SSB/RTTY transmissions and reports on piccolo RTTY stations. What he says is quite interesting and we will continue with that portion of the letter in next month's column.

The French military may be sending messages at 50 baud with the ARQ-E3 mode, instead of at the usual 48 baud. Murray Lehman of Perth, Australia, writes about bagging four such intercepts in July, which are to be found in the RTTY Intercepts listings. His Universal M-7000 decoder refused to synchronize to ARQ-E3 at speeds of 47, 48, or 49 baud, he says, but it did at 50. He adds, however, that his decoder won't synchronize to ARQ-E3/48 signals known to be used by other stations.

It appears that you're experiencing a problem with the decoder, Murray. It could be that its internal clock needs

recalibration, according to Universal Radio, Inc., Reynoldsburg, Ohio. You will find information on making the adjustment yourself by reading "master time base adjustment" on page 81 of the owner's manual for the M-7000 version 7 decoder.

Robert Hall of the Republic of South Africa checks in this month with an inquiry about a RTTY transmission he's found on 18490.2 kHz that's got him stumped. He says that last March he was regularly logging FAX transmissions from RUZU, the Russian Antarctic base at Molodezhnaya between 1200 and 1245 UTC on 18488.4 kHz USB, which means the center frequency was around 18490.2 kHz.

During the same time period in July, however, he no longer heard a FAX signal, he said. In its place was a RTTY signal on 18490.2 kHz. He has an M-7000 RTTY decoder, and when he went through various RTTY modes to determine what kind of signal he was hearing, he said he got a perfect tune at ARQ-S4/96 "with all the correct LED's showing." His video monitor, however, showed "lots of 'XOC' and an alphanumeric pattern with no indication of origin."

He asks our readers if what he heard was an ARQ-S4 signal and if the Russians use that mode. I'll attempt to

answer his questions but if any readers have different thoughts, please tell them to us.

The files of the International Telecommunications Union lists OEC, MFA, Vienna, Austria, as being registered to use 18490.5 kHz, which is 300 Hz above Hall's RTTY logging. One RTTY mode used by Austrian diplo stations is ARQ-S5/96. I have not seen any reports that this frequency has been used by the Austrian MFA, but my conclusion is that's what Hall heard. So, Bob, instead of tuning to ARQ-S4, try ARQ-S5, and tell us your results.

On Sept. 4 and 11 at 1530 and 1545 UTC, NAVEASTOCEANCEN sent two unscheduled weather charts each day during an open period in its schedule. Petty Officer Tyo at the oceanography facility said in a telephone interview that the charts were transmitted as part of Navy fleet exercises.

Did any of you see the typo in the FAX test strip of WLO, Mobile Radio, AL, that appeared in the October column? The strip read, "U.S. Dept. of Commerece," misspelling Commerce. Tsk, tsk.

Weatherfaxes from an unidentified meteo station were on 10667.0 kHz at 1805 UTC on Aug. 11, at 120/576. One frequency guidebook lists LRN2, AP, Buenos Aires, Argentina, with radiofax operations on this frequency, but this was not the intercepted station.

Nairobi Meteo, Kenya, was on 16187.0 kHz, a new frequency for its radiofax operations, in early September. Several weather charts were received after 1900 UTC, at 120/576.

NPM, U.S. Navy, Pearl Harbor, HI, sent weatherfaxes on a new frequency, 17036.0 kHz, in mid August at 2245 UTC. NPN, U.S. Navy, Barrigada, GU, had weather charts on the new frequency of 23882.0 kHz at 1545 UTC in September.

RTTY Intercepts

441.0: Portishead R., England, w/test msgs, FEC at 1411. New service. New freq. (Ary Boender, NLD)

3607.3: GKR1. Humber R., England, w/list of new freqs for GKR1 & GLD3. + a tfc list, FEC at 1506 (Boender, NLD)

4212.5: WOO. Ocean Gate R., NJ, w/a tfc list at 0217. FEC. (Ed.)

4214.5: VAI, Canadian Coast Guard, Vancouver, BC, w/NOTAMs at 0241. FEC. (Ed.)

4462.5: WLO. Mobile R., AL, w/plaintext wx in EE at 1357. FEC. (ED.)

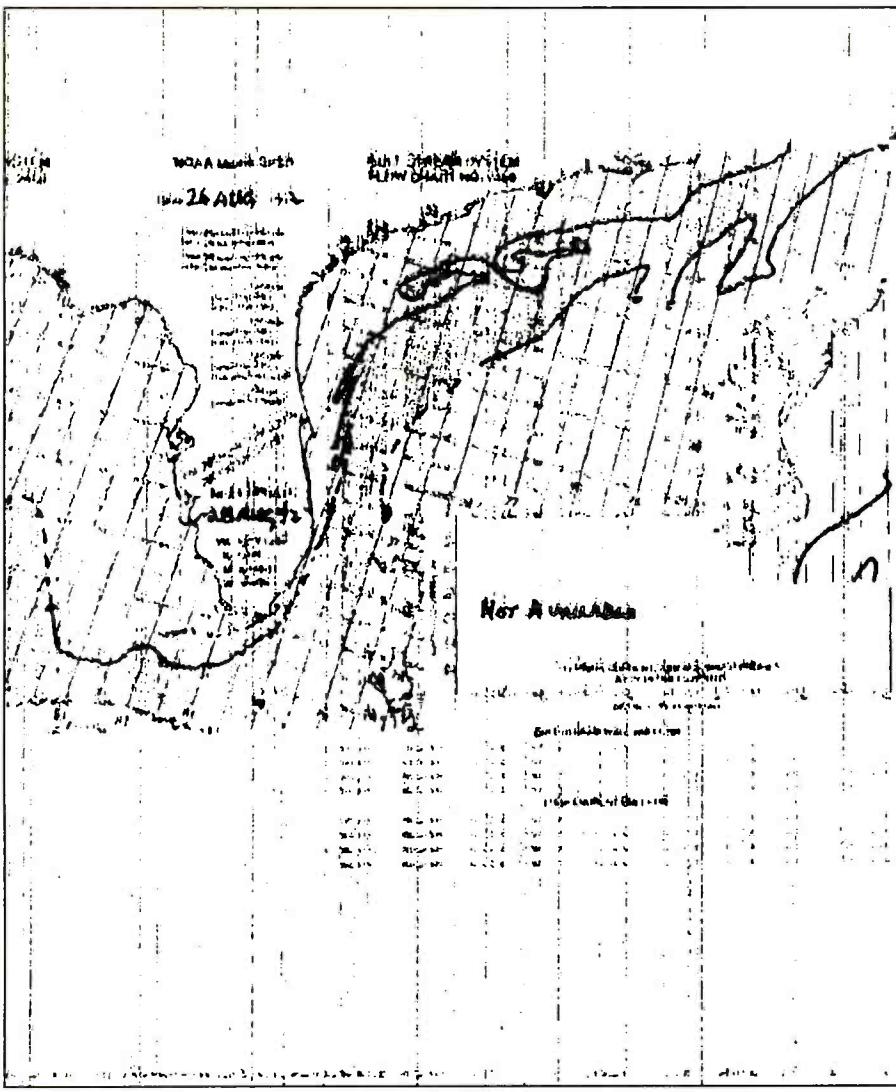
5335.0: RDM78. Tbilisi Meteo, Georgia, w/coded wx at 2240, 50 baud. (Boender, NLD)

6776.5: AFA4PC. Kelly AFB, TX. MARS sta. w/msgs to AFA4BM, packet radio at 0037. (Ed.)

7485.0: MKD. RAF. Akrotiri, Cyprus. w/RYR foxes, & 10 count at 0300, 50 baud. (Ed.)

7512.0: TZH. ASECNA, Bamako, Mali. w/coded wx, 75 baud at 0215. (Ed.)

7607.0: FUJ. French Navy, Noumea, New



Unavailability chart from WLO, Mobile Radio, AL, was issued at 0127 UTC on Aug. 28, 1992, on 6852 kHz, 120/576.

Caledonia, w/"controle de voie," at 1301. ARQ-E3/100. (Ed.)

7645.2: French Mil., Paris, France, w/msgs & 5L grps to Fort de France, Martinique, ARQ-E3/100 at 0336. (Ed.)

7692.8: Un-ID w/coded wx, 75 baud at 0035. Went to a carrier sig a few minutes later & sent nothing for a very long time afterward. 3BT3. Vacoas Meteo, Mauritania, is listed as being on 7693 kHz, but at 50 baud. Did Vacoas change speeds? (Ed.)

7715.0: RCU71, Novosibirsk Meteo, Russia, w/coded wx at 2237. 50 baud. ("Gal of Liberia," Italy)

7855.0: ROK24, Moscow Meteo, Russia, w/coded wx at 2237. 50 baud. ("Gal of Liberia," Italy)

8001.5: Colombian drug busters tfc in SS at 0020. ARQ. (Ed.)

8002.0: RFHJ, French Navy, Papeete, Tahiti, idling, ARQ-E3/96 at 0553. Circuit is to Fort de France, Martinique. (Ed.)

8045.0: Isla Rey Jorge Meteo, Antarctica, w/coded wx for Chile's Antarctic bases, ARQ (850 Hz shift) at 0338 & 0610. (Ed.)

8049.0: 9BC25, IRNA, Teheran, Iran, w/nx in EE, 50 baud at 1945. ("Gal of Liberia," Italy)

8137.5: Un-ID w/continuous RYRY, 0400-0420 + 0426-0428 + 0448 to past 0500. Was 50 baud. (Ed.)

8157.2: MKD, RAF, Akrotiri, Cyprus, w/RYI's, foxes & 10 count, 50 baud at 0058. (Ed.)

8198.5: Colombian drug busting tfc mentd "helicoptero," "clandestina," "narco," "guerilla," &

"Bolivia," ARQ at 0126. (Ed.)

8203.2: Isla Rey Jorge Meteo w/coded wx for Chile's Antarctic stas., ARQ (850 Hz shift) at 0533. (Ed.)

8215.0: Un-ID w/a bunch of different selcals, ARQ at 0154 & 0614. (Ed.)

8303.0: IOR, Puerto Belgrano Navrad, Argentina, w/5L grps, 75 baud at 0246. (Ed.)

8556.0: SAB44, Goeteborg R., Sweden, clg EACF, ARQ at 0655. (Boender, NLD)

8672.5: MTO, Royal Navy, Rosyth, Scotland, w "LF states" msg at 0201, 75 baud. (Ed.)

9046.0: DFZG, MFA, Belgrade, Yugoslavia, w/nx, 75 baud at 0655. (Boender, NLD)

9076.6: RFFA, Minodefense, Paris, France, w/tfc to RFTJD, Douala, Cameroon, ARQ-E3/50 at 2340. (Murray Lehman, AUS)

9126.2: RFTJD, French Forces, Douala, Cameroon, w/a service msg to RFFA, Paris, ARQ-E3/50 at 2350. (Lehman, AUS)

9290.0: RTQ78, Sverdlovsk Meteo, Russia, w/coded wx, 50 baud at 1840. (Boender, NLD)

9337.0: MKD, RAF, Akrotiri, Cyprus, w/RYI's, foxes & 10 count, 50 baud at 1855. (Boender, NLD)

9967.5: "LYNX" w/ID in CW + ARQ phasing sig at 0209. (Ed.)

9983.9: Un-ID at 2018 w/a good tune to ARQ-S4, but nothing seen on the screen. (Robert Hall, RSA) This is RFFIC, Paris, using ARQ E3/100—Ed.

10217.5: 9VF59, Singapore relay of PIAB, Bonn, Germany, heard at 1555. FEC-A/96. (Takashi Kuroda, Japan)

10229.5: "LYNX" w/a QYXX selcal, ARQ at

Abbreviations Used In The RTTY Column

AA	Arabic
ARQ	SITOR mode
BC	Broadcast
EE	English
FEC	Forward Error Correction mode
FF	French
foxes	"Quick brown fox . . . " test tape
GG	German
ID	Identification/led
MFA	Ministry of Foreign Affairs
nx	News
PP	Portuguese
RYRY	"RYRY . . . " test tape
SS	Spanish
tfc	Traffic
w/	With
wx	Weather

0343. (Ed.)

10384.0: Possibly 5YE11, Nairobi Meteo, Kenya, w/coded wx at 1208, 50 baud. (Ed.)

10625.0: Un-ID w/QVBV selcal, ARQ at 1200. (Ed.)

11123.5: DFL26, PIAB, Bonames, Germany, w/nx in GG, FEC-A/96 at 0217. (Ed.)

11450.0: RDD77, Moscow Meteo, Russia, w/coded wx at 0432, 50 baud. (Ed.)

11476.5: HMF52, KCNA, Pyongyang, North Korea, w/RYRY at 1749, foll by nx in EE at 1800, 50 baud. (Ed.)

11536.5: HMF49, KCNA, Bosong, North Korea, w/nx in FF at 1814, 50 baud. (Ed.)

11606.0: BZS21, Xinhua, Beijing, China, w/nx in EE at 1830, 75 baud. (Kuroda, Japan)

12228.5: Xinhua, Beijing, China, w/RYRY at 1428, foll by nx in EE at 1430, 75 baud. (Ed.)

13372.8: 5YD9, Nairobi Meteo, Kenya, w/RYRY on a new freq for them, 50 baud at 1437. Was not // 13365.7 kHz, where Nairobi was running coded wx at the same time. (Ed.)

13392.0: DFZG, MFA, Belgrade, Yugoslavia, w/nx in SC from Tanjug, Reuters, et al, FEC-A/144 at 2321. (Ed.)

13416.5: CCS, Santiago Navrad, Chile, w/RYRY & SGSG at 2343, 75 baud. (Ed.)

13438.6: DFN43, PIAB, Bonames, Germany, w/RYRY at 2052, foll by nx in GG, FEC-A/96. (Ed.)

13462.8: Un-ID w/"test," foxes, 10 count & "cmb avzzzzzz." Was 75 baud FDM at 1354. (Ed.)

13939.9: CLP65, Cuban Embassy, Managua, Nicaragua, w/BRZ BRZ ZZZZ sync pattern before encryption, 100 baud at 1512. (Ed.)

14355.0: Un-ID in Mexico w/a manually-typed administrative msg in SS at 1441, 75 baud. SAM92, Swedish Embassy, Managua, Nicaragua, w/a Telex in Swedish & 5L grps, SWED-ARQ at 1823, several days after the Mexican xmsn. (Ed.)

14359.0: SNN299, MFA, Warsaw, Poland, w/a msg in Polish, 75 baud at 1350. ("Gal of Liberia," Italy)

14445.0: Un-ID aero sta. w/aero wx data, 50 baud at 1336. (Ed.)

14498.0: SUC, Cairo Air, Egypt, w/coded wx at 1430, 50 baud. ("Gal of Liberia," Italy)

14524.0: SAM, MFA, Stockholm, Sweden, idling, SWED-ARQ at 1430. ("Gal of Liberia," Italy)

14605.7: Un-ID signing off w "all qtc 1 all qtc 1 qru qr sk sk." Was 75 baud at 1503. (Ed.)

14635.0: FUF, French Navy, Fort de France, Martinique, w/a large variety of tlc, 1530-1830. ARQ-E3/100. During this monitoring session there were 5F & 5L msgs, nx in FF, "non protege" naval msgs, death notices, wx forecasts, & job openings. What wasn't included, and should've been, were Tintin comic strips. (Ed.)

14641.7: MFA, Cairo, Egypt, w/texts in EE & AA at 1617, ARQ. (Ed.)

14646.5_3_UHN (garbled ID) wkg 08M52D, packet radio at 2100. SFI_YZ w/encryption to XAW_9 (garbled ID's) on another day at 1930, also packet. (Ed.)

14719.0: OST58, Oostende R., Belgium, w/a tlc list, FEC at 1917. (Ed.)

- 14726.5:** Un-ID w/5L msgs, 2222-2247, foll by "GB SK" s/off. 75 baud. (Ed.)
- 14817.5:** Un-ID in ARQ at 1731. Sig covered by static. (Ed.)
- 15138.8:** Un-ID French diplo w/RYRY XAGP into encryption. ARQ6-90/200 at 1619. Less than a 1/2 hr later MKK, RAF, Stanbridge, England, got on this freq. w/RYI's & foxes, FDM 50 baud. (Ed.)
- 15801.3:** Un-ID French diplo w/5L grps at 1349. ARQ6-90/200. (Ed.)
- 15834.7:** SRI, Schwarzenburg, Switzerland, w/nx in EE at 1703, 50 baud. (Ed.)
- 16005.3:** MFA, Sofia, Bulgaria, w/crypto after DDDDD + Z- & Q-codes, 75 baud at 1230. (Ed.)
- 16014.2:** RFVI, French Navy, Le Port, Reunion, w/"controle de voie." ARQ-E3/100 at 1647. (Ed.)
- 16015.3:** MFA, Sofia, w/op msgs, 75 baud at 1239. (Ed.)
- 16025.3:** Bulgarian Embassy, Berne, Switzerland, w/SDV ID + RYRY at 1244, foll by a msg in Bulgarian at 1245, 75 baud. (Ed.)
- 16073.5:** Un-ID Swedish diplo w/text in Swedish, SWED-ARQ, 1235-1255. (Ed.)
- 16092.0:** LOL, Buenos Aires Navrad, Argentina, w/RYRY & SGSG to HDN, 75 baud at 1155. (Ed.)
- 16103.8:** Un-ID in Managua, Nicaragua, w/a msg in EE re "development cooperation." Was ARQ at 1341. (Ed.)
- 16183.0:** Un-ID w-coded wx at 2248, 50 baud. Had a spur on 16192.0. (Ed.)
- 16211.7:** Un-ID Egyptian diplo w/a msg in AA, ARQ at 1822. (Ed.)
- 16312.5:** Un-ID w/encryption. ARQ-E/288, 1807-1817. (Ed.)
- 16324.7:** RFTJD, French Forces, Libreville, Gabon, w/"controle de voie," ARQ-E3/48 at 1952. (Ed.)
- 16339.3:** Possibly MFA, Nicosia, Cyprus, w/op msgs. ARQ-E/96 at 1205. (Ed.)
- 16347.2:** Un-ID idling in ARQ mode at 1430. (Ed.)
- 16351.0:** CLP4, Cuban Embassy, Bissau, Guinea Bissau, w/5F grps to CLP1, 50 baud at 1935. (Ed.)
- 16817.5:** KPH, San Francisco R., CA, w/a Telex, ARQ at 0900. (Kuroda, Japan)
- 16821.0:** VPS82, Victoria Harbor R., Hong Kong, w/a Telex at 0442, ARQ. (Kuroda, Japan)
- 16829.0:** XSG, Shanghai R., China, w/a Telex at 0917, ARQ. (Kuroda, Japan)
- 16840.0:** GKQ6, Portishead R., England, w/a Telex, ARQ at 0908. (Kuroda, Japan)
- 17197.5:** LOR, Puerto Belgrano Navrad, Argentina, w/5L msgs at 0106, 100 baud. (Ed.)
- 17431.8:** DFZG, MFA, Belgrade, Yugoslavia, w/Tanjug nx in SC, 75 baud at 1416. (Ed.)
- 17443.0:** BZG48, Xinhua, Beijing, China, w/nx in FF at 1147, 50 baud. (Ed.)
- 17454.7:** Un-ID French diplo w/5L grps, ARQ6-90/200 at 1418. (Ed.)
- 17470.0:** BZS28, Xinhua, Beijing, w/nx in EE, 75 baud at 1150. (Ed.)
- 17592.5:** 5KM, Bogota Navrad, Colombia, wkg CXR, 75 baud at 1526. (Ed.)
- 18044.9:** CLP67, Cuban Embassy, Baghdad, Iraq, w/crypto after ZZZZZ, 50 baud at 1749. (Ed.)
- 18051.7:** Egyptian Embassy, Kinshasa, Zaire, w/tfc in AA to Cairo at 1423, ARQ. (Ed.)
- 18279.0:** HBD20, MFA, Berne, Switzerland, w/5L grps, ARQ at 1224 & 1407. (Ed.)
- 18320.0:** OMZ, MFA, Prague, Czechoslovakia, w/telegrams in Czech, 100 baud at 1253. (Ed.)
- 18416.5:** MFA, Jakarta, Indonesia, w/5L msgs, 50 baud at 1224. (Ed.)
- 18428.0:** Un-ID w/a garbled s/off. "73 qro fm the best amo! bibip arajai." ARQ6-90/200 at 1313. (Ed.)
- 18455.0:** MKK, RAF, Stanbridge, England, w/RYI's, foxes, and 10 count, 50 baud FDM at 1540. (Ed.)
- 18496.1:** CNM80, MAP, Rabat, Morocco, w/nx in AA at 1300, 50 baud. (Ed.)
- 18597.5:** Spanish Embassy, London, England, w/crypto for "EAF," ARQ at 1324. (Hall, RSA)
- 18872.5:** BZR68, Xinhua, Beijing, China, using ship RTTY channel 5 for nx in EE. Was 75 baud at
1318. (Ed.)
- 18986.7:** Un-ID w/a s/off msg possibly in AA, ARQ at 1448. (Ed.)
- 19216.8:** Un-ID using ARQ-S4/96 at 1205. Garbage on screen. Letters "WZE" prominent. (Hall, RSA) This is FUF, French Navy, Fort de France, Martinique, using ARQ-E3/96—Ed.
- 19334.0:** TAD, MFA, Ankara, Turkey, w/text in Turk to Bonn, Germany, at 1500, FEC-A/144. (Ed.)
- 19386.7:** FUV, French Navy, Djibouti, w/"controle de voie," ARQ-M2/200 at 1711 on channel B, and at 1716 on channel A. (Ed.)
- 19529.5:** JMG5, Tokyo Meteo, Japan, w/coded wx, 50 baud at 1540. (Hall, RSA)
- 19592.0:** IED21, ANSA, Rome, Italy, w/nx in II at 1117, 50 baud. (Hall, RSA)
- 19649.2:** RCF, MFA, Kupavna, Russia, w/5L grps, 75 baud at 1530. (Hall, RSA)
- 19689.5:** KMI, Dixon R., CA, w/a tfc list, FEC at 1534. (Ed.)
- 20004.7:** CLP67, Cuban Embassy, Baghdad, Iraq, w/crypto after ZZZZZ foll by "noticias del dia," 75 baud at 1445. Many of the "noticias" dealt w/the "zona de exclusion en el sur de Iraq," which the U.S., Britain, and France imposed to protect the Iraqi Shiite population from Iraq's military a/c. (Ed.)
- 20006.7:** Un-ID w/an ARQ sig at 1330 that was too weak to decode. (Ed.)
- 20011.7:** MFA, Islamabad, Pakistan, putting out a weak ARQ sig at 1426. (Ed.)
- 20029.0:** MFA, Oslo, Norway, w/nx in Norwegian, ARQ, 1335-1345. (Ed.)
- 20076.0:** Un-ID goes QRT at tune-in, FEC at 1357. (Ed.)
- 20094.0:** MFA, Warsaw, Poland, w/tfc in Polish, POL-ARQ at 1317. (Ed.)
- 20095.2:** Un-ID French diplo w/ "QRO tks /end" s/off. ARQ6-90/200 at 1430. (Ed.)
- 20101.7:** MFA, Cairo, Egypt, w/tfc to Lagos, Nigeria, ARQ at 1543. (Ed.)
- 20106.8:** AAA0USA, U.S. Army MARS, Fort Lewis, WA, relaying MARSgrams from troops in South Korea to AAA3USA, packet radio at 1450. (Ed.)
- 20119.7:** MFA, Cairo, Egypt, w/tfc in AA, ARQ at 1327. (Ed.)
- 20130.0:** DFZG, MFA, Belgrade, Yugoslavia, w/a circular in EE + op msgs, 75 baud at 1254. (Ed.)
- 20132.0:** DFZG, MFA, Belgrade, w/RYRY at 1416, foll by crypto after XYXYXY, 75 baud. (Ed.)
- 20134.0:** Yugoslav Embabssy, Havana, Cuba, w/text in SC, 75 baud at 1630. (Ed.)
- 20135.8:** Un-ID Yugoslav diplo w/crypto after VCVVC, 75 baud at 1550. (Ed.)
- 20155.0:** Thai Embassy, Bonn, Germany, w/nx in EE re Thailand at 1358, 75 baud. (Ed.)
- 20156.5:** Un-ID w/VYQX selcal, ARQ at 1452. (Ed.)
- 20157.3:** 5KM, Bogota Navrad, Colombia, w/tfc to CCS at 1650, 75 baud. (Ed.)
- 20170.0:** Un-ID w/ARQ idling, 1526-1529. (Ed.)
- 20179.7:** RFFA, Mindefense, Paris, France, in ARQ-E3/100 mode at 2220. (Kuroda, Japan)
- 20181.7:** Un-ID Egyptian diplo w/s/off in AA, ARQ at 1907. (Ed.)
- 20204.0:** YZJ, Tanjug, Belgrade, Yugoslavia, w/nx in EE & FF pooled from several nx agencies, 50 baud at 1326. (Ed.)
- 20238.8:** PWN33, Natal Navrad, Brazil, w/RYRY & SGSG foll by a Tango Tango Tango msg in PP to PWX. Was 75 baud at 1521. PWX replies on same freq. (Ed.)
- 20247.0:** Un-ID w/encryption, ARQ-E/288 at 1536. (Ed.)
- 20286.5:** SOV228, PAP, Warsaw, Poland, w/nx in Polish, FEC at 1759. (Ed.)
- 20402.2:** YWM1, Maracaibo Navrad, Venezuela, w/RYRY, SGSG, 10 count & "test el agil zorro..." 75 baud at 1444. (Ed.)
- 20412.0:** HDN, Quito Navrad, Ecuador, w/RYRY, SGSG & 10 count, 75 baud at 1603. (Ed.)
- 20447.7:** CLP55, Cuban Embassy, Georgetown, Guyana, w/nx in SS at 1543, 50 baud. (Ed.)
- 20470.2:** CXR, Montevideo Navrad, Uruguay, w/RYRY, SGSG, foxes, & 10 count to HDN at 1550, and to OBC at 1557, 75 baud. (Ed.)
- 20473.3:** CXR w/RYRY, SGSG, etc. to CPF2 at 1407, 75 baud. (Ed.)
- 20494.8:** CXR, Montevideo Navrad, Uruguay, w/IANTN tfc in SS to YWM, 75 baud at 1945. Was // 20518.8 kHz. (Ed.)
- 20560.0:** Jana, Tripoli, Libya, w/nx in EE at 1605, 50 baud. (Ed.)
- 20590.2:** HBD20, MFA, Berne, Switzerland, w/5L grps, ARQ at 1415. (Ed.)
- 20596.0:** HBD20, MFA, Berne, w/tfc/FF & GG, ARQ at 1520. (Ed.)
- 20609.5:** HBD20, MFA, Berne, w/5L grps at various times between 1430 and 1830 on different days, ARQ. (Ed.)
- 20612.0:** Un-ID French diplo signing off w/qsa 2 qsa 2 to 4 bzb ar 73. Was ARQ6-90/200 at 1522. (Ed.)
- 20622.0:** 5KM, Bogota Navrad, Colombia, w/RYRY & SGSG, 75 baud at 1855. (Ed.)
- 20716.4:** RFFA, Mindefense, Paris, France, w/tfc to RFTJD, Douala, Cameroon, ARQ-E3/50 at 1220. (Lehman, AUS)
- 20734.0:** 4UZ, UNHCR, Geneva, Switzerland, w/tfc for several AFI stas., ARQ at 1230. (Hall, RSA)
- 20791.4:** PWX33, Brasilia Navrad, Brazil, w/RYRY & SGSG to RPEN, 75 baud at 0120. (Ed.)
- 20813.6:** RFTJD, French Forces, Douala, Cameroon, w/a service msg to RFFA, Paris, ARQ-E3/50 at 0915. (Lehman, AUS)
- 20880.0:** CLP1, MFA, Havana, Cuba, w/crypto after ZZZZZ at 1517, 75 baud. (Ed.)
- 20966.2:** Un-ID idling in ARQ mode, 1452-1515, switches to FEC & sends "PK X-2-2-2 / 22 22 22 / 15H16M08S." Returns to ARQ at 1519, idles, and goes back to FEC at 1530, but w/no tfc. Goes QRT at 1531. (Ed.)
- 21831.5:** Un-ID Spanish diplo w/encryption, ARQ at 1508. (Ed.)
- 21859.0:** DFZG, MFA, Belgrade, Yugoslavia, w/nx in SC at 1446, 75 baud. (Ed.)
- 21862.0:** Un-ID Yugoslav diplo w/crypto after MIMI, 75 baud, 1644-1657. (Ed.)
- 22255.0:** UMV, Murmansk R., Russia, w/a msg in RR, 50 baud at 1350. ("Gal of Liberia," Italy)
- 22831.9:** Un-ID w/nx in FF, 100 baud at 1108. ("Gal of Liberia," Italy)
- 22971.0:** Un-ID w/nx in FF at 1100, 100 baud. ("Gal of Liberia," Italy)
- 23370.0:** HZN50, Jeddah Meteo, Saudi Arabia, w/coded wx, 100 baud at 1323. (Boender, NLD)
- 24851.7:** FUF, French Navy, Fort de France, Martinique, w/msgs at 1620, ARQ-E3/192. (Ed.)
- 25127.0:** UJY, Kaliningrad R., Russia, w/a msg in RR, 50 baud at 1345. ("Gal of Liberia," Italy)

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FCC ACTIONS AFFECTING COMMUNICATIONS

Fined \$2,000 For Unlicensed Radio Operation On Aviation Frequency

An Oakdale, NY radio operator was fined \$2,000 for operating on a frequency reserved for aviation safety communications, the FCC said.

On September 15, 1992, the New York Field Office received a report from the Federal Communications Commission's national monitoring network, of unauthorized transmissions on 2990.1 kHz in the aeronautical radio service. This frequency is a communications link between control and situations and passenger aircraft on transatlantic flights.

At approximately 9:00 pm, Staff Engineer Judah Mansbach, using mobile automatic radio direction finding equipment, determined that the unauthorized signal was emanating from a private house.

The engineer inspected the unauthorized radio station and interviewed Jamie and Frank Green. The Greens admitted to the unauthorized operation. Mrs. Green used the radio transmitter to communicate with her husband, who is employed on board a commercial fishing vessel. A review of the Commissions' records revealed that no authorization was issued to Frank and/or Jamie Green to operate a radio transmitter from their home.

Unlicensed radio operation is a violation of Section 301 of the Communications Act of 1934, as amended. Unlicensed radio operators may be subject to fines of up to \$100,000 and/or one year in prison.

The New York office of the FCC is responsible for managing the radio and television spectrum for the New York Metropolitan Area. "We hope his action sends a clear message. Unlicensed radio operators cannot disregard Federal Authority," said Alexander Zimny, Engineer in Charge of the FCC's New York Office.

San Diego Computer Retailer Fined

The Federal Communications Commission's San Diego Office issued a \$7,000 fine to a computer retailer, Advanced Technology Systems, for marketing uncertified computers.

FCC rules require all computers to be approved before being marketed. Such approval assures that computers meet radio frequency emission limitations that

prevent radio frequency interference to users of the radio spectrum. FCC regulations categorize computers as being either a Class A or Class B device. Class A computers are used in a commercial environment and are advertised to commercial users through trade magazines, etc. They are required to be "verified." Class B computers or personal computers (PCs) are generally used in the home, commonly sold in retail stores, and are required to be "certified."

Consumers contemplating the purchase of a PC for use in a residential environment are cautioned to make sure that it has been certified by the FCC. An FCC identification number is required to be affixed on the computer's case. If the label is missing, there is a strong possibility that the equipment may not be certified and the computer is being unlawfully offered for sale.

The Marketing of unlawful radio frequency devices, including computer equipment requiring FCC approval, is a violation of Section 302 of the Communications Act and Section 2.803 of the Commission's Rules. Sanctions may include administrative fines of up to \$10,000 for each violation or for each day of a continuing violation up to a total of \$75,000, and criminal penalties, upon conviction, of a fine of up to \$100,000 and imprisonment for up to one year.

FCC Proposes To Expand Coordination Of The 800 MHz General Category Channels

The Commission is asking for comment on whether applicants for conventional Specialized Mobile Radio (SMR) systems licensed on General Category frequencies must continue to be restricted to the services of only one frequency coordinator, or whether they should be allowed to choose from among the three certified coordinators for the frequencies above 800 MHz.

In 1986, the Commission certified SIRSA, NABER and APCO as the frequency coordinators for the 150 conventional 800 MHz frequencies. Prior to that, the Commission had recognized only NABER as the sole coordinator for conventional SMR base stations on these 150 conventional channels.

In 1990, the Commission made these 150 channels, which until then had been set aside exclusively for conventional use, available to all eligible users for conventional or trunked use as "General

Category" channels. However, the Commission indicated that applicants for conventional SMR systems in the General Category must continue to obtain coordination from NABER. The Commission also decided that SMR licensees seeking to add conventional General Category channels to existing trunked systems or to create trunked SMR systems by consolidating conventional systems would be allowed to seek frequency coordination from any of the three certified coordinators.

The Commission agreed with SIRSA, who initiated this proceeding, that there was no apparent justification for the distinction in coordination procedures between conventional and trunked SMR systems licensed on General Category channels. The Commission expressed concern that applicants requesting General Category channels for conventional SMR operations may be at a competitive disadvantage to applicants seeking these same channels for expansion or consolidation of trunked SMR systems because the SMR applicant for a conventional system does not have the ability to choose the coordination service that best meets its requirements.

Moreover, the Commission found no apparent benefit to be gained by separate treatment of applicants based on type of systems employed or proposed. NABER, APCO and SIRSA all currently maintained complete up-to-date data bases for General Category channels, and therefore, all possess the capability to coordinate applications for conventional SMR's.

Proposed Privatizing Administration of Exams For Commercial Radio Operator Licenses

The FCC proposed amending the Commercial Radio Operator Rules to privatize the examination of applicants for commercial radio licenses. It has also proposed clarifying Part 13 rules regarding who may sign certifying statements.

Because of budgetary constraints, the Commission said that it can presently offer commercial radio operator examinations only twice each year at 25 local offices. Because major population areas do not have FCC offices, many applicants must travel great distances to sit for commercial radio operator examinations, at great expense to those applicants.

Moreover, the Commission noted that a review of the licensing process has revealed that many applicants for com-

mercial radio operator licenses have not been required by the Commission to have a license for the work they intended to perform. Available information has also indicated that many employers impose a license requirement as a condition of employment because to them, it is an indicator of job competency.

Currently, the Commission has seven types of commercial radio licenses and two types of endorsements. A new class of license, the Global Maritime Distress and Safety System Radio Operator's License (GMDSS), has recently been created, and is expected to be issued beginning in September 1992. The GMDSS exams are expected to add resource burdens to the Commission's license issuance process.

In May 1990, the Commission began charging a fee for processing almost all commercial radio operator license applications. The \$35.00 fee was established by Congress. Although the fee amount was set at the minimum necessary to reflect current Commission costs for administering the examinations, the establishment of the fee does not permit the Commission to increase frequency of examinations or their site availability.

The Commission also proposed limiting the category of officials signing a certification statement for the purposes of granting an endorsement under Section 13.21(b) of the Rules. This change as

well as other minor changes such as those addressing license posting requirements, are primarily administrative processing clarifications.

Use Of Pagers By Organ Transplant Candidates Authorized

The Commission amended its rules to clarify that participation in the Telocator LifePage program by private carrier paging (PCP) entities is permissible.

The LifePage program, begun in 1983, offers pagers, usually free of charge, to patients who are active candidates for organ transplants. The pagers alert them when suitable organs become available. Time is of the essence in these situations because, if the prospective organ recipient cannot be in surgery within hours after an organ has been located, it goes to the next patient on the waiting list.

The LifePage program now has participating carriers in all 50 states and Puerto Rico, with companion programs in the United Kingdom and Canada. The program has provided pagers to over 12,000 individuals across the United States and is administered by the Telocator Science and Education Foundation.

Telocator sought clarification of the Commission's rules as to whether partici-

pation in the LifePage program by PCP entities would be permitted. Although potential organ recipients are not clearly specified as being eligible to receive PCP service, the Commission said that this program was clearly in the public interest and should be free from any uncertainty caused by possible regulatory restrictions on eligibility. The Commission amended its rules accordingly.

New Rules Adopted For Private Land Mobile Licensees

The FCC eliminated or modified various rules that impose unnecessary burdens on private land mobile licensees. This action is consistent with the Commission's regulatory reform initiatives.

First, the Commission eliminated the requirement that licensees of shared systems that do not individually license their end users maintain and periodically furnish detailed information about their customers. The Commission will request only the information needed to fulfill its spectrum management obligations and simultaneously enable the coordinators to meet their frequency coordination functions.

Second, the Commission modified the



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rules by reducing the frequency with which most private land mobile licensees report increases or decreases in the number of authorized paging or mobile units. The Commission believes these less burdensome procedures will yield more accurate spectrum utilization information.

Currently, FCC rules stipulate that applicants for private land mobile licenses must limit their requests for authorized mobile transmitters to the number of transmitters they expect to put into use within eight months of station authorization. Therefore, applicants must provide the Commission and coordinators with

an assessment of their initial loading levels. The Commission concluded that the most reliable procedure for ensuring that licensees inform the Commission and coordinators of changes in the number of authorized mobiles and pagers is by requiring licensees to provide such information when: 1) they request a license modification; and, 2) at license renewal. The Commission believes these procedures will both improve the spectrum management and frequency coordination processes while at the same time relieving the FCC and the private land mobile industry of unnecessary burdens.

Propose Amending Private Land Mobile Rules Concerning Slow Growth Provisions

The Commission, on its own motion, is soliciting comment on a proposal to amend the rules governing extended implementation schedules. Extended implementation schedules enable certain private land mobile licensees to receive an extended period of time for constructing and placing their systems in operation.

Specifically, the Commission proposed to: 1) extend the rule's applicability to Specialized Mobile Radio Category applicants; 2) lengthen the "slow growth" period from three to five years; 3) eliminate the fleet-size requirement for qualification for an extended implementation period; and 4) eliminate the annual reporting requirement. The Commission also proposed to clarify its policies concerning licensees that do not fully meet their system construction benchmarks and channel loading requirements.

The Commission said these proposals are designed to encourage the development of innovative and complex land mobile technologies, and to ease the regulatory burden upon the licensees of such systems.

Eliminate Separate Licensing Of End Of Specialized Mobile Radio Systems

The Commission eliminated, in most cases, the separate licensing of end users of Specialized Mobile Radio (SMR) systems.

As part of the FCC's regulatory review program, the action streamlines the Commission's procedures by eliminating unnecessary paperwork and thus improving the operating flexibility and efficiency of the SMR industry.

Specifically, the Commission's action will: 1) eliminate, with certain exceptions, separate licensing requirements imposed on end users of SMR systems; 2) authorize end users to operate under the terms and conditions of authorizations issued to SMR base station licensees; 3) require SMR licensees to assume responsibility for exercising operational control over mobile and control stations communicating over their base systems; 4) eliminate certain loading reports now required of SMR licensees and instead require loading data only in specified circumstances; 5) calculate mobile loading for trunked SMR systems on the basis of the business records of base stations licensees; and, 6) relax the requirement to modify trunked SMR system licensees.

While the Commission eliminated sep-

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erate licensing for most SMR end users, in cases where a proposed end user facility falls within the scope of the Federal Aviation Act, National Environment Policy Act, or "quiet zone" restrictions, the end user will be required to file an application and be separately licensed by the Commission before commencing construction or operation. Base station licensees will be responsible for assuring that end users that require separate licenses do not construct or operate until they have received an authorization from the Commission. If the base station licensee has any questions concerning end user compliance with the Commission's rules, they may call any FCC field office or the Private Radio Bureau.

In connection with SMR loading data filing requirements, the Commission eliminated periodic loading report requirements in favor of a requirement that loading reports be submitted only with applications for authorizations for which loading is a prerequisite. Loading data will be comprised of the average number of mobiles and control stations operating on the licensee's system on the first business day of the month for the six month period immediately preceding the filing of an application. This average will be calculated according to the licensee's own business records.

The Commission also exempted licensees of trunked SMR systems from the requirement that they modify their licenses whenever there is a change in the location or number of fixed, control or mobile transmitters.

SMR systems are private two-way land mobile stations authorized in the 806-821/851-866 MHz and 896-901/935-940 MHz bands. SMR systems are either trunked or conventional. SMR base station licensees are authorized a specific number of frequencies, generally on an exclusive basis, and are permitted to provide a wide array of mobile communications services to customers, called end users, on a commercial basis.

Rules Governing The Conduct Of Attorney Practicing Before The Commission

The FCC amended the rules governing the conduct of attorneys practicing before the Commission. The new rules provide for the temporary suspension, at the Commission's discretion and without opportunity for hearing, of any attorney subject to a final order of suspension or disbarment by any tribunal of competent authority.

The Commission's objectives was to establish a procedure that will enable it to safeguard the public and its processes from the conduct of an attorney who has

been found unfit to practice by another disciplinary tribunal.

The Commission will not consider suspension or disbarment orders by any court or federal or state agency as grounds for disbarment at the FCC. The new rules provide that only an order of a tribunal authorized to regulate the practice of law generally within its territorial boundaries, would affect eligibility to practice or cause the Commission to consider initiating disciplinary proceedings against a practitioner.

Rules To Implement The Telephone Consumer Protection Act

In accordance with the requirements of the Telephone Consumer Protection Act of 1991 (TCPA), the Commission established procedures for avoiding unwanted telephone solicitations to residences, and to regulate the use of automatic telephone dialing systems (auto dialers), prerecorded or artificial voice messages, and telephone facsimile machines.

Telemarketers are required to maintain company-specific do-not-call lists for any telephone solicitations, thus protecting residential subscribers requesting that they not be called from unwanted solicitations. Further, telemarketers may not call residences before 8:00 am or after 9:00 pm.

Under the new rules, the public is protected from automated calls which may pose a threat to health and safety, as well as from unwanted solicitations. The new rules prohibit calls using auto dialers or prerecorded messages to emergency lines, health care facilities, and calls to radio common carriers or other numbers for which the called party may be charged for the call. Further, pre-recorded calls made using an auto dialer must identify the caller, give the caller's telephone number or address, and release the called party's line within five seconds of notice to the caller that the called party has hung up.

Persons are prohibited from making calls, other than for emergency purposes or with prior consent of the called party, to residences using an artificial or prerecorded voice to deliver a message. However, where the record demonstrated that the calls do not adversely affect the privacy interests of residential subscribers, the Commission established certain exemptions to the prohibition. These exemptions are: non-commercial calls, commercial calls not transmitting an unsolicited advertisement, calls from parties with whom a resident has an established business relationship, and calls from tax-exempt non-profit organizations.

The rules also ban unsolicited or "junk

fax" advertisements to telephone facsimile machines and require that a fax clearly indicate the sender's name and the telephone number of the sending device.

Under the TCPA, consumers and businesses, as well as state authorities, may sue telemarketers who violate the Act or the rules. Consumers may sue telemarketers in state court to enjoin violations or to recover actual monetary damages or up to \$500 in damages. States may sue for the same remedies in federal court. In addition, consumers may request the Commission to take action against violators.

Signed into law by the President on December 20, 1991, the TCPA amended the Communications Act of 1934 by adding a new Section 227.

The rules became effective December 20, 1992.

Denial Of Request For Call Letters For Public Coast Station

The Commission affirmed the Private Radio Bureau's action denying an application from Global Communications, Inc., which requested authority to use the three-letter callsign WCT for its public coast station located in San Juan, PR.

The callsign WCT was previously assigned to an American Telephone and Telegraph Co. (AT&T) public coast station located in the same area serving both ships in local waters and on the high-seas. AT&T was authorized to discontinue service from WCT by the Commission in March of 1991.

The Bureau denied Global's request noting that three-letter callsigns were assigned only to public coast stations with high-frequency assignments and, typically, worldwide operations.

In denying Global's petition, the Commission said that while the term Class I coast station is no longer used in the rules governing maritime services, as a practical matter, the differences in the types of services offered by public coast stations still exist. For example, some offer only local (VHF) service and some offer only high seas (HF) service, and callsigns continue to be assigned on that basis.

The Commission also stated that it has long maintained a policy to deny requests for specific call signs in the maritime services because of the potential adverse impact on their licensing resources.

The Commission noted that although Global claimed to rely on the callsign for name recognition, VHF public coast stations are not required to identify by callsign. Such stations may identify by means of the approximate geographic location where there is no conflict with other stations.

TELEPHONES ENROUTE

BY TOM KNEITEL, K2AES

WHAT'S HAPPENING WITH CELLULAR, MARINE & MOBILE PHONES

Cellulars make for interesting friendships. Last summer, along with many other drivers, I was stuck in an enormous traffic tie-up on a parkway. Nothing had moved for more than a half hour. Drivers had given up and shut off their cars. I couldn't believe it when a well-dressed fellow walked over to my car and explained that he was going to be late for an important job interview. He asked if he could use my car phone to call the company and explain that he was going to be late because he was in the middle of a zillion stopped cars on a freeway. He made his call. I thought he was a rather resourceful guy.

How many people would have thought of doing that, or had the courage to ask a stranger?

In fact, despite the sluggish economy, personal comms have continued to increase in popularity. Every month, 222,000 new cellulars go on line. That's about 7,300 per day. At this rate, most people will have one or another category of personal comms device before long, and there will be little need to knock on someone's car roof to use theirs during a traffic jam.

By the time you read this, there should be well over 10-million cellulars in use in the USA, alone. Revenues, you ask? The average monthly tab for using a

cellphone now runs about \$68. Roaming is where the big money is being made. In the first half of 1992, roamer (cellular users placing calls while away from their home areas) calls rang up \$437-million, which is a 45% increase over the same period a year earlier.

There are now more than 8,900 individual cell sites in the USA. All the better to hear you with!

If You Pass A Law, They Won't Listen...

Ivan Hixon, of Fort Worth, Texas, dropped the column a news clipping from the *Fort Worth Star-Telegram*. It tells how the police arrested a 46-year old freelance videotographer while he was working at an arrest scene. They claimed that while they were arresting a murder suspect, the cameraman was using a scanner to illegally monitor the cellphone calls Fort Worth police officers often make when they wish to bypass regular police frequencies for security reasons.

The report stated that the photog, like many in the news media, usually monitors the police frequencies for leads to where the action is. The police don't mind the news media monitoring their regular comms frequencies, but apparently were of the opinion that cellular

monitoring is a violation of state wiretap laws. The cameraman's defense attorney was researching the state laws, but said it was questionable if the state wiretap laws related to cellular phones.

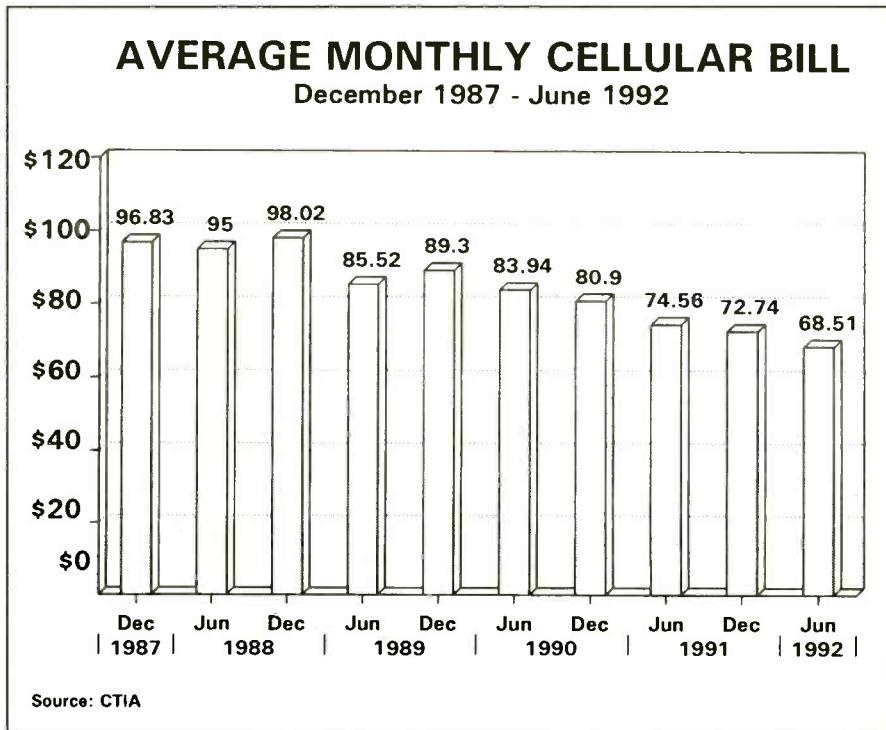
The defense attorney observed that the rationale of court decisions in similar cases has been that the airwaves belong to the public, and if you wish to communicate on those airwaves with a cellular phone, "you're pretty much at your own peril" insofar as privacy expectation is concerned.

Police confiscated the handheld scanner, anyway. They claimed that it was tuned to cellular frequencies, deducing from this and their observations of his alleged movements that the cameraman was intentionally listening to their calls. Of course, anybody else for several miles around the cell site could also have just as easily listened from their home, car, or a handheld. They could have heard the very same cellular calls from the police that were being transmitted in the clear.

Communications security by the cellular industry's failed voodoo smoke and mirror methods doesn't work nearly as well as an old fashioned voice scrambler. The Fort Worth police need some comms techs on staff that can adequately explain this to the agency's well meaning, but somewhat naive, detectives.

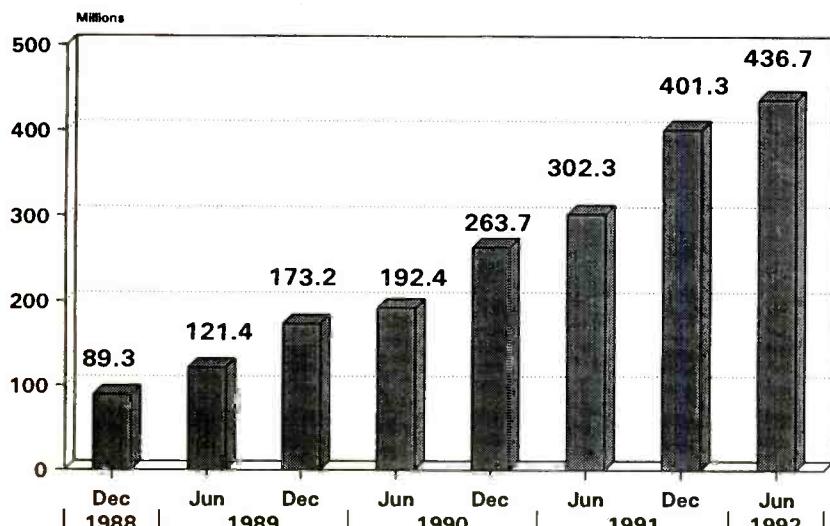


The beautiful little Mitsubishi 4000 knows what city it's in, even if you aren't too sure, yourself!



ROAMER REVENUES

December 1988 - June 1992



Source: CTIA

Hear Here!

From Douglas H. Stingley, of Salem, Oregon, a story by Guy Webster that ran in the Phoenix newspaper, *The Arizona Republic*. This piece was about a company in Phoenix, Arizona, called Cellular Sales, Inc. This company has designed a device (intended to sell for about \$50) that plugs into a cellular phone. It's intended for use by persons who are hearing impaired and require high amplification in order to hear telephone conversations.

It's actually an adapter that plugs into the phone, and then the user places it right into a hearing aid. The place on a cellular where the device plugs in is where you can also plug in a computer, or a FAX.

This adapter puts the convenience of cellular phones into the hands as many as 26-million Americans who could otherwise not use them because of hearing problems.

The newspaper story mentioned that the developers of this adapter at Cellular Sales, Inc., in Phoenix, are Dave Parke, and Jim Potter. The story offered no further information, phone number, or address. Directory Assistance in Phoenix had no listing for a company named Cellular Sales, Inc., when we asked. That is to say, unfortunately we can't give you any more information than this regarding who makes it, or how to contact them.

If it's actually on the market, hearing aid dealers may have additional information about its availability. Also, we understand that Panasonic Communications was negotiating with Dave Parke, so it could conceivably turn up in that com-

pany's product line at some point in the future.

Actual Cellular Privacy, For Real!

Bell Atlantic Mobile Systems has installed a capability to provide increased security for government users and future commercial users of STU-III (Secure Telephone Unit) celluar. This service is available in the Washington, DC, area.

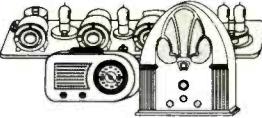
STU-III privacy interfaces protect the radio signal portion of calls between a STU-III cellular phone and an unsecured landline phone. STU-III phones are controlled by the NSA for federal users with classified security clearances. They are controlled jointly by NSA and the National Institute of Standards & Technology for unclassified and commercial users. There are more than 300,000 STU-III landline and cellular phones in use now.

Conversations between two STU-III phones can be secured from end-to-end. Prior to the introduction to the new interface switch, in a call between a STU-III phone and a non-STU-III phone, the signals could still be intercepted on scanners. The privacy mode may be optionally invoked, and this is possible from either phone. It is triggered by using a three-digit keypad code. Data and voice may be sent in the secure mode, which is authorized for "sensitive but unclassified" communications.

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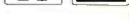
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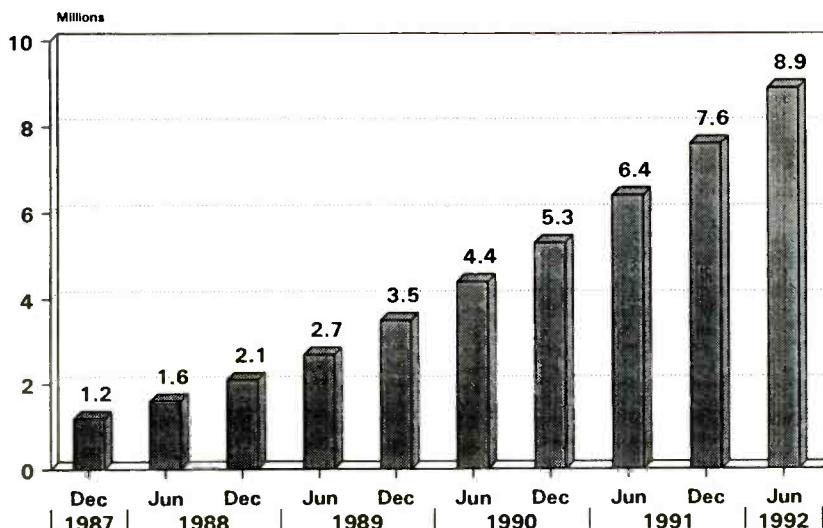
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CIRCLE 156 ON READER SERVICE CARD

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December 1987 - June 1992



Source: CTIA

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Customers are billed the \$3.95 monthly charge on their regular monthly cellular statement. You don't have to pay out the whole annual payment in one chunk.

US WEST customers wishing to sign up for Mr. Rescue, should call 1-800-626-6611, or *611 on their celluars.

This sounds to us like a winning idea.

Small & Lightweight Portable

Mitsubishi International brought out their Model 4000. It's one of the smallest and most lightweight celluarls available, and is the smallest one Mitsubishi has ever produced.

This weighs less than 8 oz., is about 2 in. wide, 6 in. high, and less than three quarters of an inch thick. Equipped with a standard battery, the Model 4000 pro-

a great new emergency service to summon roadside assistance. Called, Mr. Rescue, the service provides customers with jump starts for dead batteries, help with flat tires, gasoline deliveries to stranded motorists, help for locked-out

drivers, plus other services on a full-time basis. The service is available for \$3.95 per month to all US WEST customers registered in the 14 midwestern, western, and southwestern states where the company operates.

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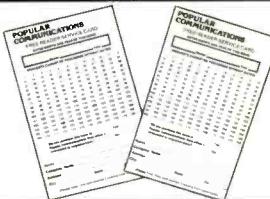
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Beaming In (from page 4)

cable should be left long. Cut them only as a last resort.

24. No matter how careful you coil up used wire or cable, it will kink and/or tangle when you try to uncoil it.

25. Teamwork is essential when erecting an antenna. It helps to spread around the blame if it should fall.

26. You're better off with a so-so receiver connected to a great antenna than you are with a great receiver connected to a so-so antenna.

27. No point in running a lot of CB power unless you've got a good receiver; there's no reason to be able to talk any further than you can listen. If you can't hear 'em, you can't work 'em.

28. TV interference from CB'ers and hams has now become more interesting than most of the TV shows it affects.

29. Things that must be used together in order to work are seldom in stock at the same time.

30. When working on anything electronic, if it's stuck, force it. If it breaks, it needed to be replaced anyway.

31. If an SWR or a watt meter is unavailable, tune up your transmitter for maximum smoke. Any transmitter that's not blowin' at least a little smoke surely can't be doing its best.

32. Anything you do can pop a circuit breaker—including nothing.

33. If it works at all, even a little, don't try to fix it.

Sage advice. Maybe you have one, two, or more to add to these. If so, send them along. If we can collect enough good ones, we'll run them in an upcoming issue. We hope you enjoy the ones presented here. They caught the flavor of several key aspects of the communications hobby all of us know and love.

Words of wisdom are a good way to start a new year. Let's hope that 1993 is happy, and brings the world wisdom.

vides up to an hour of talk time, or 10 hours of standby. An extended life battery is optionally available for 2.5 hours of talking and a full day's worth of standby.

This isn't a bare-bones phone, either. It's got all of the usual features, a numeric pager, an alarm clock, and a long list of other things it can do. Automatic NAM selection lets the phone select the appropriate NAM (cellular phone number) you have registered for the city where the phone is being used. There are all kinds of optional extras, too. Like quick chargers, cigarette lighter adapter, 3-watt power booster, and everything else. This thing is a gadgeteer's dream come true. Get it out of my sight before I buy one!

Depending on the configuration, the Model 4000 runs from \$999 to \$1,199. You can get more information from Mitsubishi International Corp., 1500 Michael Dr., Suite B, Wood Dale, IL 60191. Phone (708)-860-4200.

Digital/Analog Phone

The M6100 dual-mode phone from Hughes Network Systems, announced almost a year ago, has now received FCC type approval for digital operation. This phone was devised to meet the industry's proposed eventual phase-in of digital systems during the lengthy transitional period when both digital and analog systems must co-exist.

Digital systems use Time Division Multiple Access (TDMA) technology that allows several calls to simultaneously pass through on the same frequency pair without interfering with one another. If anything, digital's promoters say the sound quality is better than existing single-user-per channel analog systems.

Digital operations cannot be monitored on current generation scanners, so the technology offers the promise of communications security. At least, and until, someone comes up with the key to monitoring the transmissions. Cellular phones can do it, and certainly other pieces of equipment can and will be designed that can do the same.

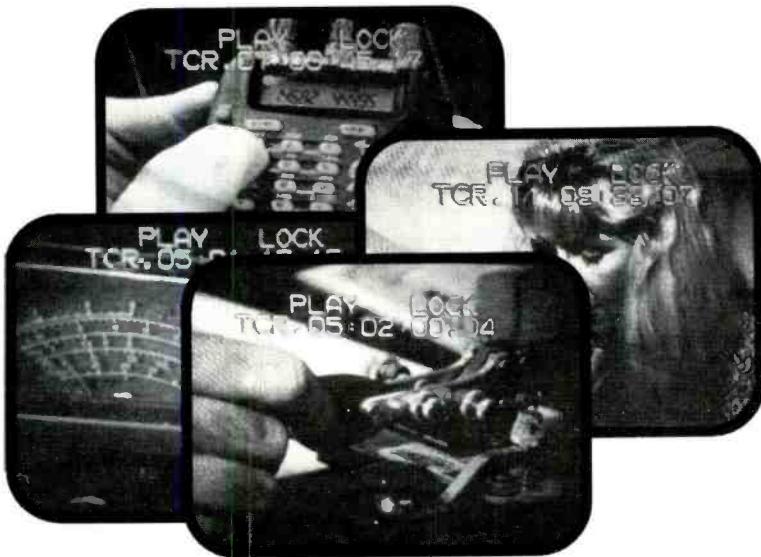
However, more than 60,000 of the new Hughes M6100 units have been ordered for use in the USA and Canada. Areas that have digital use being phased-in first include New York City, Miami, Los Angeles, Chicago, and Calgary. Nevertheless, analog systems will also remain in use in those areas for a number of years to come as analog equipment is still being produced and sold at an enormous rate.

Come Again

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SCANNING VHF/UHF

BY CHUCK GYSI, N2DUP

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It's a new year and that means it's time to find new frequencies. If you use your scanner to listen to the same stuff day and day out, you're missing out on a lot of action. Use the search mode and it will open up an entire new world to you. Search through the business band frequencies from 151.625-151.955 and 461-465 MHz and you'll find your local cable TV company, security at a nearby mall, amusement park maintenance units and much, much more. If you don't look, you won't find them.

Harold Meggison of Sturgis, Michigan, writes to say he recently bought an old SBE Opti-Scan SBE-12SM scanner at a garage sale. For those who don't remember, this scanner was "programmed" with punched cards that told it what frequencies to scan. For each program, you'd have to make up a new card. Well, Harold wonders if anyone can help him figure out how these cards were set up. If you had one of these scanners or even happen to have around an old owner's manual, he'd sure appreciate the help. Write to Harold at: 111 N. Maple, Sturgis, Mich., 49091.

While most of the mail I receive here is from adults, I sure love to hear from younger folks who are into scanning. I know I was first bitten by VHF-UHF communications when I was perhaps as old as 8. Chris Tiller from Commerce, Georgia, writes in to tell us he's 12 years old and got started in scanning when he was 7. He now has a Uniden Bearcat 145XL and wants to upgrade to a Realistic PRO-2006. He also hopes to get a ham license someday. Chris says he likes listening to public safety communications, 2-meter ham repeaters and hams on 10 meters. He adds that he likes to find new frequencies and enjoys reading about communications. Now, how about a list of the frequencies you like to listen to most, Chris?

Jim Thurman of Nashville Tennessee, says that Metro Nashville on 154.860 now is Metro Police south sector and that 155.580 is central records. In addition, he notes that 154.815 is a fairly active surveillance frequency in the Music City.

Although the hot summer months are far away yet, John Gomer of Sacramento, California, passes along a great list of frequencies used for forest fires in northern California.

California Department of Forestry—119.950, heliport control; 151.190, Camino; 151.265; 151.280, aircraft; 151.295, aircraft; 151.325; 151.340; 151.355, Branch 1; 151.370, Tac-8; 151.400, Oroville.



Here's the simple, but effective listening post used by 12-year-old Chris Tiller of Commerce, Georgia. Notice the parent-approved listening device on Chris' head.

U.S. Forest Service—166.5875, fire dispatch; 168.625, aircraft dispatch; 168.750; 168.755, fire cache; 169.125, travel net; 169.175, Tac-5; 415.225, Camino; 415.350; 415.550, aircraft dispatch; 415.575; 417.650; 419.150.

California Department of Parks and Recreation—44.64; 151.160; 151.190, San Andreas.

California Department of Fish and Game—151.415; 151.430; 151.445.

The next time flames start licking the woods in northern California, tune in these "hot" frequencies. Thanks, John.

Sebastian J. Cultrera of Wethersfield, Connecticut, notes that a good source of on-air information in his area is the Alarm Room News Service, which is a Hartford, Connecticut, based fire notification group. The group monitors scanners 24 hours a day and puts out on the air late-breaking information on fires and other major emergencies on its own frequencies. The group also sends reporters to the scene of fires to relay information via radio. Alarm Room News Service uses the following frequencies: 464.975, 464.875, 463.550, 153.140 and 461.825. Sebastian also notes that Cromwell police in Connecticut now are on 860.9625, F-1; and 857.2625, F-2 (new).

Scott Lasater, N7NFV, of Everett, Washington, says he's found what he thinks is a great preamp and antenna combination for scanner listeners. He

recently purchased a Radio Shack portable amplified VHF-UHF-FM antenna for his RV. The antenna, model 15-1607, sells for \$24.95. After hooking it up to his TV and getting good performance, he checked the specs and noticed that it is listed as covering 50-900 MHz with gain at 10 dB minimum for 50-470 MHz and 8 dB minimum for 470-900 MHz. The antenna has a 75 ohm input impedance and two telescoping rotating antennas. There is a switch and indicator LED to kick in the amplifier and an adjustable stand to support the unit. When the unit is collapsed, the entire antenna fits into a shirt pocket. It will run on either 2 AAA batteries or an included power supply.

Scott hooked up this portable antenna to his Cobra SR-12 scanner with a BNC-type F adapter, a 75-ohm TV cable patch cord and a type F 1/8 inch male and male-male adapters. The unit comes with a 1/8 inch mono plug. Scott says that using a 75-50 ohm transformer may help performance of this unit.

The good news is that when he turned on the antenna when hooked up to his scanner he started hearing signals he never heard before. He was picking up mobiles and even unicom transmissions on the aero band. Even signals that were strong before now come in crystal clear. It may be worth checking out this antenna if you are limited as to putting up an outside antenna or need a good antenna for traveling.

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- Antenna attenuator switch, 10db.
- Manual tuning knob.
- Earphone jack, 3.5mm.
- AM, FM and wide band FM tuning modes.
- Backlighted LCD display.
- 10 Scan Banks, 10 Search Banks.
- Selectable Priority Channel.
- Delay, Hold Features.
- Selectable Search Increments, 5-955KHz.
- Permanent memory backup.
- 4 AA Ni Cad batteries included.
- AC adaptor/charger.
- Carry Case.
- Cigarette Lighter Charger.
- Belt Clip.
- Earphone.

Options:

External Speaker. Mobile Mount. MS190 \$19.50
Extended Warranty. 2/3 yrs \$45/\$55

Specifications:

Coverage: 500KHz-1300MHz
Sensitivity: .35uV NFM, 1.0uV WFM, 1.0AM
Speed: 20 ch/sec. scan. 40 ch/sec. search
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
Dimensions: 6 7/8H x 1 3/4D x 2 1/2W. 12oz wt.

AR950/AR900 \$289/\$219



100 Channels. Low, Air, High, UHF & 800MHz.

Standard Features:

- Extremely compact size.
- Unrestricted 800MHz coverage.
- 100 channels permanent memory.
- Earphone Jack.
- Delay, Hold features.
- Channel 1 Priority.
- 5 Scan Banks, 5 Search Banks.
- Two antennas included.
- AC & DC Power cord w/mobile mnt. hrdwr. (AR950)
- NiCad battery w/chgr adapter. (AR900)
- One Year Limited Warranty.

Options:

Base type antenna	
25 to 1000MHz w 50' coax.	AS300 \$59.95
Mag Mnt Mobile Antenna. 15' coax.	MA100 \$25.00
Cigarette Lighter power adaptor.	CP100 \$5.00
Wide band preamp	GW-2 \$89.00
Extended Warranty. 2/3 yrs	\$40/\$55

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
Display: LCD w/backlight
Dimensions: 2 1/4H x 5 5/8W x 6 1/2D. 14oz wt. (AR950)
5 3/4H x 2W x 1 1/2D. 12oz wt. (AR900)

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AR2500**\$429****AR3000****\$1095**

2016 Channels. 1 MHz to 1500 MHz

Standard Features:

- continuous coverage.
- AM, FM, wide band FM, & BFO for SSB, CW.
- 64 Scan Banks.
- 16 Search Banks.
- RS232 port built in.
- Includes AC/DC pwr crd. Antenna, Mntng Brckt.
- 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 (software & cable) offers spectrum display and database.	SCS2	\$295.00
Wide band preamp	G-W2	\$89.00

Specifications:

Coverage:	1MHz-1500MHz
Sensitivity:	.35uV NFM, 1.0uV WFM, 1.0AM/SSB/CW
Speed:	38 ch/sec. scan. 38 ch/sec. search
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, backlit
Dimensions:	2 1/4H x 5 5/8W x 6 1/2D Wt. 1lb.

400 Channels. 100KHz to 2036MHz.

Standard Features:

- Extremely compact size.
- Continuous coverage.
- Attenuation Programmable by Channel.
- Manual tuning knob.
- Tuning increments down to 50Hz.
- AM, FM, wide band FM, LSB, USB, CW modes.
- Backlit LCD display.
- 4 Scan and Search Banks, Lockout in Search.
- 4 Priority Channels.
- RS232 control through DB25 connector.
- Delay, Hold Features.
- 15 band pass filters, GaAsFET RF amp.
- Sleep and Alarm Features.
- AC adaptor / charger. DC power cord.
- Telescopic Antenna
- 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 (software & cable) offers spectrum display and database.	SCS3	\$295.00
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
Display:	LCD
Dimensions:	3 1/7H x 5 2/5W x 7 7/8D Wt. 2lb 10oz.

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Prices and specifications subject to change.

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R-5000

R-2000
High performance
receivers

Scan the world bands with Kenwood's R-5000, R-2000 and RZ-1. Listen in on foreign music, news, and commentary. Monitor local police, fire, and other public safety services, as well as the Marine channels, and the many other services.

(The VHF converter options must be used in the R-5000 and R-2000.)

R-5000

The R-5000 is a high performance, top-of-the-line receiver, with 100 memory channels, and direct keyboard or main dial tuning—makes station selection



R-2000

The R-2000 is an all band, all mode receiver with 10 memory channels and many deluxe features such as programmable scanning, dual 24-hour clocks with timer, all-mode squelch and noise blankers, a large, front-mounted speaker, 110 volt AC or 12 volt DC operation (with the DCK-1 cable kit), and 118-174 MHz VHF capability with VC-10 option.

Optional Accessories

R-2000:

- VC-10 VHF converter
- DCK-1 DC cable kit for 12 volt DC use.

R-5000:

- VC-20 VHF converter
- VS-1 Voice module
- DCK-2 for 12 volt DC operation
- YK-88A-1 AM filter
- YK-88SN SSB filter
- YK-88C CW filter
- MB-430 Mounting bracket.

Other Accessories:

- SP-430 External speaker
- SP-41 Compact mobile speaker
- SP-50B Mobile speaker
- HS-5 Deluxe headphones
- HS-6 Lightweight headphones

RZ-1

Wide-band scanning receiver



The RZ-1 wide-band, scanning receiver covers 500 kHz-905 MHz, in AM, and narrow or wideband FM. The automatic mode selection function makes listening

super easy! Other useful features include programmable scanning, large, built-in speaker, 110 volt AC or 12 volt DC operation (with optional DCK-2 cable), VHF capability (108-174 MHz) with the VC-20 option, dual 24-hour clocks with timer, and even voice frequency readout with the VS-1 option.

easier. One hundred memory channels with message and band marker, direct keyboard or VFO frequency entry, and versatile scanning functions, such as memory channel and band scan, with four types of scan stop. The RZ-1 is a 12 volt DC operated, compact unit, with built-in speaker, front-mounted phones jack, squelch for narrow FM, illuminated keys, and a "beeper" to confirm keyboard operation.

Optional Accessory
• PG-2N Extra DC cable

Specifications, features, and prices are subject to change without notice or obligation.

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