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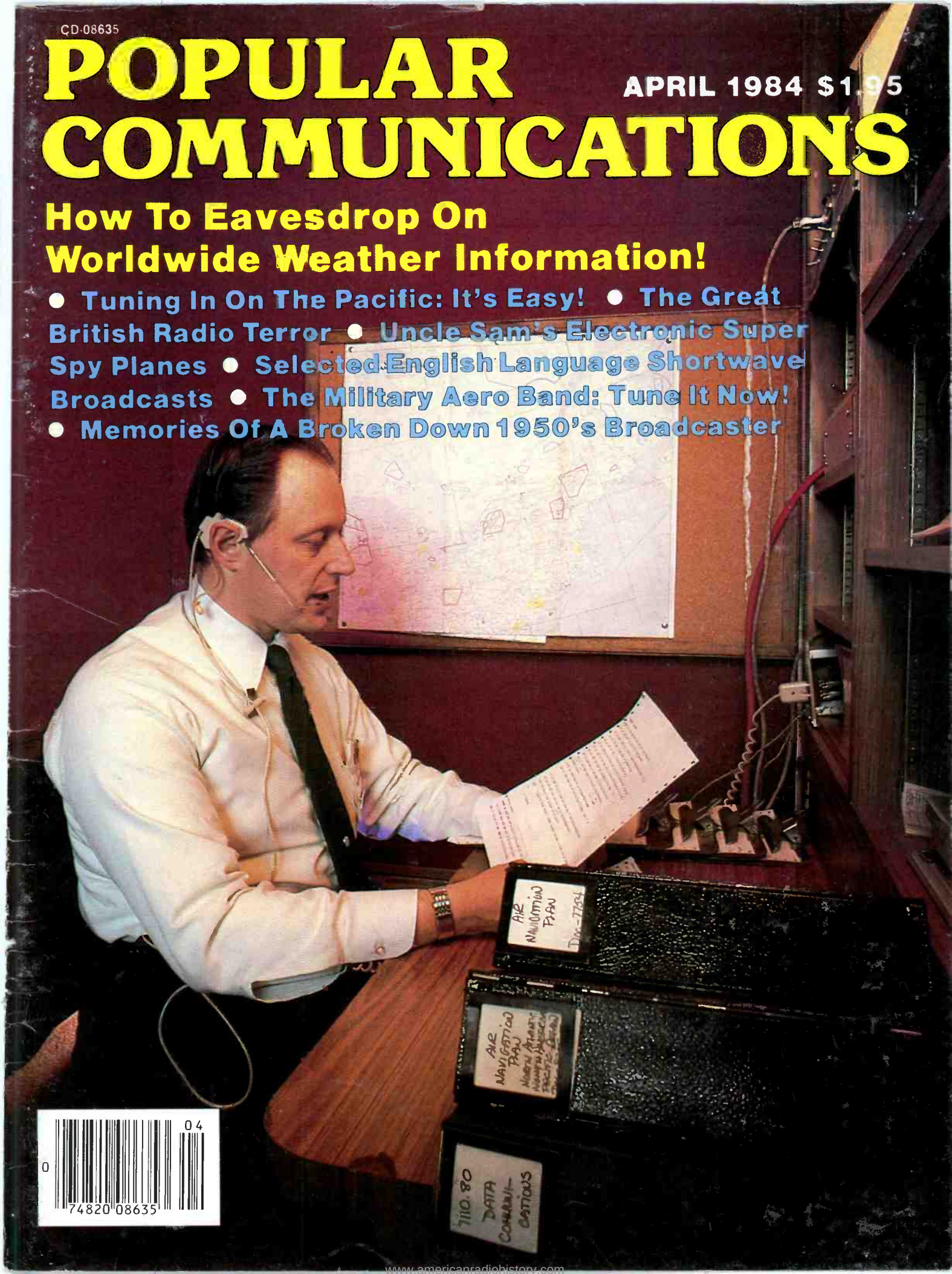

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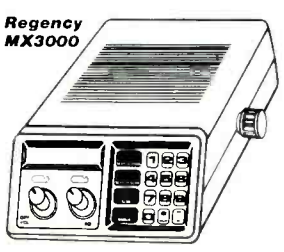

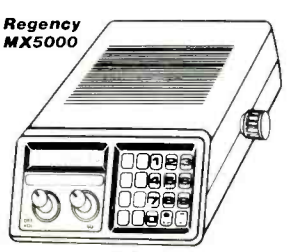

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POPULAR COMMUNICATIONS

APRIL 1984 **VOL. 2, NO.8**


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FEATURES

This month's cover: *The VOLMET broadcast station heard on shortwave as "New York" is located at Long Island MacArthur Airport in Islip, New York and operated by the Federal Aviation Administration. This is how it looks. Photo by Larry Mulvehill, WB2ZPI.*

DEPARTMENTS

BEAMING IN

AN EDITORIAL

BY TOM KNEITEL, K2AES

One Lung Radio

In the December Mailbag column, I happened to mention that at one point in the dim past I worked at a little one lung radio station which was in the throes of permanent poverty. Well, it isn't especially often that the Mailbag column attracts its own mail, but that mention of poor old WTTT in Coral Gables, Florida (1490 kHz, 250 watts, and no relation to the present WTTT in Amherst, Massachusetts) brought in mail—*lots* of mail.

The very first epistle to arrive was rather emotional and took me sternly to task for making reference to WTTT as a *one lung* station, suggesting that 250-watt local stations are the "backbone of American broadcasting." I was admonished for making fun of 250-watt stations with my use of "deprecatory epithets." Since I thought that epithets were what naval officers wear on the shoulders of their uniforms, I looked it up in the dictionary and suddenly realized that this reader was giving me a bad rap. Calling a low power station a one lunger is hardly dishonorable; it is a term noted in use in radio hobby circles for decades.

The rest of the mail was from readers who asked all sorts of questions about what life was like at a broken down and thoroughly decrepit local broadcaster of the early 1950's—one that didn't have enough money to fix or replace a bent-in-half storm-damaged antenna tower and solved the problem with a long wire strung from the highest point of the broken tower to a palm tree. Not that WTTT was by any means typical of most local broadcasters (then or now), but when you're sitting at home listening to a station on your radio you never actually know the conditions that exist at the station you're hearing. Very often the image that you have of any given station is quite different than the facts. In the case of WTTT, I suspect that it was somewhat unique and most likely there have been dozens of pirate broadcasters that were more formidable.

My introduction to WTTT was accidental. I was a freshman at the University of Miami and had hopes of getting into the broadcasting industry. My plan was to capture a part-time job at a radio station located near the campus in Coral Gables. The Chairman of the University's Radio and TV Department suggested that I look for a job with WVCG, a station that fit my needs exactly. Unfortunately, WVCG didn't have any openings, but they told me to inquire at the other station in town, WTTT. I had never even heard of WTTT but they assured me that there was such a broadcaster and gave me the address.

Wandering over to 350 Aragon Avenue, home of WTTT, I arrived at a drab little building a few blocks from the municipal bus depot. I was immediately struck by the fact that the sign on the front of the building didn't say WTTT—it read WBAY! No difference, I had never heard of WBAY either!

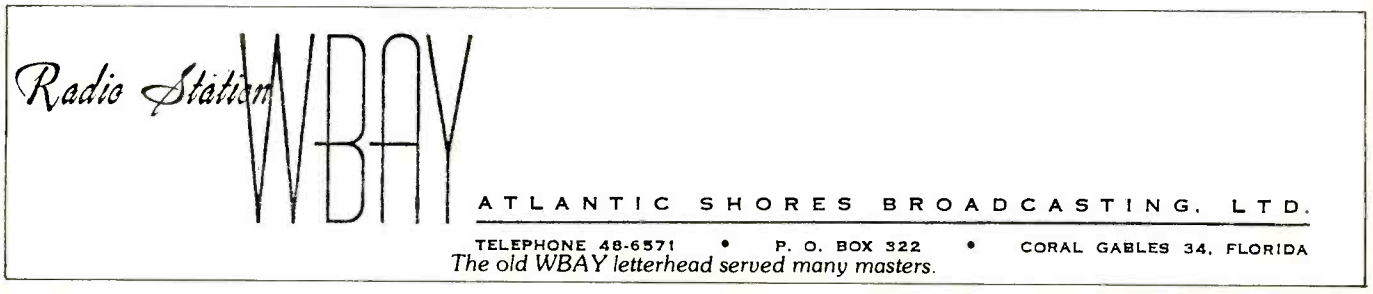
Entering the building I was met by Mr. Daley, the Station Manager, who welcomed me with open arms. When he heard that I was looking for a job he explained that the record library consisted of a bunch of 78 RPM discs that were unsorted. What's worse, he said, they were stacked precariously in piles on the floor and every time someone attempted to use one of these stacks as a chair the station would lose a substantial portion of its available music. For starters, he was appointing me as the Chief Record Librarian in the hopes that I could get the discs onto shelves and organize a record catalog. He also hoped that I might take a broom and attempt to clear up a major problem the floors were having since they hadn't been swept within recent memory and were especially troubled with several thousand multi-faceted shards of shattered 78 RPM discs. I explained that I had really hoped to secure a staff position as an announcer or studio engineer. Without further discussion he promptly awarded me those positions too and asked if there were any other jobs I might like to fill—with the possible exception of Station Manager. I couldn't think of any at the moment, having figured that my broadcasting career had advanced far enough for one day and further realizing that there was going to be one basic compensation rate no matter how many executive positions I held. That compensation was the minimum wage and I was told that it "might not be paid on a regular basis." As things turned out, I was seldom paid.

Before I embarked on my career, I asked about the WBAY sign on the front of the building. The Station Manager explained that those were the call letters of the station that had previously occupied the WTTT studios, operated on WTTT's 1490 kHz frequency, and had even used the same transmitter presently utilized by WTTT. He said that WTTT was hoping to be able to afford a new sign at some point in the future. Daley felt that it didn't make much difference about the sign anyway since the only letterheads WTTT had on hand were also left over from WBAY. WTTT also used the old WBAY phone number and mailing address. But, he claimed, WTTT was planning on new letterheads "soon." It was never clear to me if WBAY had been an earlier station that had gone out of business or was simply a previous callsign for WTTT. It was one of those questions that brought a slightly different answer each time it was asked.

The interior of the studio building was devoid of anything that might be termed "plush," having bare walls and furniture that consisted mainly of a couple of bridge tables and some rickety wooden folding chairs. The studio room (which was always referred to as "the main studio" and "Studio A," even though it was the only studio) was furnished with an ancient piano and a row of six seats from an old movie theatre. The tacky control room had a decrepit Western Electric console "board," two turntables, and a piano stool for the chair. What had once been a News Room was occupied only by three metal stands which had at one time held teletype machines, the machines themselves having long since been rescued by the news services for non-payment of their repeated bills.

The WTTT transmitter (formerly used by WBAY) was a Gates 250-C situated a few miles distant from the studio. It was in the home of the Chief Engineer—a crusty character named Walt Kinney who personally owned the rig. He claimed that he was also one of the owners of WTTT by virtue of the fact that he owned the transmitter. I got the

(Continued on page 74)



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CIRCLE 56 ON READER SERVICE CARD

MAILBAG LETTERS TO THE EDITOR

The most interesting questions we receive will be answered here in each issue. Address your questions to: Tom Kneitel, Editor, Popular Communications magazine, 76 North Broadway, Hicksville, NY 11801.

Left Out In The Cold (War)

In the September '83 issue of *POP'COMM* you recommended several monitoring clubs as being especially good. I sent to many of those groups to see what they had to offer. I ended up joining some of them. My specialty is cryptanalysis and therefore I had hoped to find that most clubs would offer some in-depth coverage of "spy numbers" stations and their operations. ASWLC and SPEEDX do list these stations in their monthly "utility" listings and ACE even offers a column devoted to spy stations. Unfortunately, the ACE "spy station" column is so crudely and amateurishly done that it's a total waste and detracts from their otherwise excellent publication. How 'bout it, DX clubs? Don't you think it's time to start paying some serious and lengthy attention to these stations, and getting into some coordinated efforts on locating them and finding out why they've been "unknowns" for more than 20 years?

Alice Brannigan
Boston, MA

Okay clubs, here's a suggestion you might want to consider when you next discuss your future plans. The lady has a good idea! —Editor

Reader Participation

Are the pages of *POP'COMM* open to readers or do you accept for publication only those stories written by staff members? I'm asking because I have several monitoring stories I'd like to write for you which I think are especially interesting and which deal with topics that have not yet been fully explored in the pages of any publication. There's one "catch," and that's my name. For reasons of my own, these stories could not be run with my real name on the byline.

(name withheld by request)
Alexandria, VA

The majority of the features we run are submitted by readers who want to share with other listeners their own knowledge, expertise, and experiences, so we would be happy to look over what you have and consider it for publication. All readers are encouraged to submit material for such consideration. No problem about the bylines either; several of our authors have elected to write under a pen name and we have no objection to the practice. Any readers having writing ambitions would best be advised to write and ask us for one of our authors information guide sheets which will outline the type of stories we are seeking and also give some information on preparing manuscripts for our use. Readers who have no writing aspirations are invited to participate in the magazine by submitting items to our columns, including photocopies of especially interesting QSLs (such as those from the 1950's or earlier), station and shack photos, their own SWL cards, and frequencies/schedules of stations they've been monitoring. —Editor

Old Warhorse

I am attempting to restore a WWII military communications receiver known as the SCR-274N/BC-455. One of the tubes in this receiver is missing, however there is a notation on the chassis near the empty tube socket and it reads "VT-133." I assume that is the type of tube which is required. Several local electronics shops have small supplies of old vacuum tubes remaining in stock but they don't have a VT-133 and say that they never heard of such a tube.

H.C. Whitwer
Tampa, FL

The VT-133 is no more than a military designation for a type 12SR7 tube, which happens to be the second detector in your little "Command Set" receiver. If you can't find a 12SR7, try a 12SQ7 or 12SW7 in the socket since they'll work too. If local suppliers aren't able to come up with any of these, you can probably get one from companies dedicated to those who repair, restore, or are otherwise fascinated by old radios. These companies supply tubes, parts, schematics, books, and data for antique radio buffs. For $1 you can get the great catalog from Puett Electronics, P.O. Box 28572, Dallas, TX 75228. Another $1 will get you the catalog from The Antique Radio & Tube Co., 1725 West University, Tempe, AZ 85281. As you get into your restoration, I can assure you that you're going to need far more than this one tube in order to fire up that old warhorse. Between these two companies you should be able to locate many of the parts you'll need—and I hope you've got a schematic! The BC-455 is a terrific little receiver and not especially complex to restore. Lots of luck with your project. —Editor

I Flipped To Be The Editor

I would prefer Gordon West as the Editor in Chief of this magazine.

T. Paul Jordon
Milford, OH

Gordo and I tossed a coin. Next time we toss, I promise I'll use the two-headed quarter. —Editor

A New Approach

Your December editorial about the use of pseudo high-tech lingo was a gem. My own favorite way of gracefully exiting one of those threatening high-tech conversations is via the use of the expression, "These smart Yankees are always inventing a newfangled contraption—no wonder we lost the war." That usually does the job. You ought to write the editorials for QST!

Ed Jones, Jr., WB2DVL
Somerset, NJ

FM Fan

What with all of AM's shortcomings, I'm surprised that FM hasn't been placed in use by shortwave broadcasters, just the way SSB has replaced AM for most non-broadcast voice operations between 2 and 25 MHz. Do you foresee this taking place in the near future?

Santos Rodriguez-Valon
La Paz, Bolivia

I doubt that we will see this come to pass. Besides the fact that it would take years for the broadcasters to rebuild a listening audience consisting of persons having FM receivers, there are technical reasons why it isn't very feasible. Among those reasons is the high degree of distortion which takes place when fading (QSB) is present. Signals received from long distances are subject to fading and the effects aren't as noticeable in the form of distortion with AM as with FM. —Editor

Monitoring 4H4.099 MHz?

I have a programmable scanner. The other night I turned it on and found that all of the frequencies in it had not only changed by themselves but also made no sense at all. The scanner is not theoretically capable of accepting frequencies which end in digits other than a 0 or a 5, nor can it accept letters of the alphabet, yet some of the "new" frequencies the scanner had programmed into itself included 480.909, 4-9.040, 4-9.099, 4P4.540 and 4H4.099. Please advise what went wrong in the scanner.

Johnny Birdlett
Reno, Nevada

Programmable scanners that are designed without the ability to retain their programming memory under loss of electrical power are prone to producing this effect. If the house current goes out for only a few seconds or if the power plug is removed from the wall socket (even briefly, and whether or not the scanner is turned on or off), the result is total amnesia in the scanner and loss of all frequencies which have been programmed into the unit. When power is reapplied to the scanner, the usual case is for the set to display a random assortment of nonsense digits and even letters of the alphabet. The solution is to reprogram the scanner for the frequencies which had been placed in the unit before the loss of power. This doesn't mean that the scanner is defective. —Editor

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(Photo courtesy of TWA)

VOLMET Update

Listening In On The World's Weather— And Hearing Some New Countries Too!

BY PAUL VOGT, KNY2VM

Maybe you don't care if it's raining in Karachi or foggy in Jeddah, but there are those people who do care, especially international airline pilots. Pilots flying domestic routes can generally get this type of information on VHF or by other means, but long range flights call for the use of high frequencies. That means you can monitor them on a communications receiver. The majority of these broadcasts are in English and are sent in SSB mode.

In the March '83 issue of *POP'COMM,* I presented a basic listing of the stations that send out these so-called VOLMET weather broadcasts. Since that time, readers have been kind enough to pass along a considerable amount of additional information relating to VOLMET stations that I hadn't included, and also to note that there were a substantial number of frequency and schedule changes which should be noted in any future listings of VOLMET broadcasts. When I got through compiling all of the information that has come in, I ended up with the listing that follows; it has many times more listings than we presented last year. I have presented everything that came in, despite the fact that a few of the listings appear to conflict with one another.

For those of you who aren't familiar with VOLMET stations and

Airline pilots relay heavily upon the information involved in VOLMET broadcasts.

their operations, and have not yet discovered the challenge of monitoring them, a brief synopsis is in order. The use of a specific frequency, such as 2863 kHz, as an example of typical VOLMET operations makes it easier. Stations serving international airline routes along a particular air corridor or in a certain part of the world will share a frequency and will take turns using it for scheduled broadcasts which take place twice each hour at a certain number of minutes past the hour. Each of these weather advisories is about five minutes in length, and when one station has its say, it signs off and the next scheduled station comes on the air. Thus, on 2863 kHz, there is a broadcast on the hour from the station in Honolulu, followed by a transmission from San Francisco, then (in turn) Tokyo, Hong Kong, Anchorage, and Aukland. At half past the hour, the cycle begins again. The second broadcast in the hour may well be identical to the first one, or it may contain data for cities not covered earlier, or reflect different types of information, or updated data. Some of the different types of data presented by VOLMET stations includes actual weather reports, landing forecasts, forecast trends, and information on storms or tornadoes.

As you can see, if conditions are suitable, you can "sit" on a single frequency for half an hour and monitor five or six different countries, including ones that aren't frequently heard very often on the shortwave broadcast bands. As a general rule, the best chances you'll have of hearing distant stations is by listening at night for stations operating below 9 MHz, and days for stations above 13 MHz.

Inasmuch as these stations are not engaged in "private" communications and, instead, are sending out a broadcast for general reception, you may well be able to get some of them to verify your reception more readily than other communications stations. My suggestion is to furnish them with a prepared reply card which they need only sign and return to you. Don't forget to enclose an International Reply Coupon (available at any Post Office) which the station can use to obtain local postage stamps in any country belonging to the Universal Postal Union (that includes most nations except those in the Communist Bloc). Address your report to the Operator In Charge of the station at the airport in which the city where the station is located if you have no specific address.

Various monitor-oriented registries contain data on VOLMET stations and operations around the world and readers wishing to check these out are referred to the *Confidential Frequency List* by Perry Ferrell, *The Speedx Reference Guide To Utilities*, compiled by Mike Chabak, and *The Shortwave Frequency Guide* by Bob Grove.

You should find that monitoring these VOLMET stations is interesting, exciting, and rewarding. Once you get the "feel" of it, why not take a shot at some of the more exotic ones such as those deep within the interior of the Soviet Union? If you have any additions or corrections to the listing here, please be sure to let me know about them. Write to me in care of *POP'COMM*.

Callsigns Of Some VOLMET Stations

Anchorage AK	KIS70
Aukland, New Zealand	ZKAK
Cairo, Egypt	SUC50
Edmonton, Alberta	VXA
Gander, Newfoundland	VFG
Honolulu HI	KVM70
Lahr, W. Germany	DHM95
Miami FL	WBR70
New York NY	WSY70
Prague, Czechoslovakia	OKL
St. Johns, New Brunswick	CJX
San Francisco CA	KSF70
Shannon, Eire	EIP
Singapore	9VA40
Sydney, Australia	VLS
Tel Aviv, Israel	4XL
Tokyo, Japan	JMA
Trenton, Ontario	CHR
Vancouver, British Columbia	CKN
West Drayton, England	MVU

VOLMET broadcasts originate from transmitters located throughout the world and make popular listening on the HF bands.

VOLMET Broadcasts

kHz	Minutes After The Hour	Location
2860	00/25	Brazzaville, Congo (2000-0700 GMT)
	00/30	Johannesburg, RSA
	05/35	Nairobi, Kenya
	25/55	Antananarivo, Madagascar
2863	00/30	Honolulu HI
	05/35	San Francisco CA
	10/40	Tokyo, Japan
	15/45	Hong Kong
	20/55	Anchorage AK
	20/50	Aukland, New Zealand
2881	05	Asuncion, Paraguay (0900-2200 GMT)
	10/40	Lima, Peru
	15/45	Brasilia, Brazil
	25/55	Buenos Aires, Argentina
2950	05/35	Port of Spain, Trinidad
	10/40	Merida, Mexico
	25/55	Miami FL

kHz	Minutes After The Hour	Location
2956	00	Baghdad, Iraq
	05/35	Tehran, Iran
	15/45	Beirut, Lebanon
	20/50	Cairo, Egypt
	25/55	Istanbul, Turkey
	30	Basrah, Iraq
2960	15	Ezeiza, Argentina
2965	00/30	Sydney, Australia
	05/35	Calcutta, India
	10/40	Bangkok, Thailand (1210-2245 GMT)
	15/45	Karachi, Pakistan
	20/50	Singapore (2230-1230 GMT)
	25/55	Bombay, India
2998	05/35	"Ben Gurion," Tel Aviv, Israel (Nites)
	15/45	Prague, Czechoslovakia
3001	20	Gander, Newfoundland
3047	Contin.	Johannesburg, RSA (0400-2100)
3167.5	20	Antofagasta, Chile (1120-2325 GMT)
3413	Contin.	Shannon, Eire (Nites)
3425.5	25	Cordoba, Argentina
3458	?	Beijing, PRC
3461	00/30	Riga, Latvian SSR
	00/30	Khabarovsk, USSR
	00/30	Leningrad, USSR
	05/35	Tashkent, USSR
	10/40	Rostov, USSR
	15/45	Moscow, USSR
	20/50	Kiev, USSR
3474.5	00	Montevideo, Uruguay
3485	Contin.	New York NY
4570	09	Jeddah, Saudi Arabia (0009-0330 GMT)
4637	?	RAF, unknown location
4663	00/30	Khabarovsk, USSR
	00/30	Riga, Latvian SSR
	05/35	Tashkent, USSR
	05/35	Leningrad, USSR
	10/40	Rostov, USSR
	15/45	Moscow, USSR
	20/50	Kiev, USSR
4668	30	Comodoro Rivadavia, Argentina
	50	Resistencia, Argentina
4710	50	Tegucigalpa, Honduras (1200-2400 GMT)
4722	Contin.	West Drayton, England
5280	20	Puerto Montt, Chile (1120-2325 GMT)
5445.5	10	Montevideo, Uruguay (0700-2200 GMT)
5477	15	Ezeiza, Argentina
5498	15	Salta, Argentina
	25	Cordoba, Argentina
5499	00/30	Johannesburg, RSA
	00/25	Brazzaville, Congo
	05/35	Nairobi, Kenya
	25/55	Antananarivo, Madagascar
5580	05/35	Port of Spain, Trinidad
	10/40	Merida, Mexico
	25/55	Miami FL
5589	00	Baghdad, Iraq
	05/35	Tehran, Iran
	15/45	Beirut, Lebanon
	20/50	Cairo, Egypt
	25/55	Istanbul, Turkey
	30	Basrah, Iraq
5601	10	Asuncion, Paraguay (0900-2200 GMT)
	10/40	Lima, Peru
	15/45	Brasilia, Brazil
	25/55	Buenos Aires, Argentina
5640	Contin.	Shannon, Eire
5652	20	Gander, Newfoundland
5673	?	Beijing, PRC
5676	00/30	Khabarovsk, USSR
	00/30	Riga, Latvian SSR
	05/35	Tashkent, USSR
	10/40	Rostov, USSR
	15/45	Moscow, USSR
	20/50	Kiev, USSR
5690	16	Lahr Military, W. Germany (2000-0800 GMT)
6580	05/35	"Ben Gurion," Tel Aviv, Israel
	15/45	Prague, Czechoslovakia
6582	00	Montevideo, Uruguay
6603	Contin.	Belem, Brazil
	Contin.	Brasilia, Brazil
	Contin.	Campo Grande, Brazil
	Contin.	Palegre, Brazil
	Contin.	Porto Alegre, Brazil
	Contin.	Recife, Brazil
	Contin.	Sao Paulo, Brazil
6604	Contin.	New York NY
6617	01/30	Antananarivo, Madagascar
6638	10/40	Novosibirsk, USSR
	05/35	Calcutta, India
	10/40	Bangkok, Thailand
	15/45	Karachi, Pakistan
	20/50	Singapore (1230-2230 GMT)
	25/55	Bombay, India
6679	00/30	Honolulu HI
	05/35	San Francisco CA
	10/40	Tokyo, Japan
	15/45	Hong Kong
	20/50	Aukland, New Zealand
	20/55	Anchorage AK
6716	Contin.	Johannesburg, RSA (0400-2100 GMT)
6730	00/30	Tbilisi, Georgian SSR
	05/35	Atkyubinsk, Kazakh SSR
	10/40	Krasnodar, USSR
	15/45	Alma Ata, USSR
	20/50	Tashkent, Uzbek SSR
	25/55	Baku, Azerbajan SSR
6753	20	Edmonton Military, Alta., Canada (2300-1200 GMT)
	30	Trenton Military, Ont., Canada (2300-1200 GMT)
	35	Vancouver Military, BC, Canada (2300-1200 GMT)
	40	St. Johns Military, NB, Canada (2300-1200 GMT)
7465.5	20	Antofagasta, Chile (1120-2302 GMT)
8828	00/30	Honolulu HI
	05/55	San Francisco CA
	10/40	Tokyo, Japan
	10/40	Bahrain
	15/45	Hong Kong
	20/50	Aukland, New Zealand
	20/55	Anchorage AK
8849	?	Beijing, PRC
8852	00/30	Algiers, Algeria
	05/35	Kano, Nigeria
	15/45	Dakar, Senegal
	25/55	Khartoum, Sudan
8858	00/30	Algiers, Algeria
	15/45	Kano, Nigeria
	25/55	Khartoum, Sudan
8868	20	Gander, Newfoundland
8888	00/30	Syktvkar, USSR
	05/35	Sverdlovsk, USSR
	10/40	Yeniseysk, USSR
	15/45	Kurumuch, USSR
8903	00/30	Riga, Latvian SSR
	05/35	Leningrad, USSR
	10/40	Rostov, USSR
	15/45	Moscow, USSR
	20/50	Kiev, USSR
8917	00/30	Tbilisi, Georgian SSR
	05/35	Aktyubinsk, Kazakh SSR
	10/40	Krasnodar, USSR
	15/45	Alma Ata, USSR
	25/55	Baku, Azerbajan SSR
8938	30	Comodoro Rivadavia, Argentina
8945	00	Baghdad, Iraq
	05/35	Tehran, Iran
	15/45	Beirut, Lebanon
	20/50	Cairo, Egypt

kHz	Minutes After The Hour	Location
8945	25/55	Istanbul, Turkey
8952	25	Cordoba, Argentina
8957	Contin.	Shannon, Eire
8990	Contin.	Novosibirsk, USSR
9009	00/30	Syktyvka, USSR
	05/35	Sverdvovsk, USSR
	10/40	Yeniseysk, USSR
	15/45	Kubybyshev, USSR
	25/55	Salekhard, USSR
9026	Contin.	Johannesburg, RSA (0400-2100 GMT)
10009	05/35	Tashkent, Uzbek SSR
	10/40	Novosibirsk, USSR
	25/55	Moscow, USSR
10036	05	Asuncion, Paraguay (0900-2200 GMT)
10051	Contin.	New York NY
	20	Gander, Newfoundland
10057	00/30	Johannesburg, RSA
	00/25	Brazzaville, Congo (0700-2000 GMT)
	05/35	Nairobi, Kenya
	25/55	Antananarivo, Madagascar
	Contin.	Belem, Brazil
	Contin.	Campo Grande, Brazil
	Contin.	Galeao, Brazil
	Contin.	Brazilia, Brazil
	Contin.	Palegre, Brazil
	Contin.	Porto Alegre, Brazil
	Contin.	Recife, Brazil
	Contin.	Sao Paulo, Brazil
10073	01/30	Antananarivo, Madagascar
10087	10/40	Lima, Peru
	15/45	Brasilia, Brazil
	25/55	Buenos Aires, Argentina
10090	00/30	Riga, Latvian SSR
	00/30	Khabarovsk, USSR
	05/35	Tashkent, USSR
	05/35	Leningrad, USSR
	10/40	Rostov, USSR
	15/45	Moscow, USSR
	20/50	Kiev, USSR
10215	09	Jeddah, Saudi Arabia (0409-2030 GMT)
11192	10/40	Novosibirsk, USSR
11200	Contin.	W. Drayton, England RAF VOLMET
	16/46	Lahr, W. Germany
11315	05/35	Port of Spain, Trinidad
	10/40	Merida, Mexico
	25/55	Miami FL
11319	15	Ezeiza, Argentina
11378	05/35	Ben Gurion Radio, Tel Aviv, Israel
	15/45	Prague, Czechoslovakia
11387	00/30	Sydney, Australia
	05/35	Calcutta, India
	10/40	Bangkok, Thailand (2310-1145 GMT)
	15/45	Karachi, Pakistan
	20/50	Singapore (2230-1230 GMT)
	25/55	Bombay, India
13270	Contin.	New York NY (Days)
13272	05/35	Irkutsk, USSR
	10/40	Magadan, USSR
13294.5	00	Montevideo, Uruguay (Days)
13231	16	Lahr Military, W. Germany (0800-2000 GMT)
13261	00/30	Johannesburg, RSA
	05/35	Nairobi, Kenya
	15/45	Brazzaville, Congo
	25/55	Antananarivo, Madagascar
13264	Contin.	Shannon, Eire (Days)
13270	20	Gander, Newfoundland
13276	05	Asuncion, Paraguay (0905-2225 GMT)
13279	00/30	Khabarovsk, USSR
	00/30	Riga, Latvian SSR
	05/35	Tashkent, USSR
	05/35	Leningrad, USSR
	10/40	Lima, Peru
	10/40	Rostov, USSR
	15/45	Moscow, USSR
13279	15/45	Brazilia, Brazil
	20/50	Kiev, USSR
	25/55	Buenos Aires, Argentina
13282	00/30	Honolulu HI
	05/35	San Francisco CA
	10/40	Tokyo, Japan
	15/45	Hong Kong
	20/55	Anchorage AK
	20/50	Aukland, New Zealand
13285	?	Beijing, PRC
13352	Contin.	Belem, Brazil
	Contin.	Brazilia, Brazil
	Contin.	Campo Grande, Brazil
	Contin.	Galeao, Brazil
	Contin.	Manaus, Brazil
	Contin.	Palegre, Brazil
	Contin.	Porto Alegre, Brazil
	Contin.	Recife, Brazil
	Contin.	Sao Paulo, Brazil
15035	20	Edmonton Military, Alta, Canada
	30	Trenton Military, Ont., Canada
	35	Vancouver Military, BC, Canada
	40	St. Johns Military, NB, Canada

May We Recommend . . . .

The Longwave Club of America, 45 Wildflower Rd., Levittown, PA 19057. Here's a club for those rugged enthusiasts interested in knowing what's happening below 540 kHz! Their monthly publication, *The Lowdown*, not only covers listings of stations operating between 10 and 540 kHz, but also has interesting coverage of the 1750 Meter (no license) low power communications band as conducted by Ken Cornell (W2IMB—well known "lowfer" authority. Membership includes mailing of the publication by First Class Mail and costs $10 per year (anywhere in the world).
When writing to the above, please mention that you saw it in POP'COMM!

Cook's Tour

A Shortwave Listener's Guide To The Pacific

BY GERRY L. DEXTER

This enticing photo shows the home of Radio Kiribati.

Balboa may have been the first European to see it. Magellan may have been the first European to sail it. But Captain James Cook, a master navigator among his many other talents, is the man we most associate with bringing the first solid knowledge about the Pacific Islands back to the Western world.

Cook made three Pacific voyages during the years 1768 through 1779. His great discoveries ended with his death at the hands of a band of Hawaiians in 1799.

Since Cook's time, artists, writers, and travelers have captured our imagination with tales of tropic nights, lovely maidens, palm trees, copra, and all the rest.

Things may not be quite that picturesque in some parts of the Pacific today, but the shortwave listener can still imagine himself languishing on a beach on some remote isle as he listens to a signal from the Pacific. Unfortunately, there are many more islands in the Pacific than there are shortwave broadcast stations to tune in the area.

Our Cook's Tour is designed to help you hear the stations of the Pacific. Put on a pair of shorts, don your loudest shirt, make yourself a tall, cool one and let's go.

Australia

Due to budgetary restrictions, Radio Australia recently dropped its service to North America, but it's Pacific Service can still be easily heard in North America.

Radio Australia prides itself on its informal style and its objective and comprehensive news service—which produces some 68 newscasts a day, including eight which consist of Australian news.

Radio Australia's Overseas Service is on the air 24 hours a day in English. There's another 24 hours per day consisting of eight other languages including Indonesian, Chinese, French, Vietnamese, and Thai.

The audience is huge. Immense! Radio Australia estimates there are some 30 million listeners in Indonesia alone! In 1978, Radio Australia received a total of 24 letters from the People's Republic of China. The next year, 120,000 pieces of mail flowed in!

Radio Australia got its start as "Australia Calling" back in 1939 when it was a joint operation of the Australian Broadcasting Commission and the Department of Information.

What we know as Radio Australia was born after the war when broadcasting was put into the hands of the ABC. New, modern studios were constructed in a suburb of Melbourne in 1982 where a staff of some 170 are employed in the Overseas Service.

The Pacific Service of Radio Australia has a large audience throughout the islands since radio stations are few and far between.

Broadcasts open with the familiar "Waltzing Matilda" played on a music box and the call of the Kookabura bird—a sound effect which seems to have been used in every jungle movie ever made. Incidentally, we've been told that the Kookabura is native to, and found only in, Australia.

Technical facilities consist of six 100-kilowatt and three 50-kilowatt transmitters located at Shepparton, Victoria; one 100-kw and one 250-kw unit at Carnarvon in West-

This building houses Radio Western at Daru, Papua New Guinea.

"Broadcasting House" of the Solomon Islands Broadcasting Service in Honiara.

ern Australia; three 10-kilowatt transmitters at Lyndhurst, Victoria serving the Pacific; and three 250-kw units at Darwin in the north. The latter facility was put out of commission by a cyclone in 1974. Service is expected to be restored in 1984.

The "C" in the ABC (Australian Broadcasting Commission) was changed to stand for "corporation" in a 1983 reorganization. The ABC also operates domestic stations throughout the country and a few of these have shortwave outlets which relay various ABC network services to reach areas which could not otherwise be served.

ABC Brisbane in Queensland has two 10-kilowatt transmitters at Bald Hills on the outskirts of Brisbane. VLQ came on the air in 1943, VLM began in 1949. Both carry ABC Radio Three programming to rural listeners.

ABC Perth, Western Australia runs three shortwave transmitters at Waneroo, about seven miles from Perth. All carry the Radio Three service designed for country listeners in the outback of north and northwest Australia. VLW6 runs 10 kilowatts, VLW9 is a 10/50 kw combination and VLW15 is 50 kilowatts. VLW began in 1939, VLX was added ten years later and subsequently had its call changed to VLW. All three thus use VLW with the numbers designating the individual transmitters.

ABC Sydney, in New South Wales, went off the air in the fall of 1983. Its ancient two kilowatt transmitter was in very poor condition. There are plans to upgrade this facility, but it's uncertain just how long this process will take—perhaps years.

ABC Lyndhurst has two 10-kilowatt outlets in use for the domestic service. VLH carries the Radio Two service, VLR programs Radio One.

Radio One is a pop music, news, sports, and public affairs service. Radio Two programs classical music, public affairs, arts, and drama. Radio Three includes state, regional, and national programming and locally produced shows, news, music, discussion, and community information.

The ABC is a large operation. It maintains *six* symphony orchestras, a training orchestra, a show band, a 24 hour FM network, over 200 television stations, 91 AM stations, a nationwide independent news service, domestic and international services, and a merchandising division that offers books, magazines, and recordings produced by the ABC.

New Zealand

Just as in the physical size of the country, Radio New Zealand has to play second fiddle to Radio Australia in size.

Radio New Zealand's shortwave operations have been designated as terminally ill on a number of occasions over the past several years. Each time, the patient seems to get a new lease on life.

At present, Radio New Zealand's shortwave programming is limited to relays of the domestic service, although there is a possibility of a return to the production of a minimal amount of programming to be aired on shortwave only.

Shortwave relays of the local programs of Radio New Zealand run some 18 hours per day. Like that of Radio Australia, the transcription service provides programming to many stations throughout the Pacific.

Two creaking, 40-year-old, 7½ kilowatt transmitters are still in service at Tihai Bay, 15 miles north of Wellington. Radio New Zealand's engineers and planners must have sleepless nights worrying over this situation, hoping that somehow the equipment will hold together until the day when new facilities can be afforded.

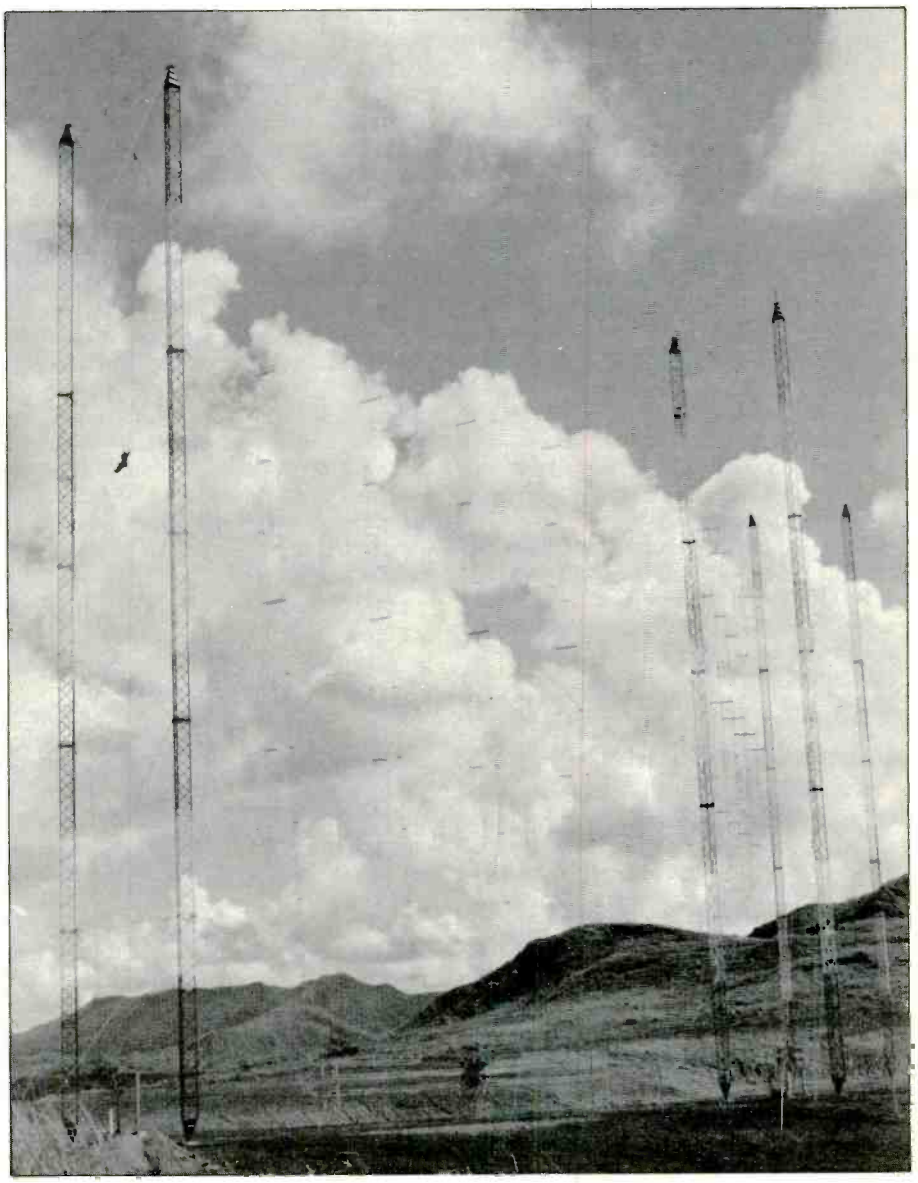
Guam

Completely "USA'ed," Guam has everything from fast food restaurants to TV sitcoms to shopping centers. It's a "permanent incorporated U.S. territory" and, as such, the people are citizens under the supervision of the U.S. Department of the Interior. About 20,000 of those on the island are in the military and about half the remainder work for the government!

Guam has been the home of KTWR since 1977. The station is owned by Trans World Radio, which operates medium and short-

A Radio Australia program going out to Mainland China.

The antenna array at KTWR on Guam



wave stations in locations around the globe.

Two 100-kilowatt transmitters are located at Merizo, and these transmitters beam religious programming in English, Japanese, Chinese, Cambodian, Vietnamese, Russian, and Lao to China, Southeast Asia, and the USSR's Far East.

Saipan

This island is located in the U.S. Commonwealth of the Northern Marianas and, along with Guam, could one day become the 51st state. The islands are weighted with military installations.

In December, 1982, American-style rock 'n' roll came to Japan in the form of station KYOI, broadcasting from a 100 kilowatt transmitter at Agingan Point on Saipan's southernmost tip.

Program tapes are prepared by the Drake-Chenault Company of Los Angeles, a music programming service.

They are broadcast from a 24,000 square foot cream and brown bunker-type building on Saipan which boasts its own emergency generator, emergency water supply, and so on. The self-contained building was designed to be typhoon and earthquake-proof.

KYOI, ("yoi" means "good" in Japanese) is the brainchild of Lawrence "Bob" Berger, who also owns stations in Hawaii, Guam, and American Samoa.

KYOI employs five locals who work 7 day, 6½ hour shifts, keeping an eye on the computer-controlled, automatic programming system.

Also located in Saipan is the Far East Broadcasting Company's new KFBS, which has had a terrible time making the airwaves.

The original location picked for the station was of historical significance to Japanese who fought on the island and, after clearing work had begun, protests started, so the site was abandoned.

Chosen next was a site at "Capital Hill" but this, too, had to be changed when it turned out there were high-rise apartment buildings planned nearby.

The third time's a charm and KFBS was constructed on a cliff overlooking the sea.

By late 1983, KFBS had still not started broadcasting, but it should be on the air by the time you read this. Broadcasts will be religious and cultural in content and beamed to Asia.

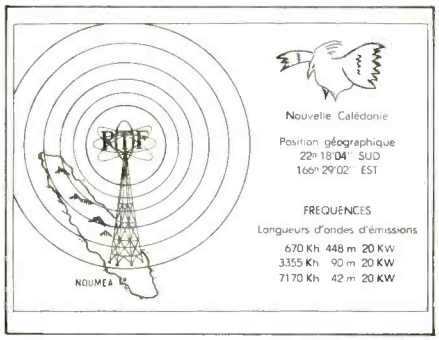
Papua New Guinea

Some of the world's most exotic radio broadcasting comes out of this country and its many local service broadcasters which operate on shortwave. All can be heard in the U.S. (See "Stasiun Bilong Papua New Guinea," *POP'COMM*, April, 1983).

Variety is the word in Papua New Guinea—from the metropolitan life of Port Morseby to nomadic hunters in the interior—there are unbelievable sights and scenery. As well, there is a jungle of languages, with Pidgin English used as a verbal bridge.

The use of shortwave allows the stations to get around some of the incredible geography which would kill off a medium wave signal practically before it got past the ground system!

Radio Tahiti's blue and white QSL card.



Radio Noumea's QSL card.

The people of Papua New Guinea rely on their radio stations like few others. Radio is often the only link they have to the outside world and the radio stations are treasured. The stations, in turn, go to unreal extremes to provide services to their audiences.

Signals from the various Papua New Guinea stations are best heard in the spring and fall between 0900 and 1300, depending on where you live.

Most stations are rated at two kilowatts (they're not intended to be heard in New Jersey!). For a complete list, refer to our "Pacific Log." Don't rely on the higher frequencies as these are often used for broadcasting during local daytimes in Papua New Guinea. Frequencies in the 120, 90, and 60 meter bands are your best bet.

Cook Islands

More Cook Islanders live abroad than live at home. That's hard to imagine for those of us who may ache to enjoy the weather, scenery, and general laid-back life style.

Radio Cook Islands, or, more formally, the Cook Islands Broadcasting and Newspaper Corporation, is listed to use 3.265, 5.045, 9.695, and 11.760. Don't believe it! The only frequency that can be regularly received is 11.760. 5.045 is, as far as we can tell, still in operation, but the other two are not used.

Programs are in English and Maori from 1600 to 0900 daily and include relays of programs from Radio New Zealand, ABC in Australia, and also feature local parliament deliberations in session.

While the power is only 500 watts, the 25 meter band frequency offers up very good signals late at night during the years of high sunspot counts and will still provide good reception, particularly in the summer.

The station is on the main island of Rarotonga, which means "down south."

Kiribati

This was formerly the Gilbert and Ellice Islands and the station used to be the Gilbert and Ellice Islands Broadcasting Service. Anywhere east of California, it was an extremely good catch until it went off the air a number of years ago.

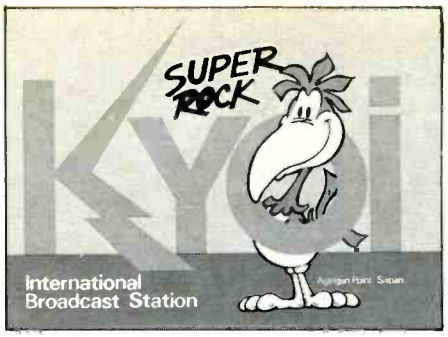
When signals were again heard from this area, they came in the form of Radio Kiribati (pronounced Kir-a-bas). The station is something of an oddity. The country's 60,000 people are spread among 33 islands, many of which are widely separated. Radio Kiribati's shortwave transmissions are aired as a feed for Christmas Island and listeners there.

Transmissions are in lower sideband on 16.433 from 1800 to 2000, 0000 to 0130, and 0530 to 1000; Saturdays from 1800 to 0130 and 0530 to 1000; and Sundays 2300 to 0130 and 0530 to 1000.

Programming is in English and Kiribatese with relays of Radio New Zealand and news from the BBC.

Shortwave DXers still aren't sure whether the use of single sideband means the broadcast is actually just a straight feed which is then converted for normal listening on

QSL cards from two of the ABC Domestic service shortwave stations.



Super Rock KYOI sends out this bumper sticker.

Christmas Island. The station seems to look upon it as a general service.

New Caledonia

This French overseas territory has been populated for over 3,000 years. The main island, Grand Terre, is the location of the capital city of Noumea and it has a population of 70,000, including Radio Noumea.

Broadcasts on Radio Noumea are strictly in French. The use of English for a few hours on Saturdays was dropped months ago.

In addition to the usual fare, programs include special oceanic weather reports and personal messages. The call of the cagou bird is used as an interval signal.

Radio Noumea broadcasts with 20 kilowatts on 3.355 and 7.170, the latter giving the most reliable reception. Broadcast hours are 1900 to 1030, Fridays to 1200, Saturdays to 1300, and Sundays to 1000.

Tahiti

The Society Islands have long been a favorite of shortwave listeners, with the steady fair of music, much of it the Tahitian variety.

Tahiti is another French possession with an almost limitless variety of flowers, rugged mountains, beautiful beaches—everything one expects when visions of the South Seas come to mind. Despite being highly developed and overrun with tourists, there's still much of that special flavor left.

Radio Tahiti began in 1931 as a service supplied by a few amateur opeators. It became Radio Tahiti in 1952 and came under the direction of the French broadcast authority in 1959.

Programs in French and Tahitian run from 1600 to 0730, Saturdays to 0930, with 4 kilowatts on 6.135, and 20 kilowatts on 11.825 and 15.170. The summer months, in particular, can provide excellent reception of Radio Tahiti.

Vanuatu

This is another country which has seen a name change in the past few years. It was formerly the New Hebrides, governed jointly by Britain and France as a condominium until independence was achieved in 1980.

The years just prior to independence saw a short-lived rebellion led by Jimmy Stevens who, with prodding by some French government officials and American entrepreneurs, tried to pull Espiritu Santu and Tanna out of the planned Republic of Vanuatu.

Pacific Log

2.340 Radio West New Britain, Kimbe, Papua New Guinea
2.376 Radio Chimbu, Kundiawa, Papua New Guinea
2.410 Radio Enga, Wabang, Papua New Guinea
2.428 Radio Manus, Lorengau, Papua New Guinea
2.450 Radio West Highlands, Mt. Hagen, Papua New Guinea
2.468 Radio Northern District, Popondetta, Papua New Guinea
3.305 Radio West Sepik, Vanimo, Papua New Guinea
3.220 Radio Morobe, Lae, Papua New Guinea
3.245 Radio Gulf, Kerema, Papua New Guinea
3.260 Radio Madang, Madang, Papua New Guinea
3.275 Radio Southern Highlands, Mendi, Papua New Guinea
3.290 Radio Central, Boroko, Papua New Guinea
3.305 Radio Western, Daru, Papua New Guinea
3.322 Radio North Solomons, Kieta, Papua New Guinea
3.335 Radio East Sepik, Wewak, Papua New Guinea
3.355 Radio Noumea, New Caledonia
3.360 Radio Milne Bay, Alotau, Papua New Guinea
3.385 Radio East New Britain, Rabaul, Papua New Guinea
3.395 Radio Eastern Highlands, Goroka, Papua New Guinea
3.905 Radio New Ireland, Kavieng, Papua New Guinea
3.925 NBC Port Morseby, Papua New Guinea
3.945 Radio Vanuatu, Port Vila, Vanuatu
4.890 NBC Port Morseby, Papua New Guinea
5.020 Solomon Islands Broadcasting Corp, Honiara, Solomon Islands
5.045 Radio Cook Islands, Rarotonga, Cook Islands
5.995 Radio Australia, Lyndhurst
6.020 Radio North Solomons, Kieta, Papua New Guinea
6.035 Radio Australia, Carnarvon
6.040 Radio Milne Bay, Alotau, Papua New Guinea
6.045 Radio Australia, Lyndhurst
6.050 Radio Australia, Shepparton
6.060 Radio Australia, Shepparton
6.080 Radio Australia, Shepparton
6.080 Radio Western, Daru, Papua New Guinea
6.090 ABC Sydney (inactive)
6.135 Radio Tahiti
6.140 ABC Perth, Australia
6.140 Radio East Sepik, Wewak, Papua New Guinea
6.150 ABC Melbourne, Australia
7.170 Radio Noumea, New Caledonia
7.260 Radio Vanuatu, Port Vila, Vanuatu
9.505 Radio Australia, Shepparton
9.505 KTWR, Guam
9.520 NBC Port Morseby, Papua New Guinea
9.535 KTWR, Guam
9.545 Solomon Islands Broadcasting Corp, Honiara, Solomon Islands
9.560 Radio Australia, Carnarvon, Australia
9.570 Radio Australia, Shepparton
9.575 Radio Morobe, Lae, Papua New Guinea
9.575 KFBS, Saipan
9.580 Radio Australia, Shepparton
9.585 KTWR, Guam
9.590 KTWR, Guam
9.600 KTWR, Guam
9.610 ABC Perth, Australia
9.640 Radio Australia, Carnarvon
9.660 ABC Brisbane, Australia
9.680 ABC Lyndhurst, Australia
9.695 KYOI, Saipan
9.710 Radio Australia, Shepparton/Carnarvon
9.760 Radio Australia, Shepparton
9.770 Radio Australia, Shepparton
11.705 Radio Australia, Shepparton
11.725 Radio Australia, Shepparton
11.735 KTWR, Guam
11.760 Radio Australia, Carnarvon
11760 Radio Cook Islands, Rarotonga
11.765 KTWR, Guam
11.770 Radio Australia, Shepparton
11.800 Radio Australia, Shepparton
11.820 Radio Australia, Shepparton
11.825 Radio Tahiti
11.840 KTWR, Guam
11.855 Radio Australia, Shepparton
11.880 ABC Perth, Australia
11.900 KYOI, Saipan
11.905 Radio Australia, Carnarvon
11.920 KTWR, Guam
11.945 KTWR, Guam
11.960 Radio New Zealand
11.970 Radio Australia, Shepparton
15.110 KTWR, Guam
15.110 KFBS, Saipan
15.115 Radio Australia, Shepparton
15.115 KFBS, Saipan
15.130 Radio Australia, Shepparton
15.135 KTWR, Guam
15.140 Radio Australia, Carnarvon
15.150 KFBS, Saipan
15.160 Radio Australia, Lyndhurst
15.170 Radio Tahiti
15.230 ABC Lyndhurst, Australia
15.240 KTWR, Guam
15.240 Radio Australia, Lyndhurst
15.265 KTWR, Guam
15.310 Radio Australia, Shepparton
15.320 Radio Australia, Shepparton
15.350 KTWR, Guam
15.365 Radio Australia, Shepparton
15.410 Radio Australia, Carnarvon
15.425 ABC Perth, Australia
15.485 Radio New Zealand
16.433 Radio Kiribati, Bairiki, Tarawa, Kiribati
17.705 Radio New Zealand
17.705 KTWR, Guam
17.725 Radio Australia, Shepparton
17.770 KTWR, Guam
17.795 KTWR, Guam
17.795 Radio Australia, Shepparton
17.795 KYOI, Saipan
17.870 Radio Australia, Carnarvon
21.525 Radio Australia, Shepparton
21.650 Radio Australia, Shepparton
21.680 Radio Australia, Shepparton
21.770 Radio Australia, Shepparton/Carnarvon

The government ended up calling in troops from Papua New Guinea to put down the revolt. For a time, Stevens even operated a clandestine radio station on Espiritu Santu.

Port Vila, the capital on Efate Island, has a population of around 17,500. It's one of some 80 islands in the group.

Radio Vanuatu operates two transmitters from Vila, using 10 kilowatts on 3.945 and 3.5 kilowatts on 7.260. English, French, and Pidgin are aired in the schedule, which runs from 1900 to 0200 and 0500 to 1100 (Sundays 1200).

The broadcast service began in 1965 as Radio Vila, the New Hebrides Broadcasting Service. Personal messages for people on scattered islands are also an important part of this station's service.

Solomon Islands

Mountains and volcanoes, heat and humidity and regular discoveries of World War II relics, including unexploded bombs, may be some of the reasons why the Solomons don't enjoy more tourism.

Their radio station began as a rather elementary affair undertaken by operators of the government wireless station after World War II. They began with just a single half-hour program on Sunday mornings. By 1948 they had all of 57 licensed listeners!

In 1952, a more formal organization—the Solomon Island Broadcasting Service—operated the 400 watt VQO for an hour an evening. Commercial advertising was accepted beginning in 1960 and the station has had a steady growth since.

New studios are located near the Botanical Gardens at Rove on Honiara with transmitters at Henderson Field.

Programming includes features aimed at farmers, women, and the youth, with time devoted to religion, school broadcasts, quiz shows, requests, shipping and aircraft movements, and job openings. Shortwave is used as a domestic service in order to provide coverage to the outer islands.

SIBS became the Solomon Islands Broadcasting Corporation in 1977. Ten kilowatt transmitters operate on 5.020 and 9.545 with a standby 5 kilowatt unit available for 5.020 if needed. The 9.545 outlet can often be well heard.

Programming runs from 1900 to 1130 and 2030 to 0730 with broadcasts in English and Pidgin and Radio Australia relays.

SIBS is a stickler for detailed reception reports and requires four international reply coupons for a reply.

Well, that's the tour! Sad to say there are so many romantic spots which have no shortwave broadcast outlets, including Fiji and American Samoa which did have them at one time.

Considering the distances many of the local stations have to cover, it's a bit surprising a greater use isn't made of the shortwave potential.

Still, there's some great listening and DXing challenges out in the Pacific. And, who knows? Maybe someday there'll be a "Radio Tonga" waiting to be heard.

Meantime, have a go at those on our list. Bon Voyage!

Addresses For Shortwave Stations Of The Pacific

Australia:
Radio Australia
P.O. Box 428-G, G.P.O.
Melbourne, 3001

ABC Brisbane
Box 293, G.P.O.
Brisbane, 4001

ABC Melbourne
Box 1686, G.P.O.
Melbourne, 3001

ABC Perth
Box 190-D, G.P.O.
Perth, 6001

ABC Sydney
Box 487, G.P.O.
Sydney, 2001

Cook Islands:
Cook Islands Broadcasting
and Newspaper Authority
P.O. Box 28
Avarua, Rarotonga

Guam:
Trans World Radio
KTWG
Box ED,
Agana, Guam 96910

Kiribati
Radio Kiribati
B.P. Box 78
Bairiki, Tarawa Atol

New Caledonia
Radio Noumea
B.P. G-3
Noumea

New Zealand:
Radio New Zealand
P.O. Box 2092
Wellington

Mariana Islands: Commonwealth of)
KYOI/Marcom
P.O. Box 1397
Saipan, CM 96950

KFBS
P.O. Box 209
Saipan, CM 96950

Papua New Guinea:
National Broadcasting Commission
Box 1359
Boroko

Radio West New Britain
P.O. Box 142
Kimbe

Radio Chimbu
P.O. Box 228
Kundiawa

Radio Eastern Highlands
P.O. Box 311
Goroka

Radio New Ireland
P.O. Box 140
Kavieng

Radio Western Highlands
P.O. Box 311
Mt. Hagen

Radio Popondetta
P.O. Box 137
Popondetta

Radio West Sepik
P.O. Box 35
Vanimo

Radio Enga
P.O. Box 96
Wabag

Radio Morobe
P.O. Box 1262
Lae

Radio Gulf
P.O. Box 36
Kerema

Radio Manus
P.O. Box 10
Lorengau

Radio Madang
P.O. Box 2036
Madang

Radio Southern Highlands
P.O. Box 104
Mendi

Radio East New Britain
P.O. Box 393
Rabaul

Radio Milne Bay
P.O. Box 111
Alotau

Radio East Sepik
P.O. Box 65
Wewak

Radio North Solomons
P.O. Box 35
Kieta

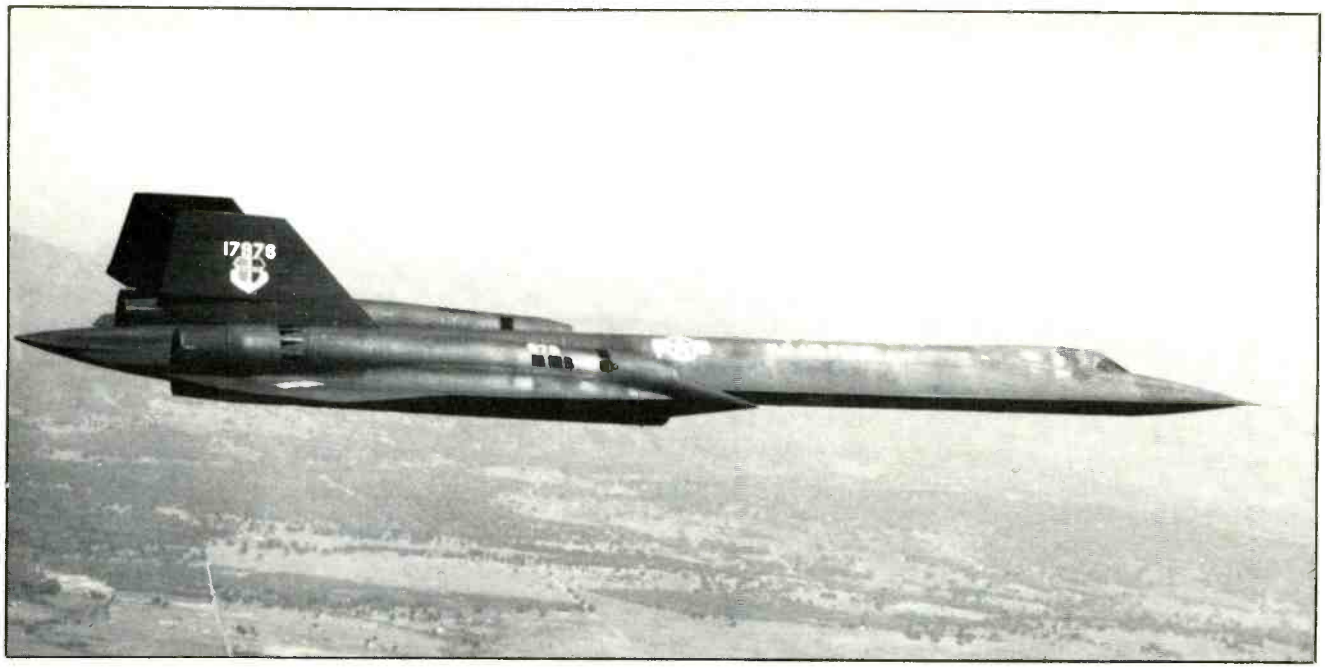
Radio Western
P.O. Box 23
Daru

Radio Central
P.O. Box 1359
Boroko

Tahiti:
Radio Tahiti
B.P. 125
Papeete

Solomon Islands:
Solomon Islands Broadcasting Corporation
P.O. Box 654
Honiara

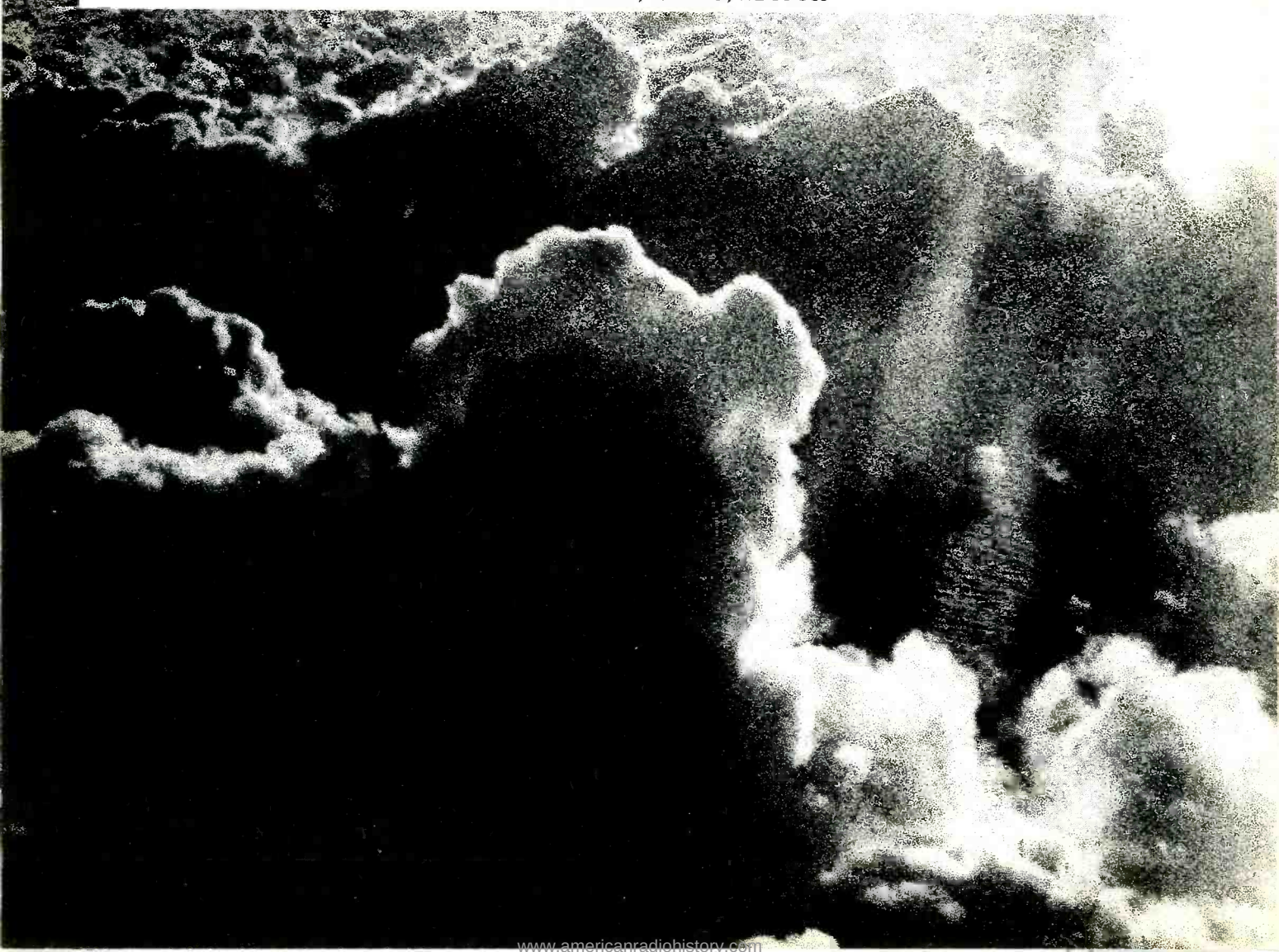
Vanuatu:
Radio Vanuatu
P.O. Box 49
Port Vila



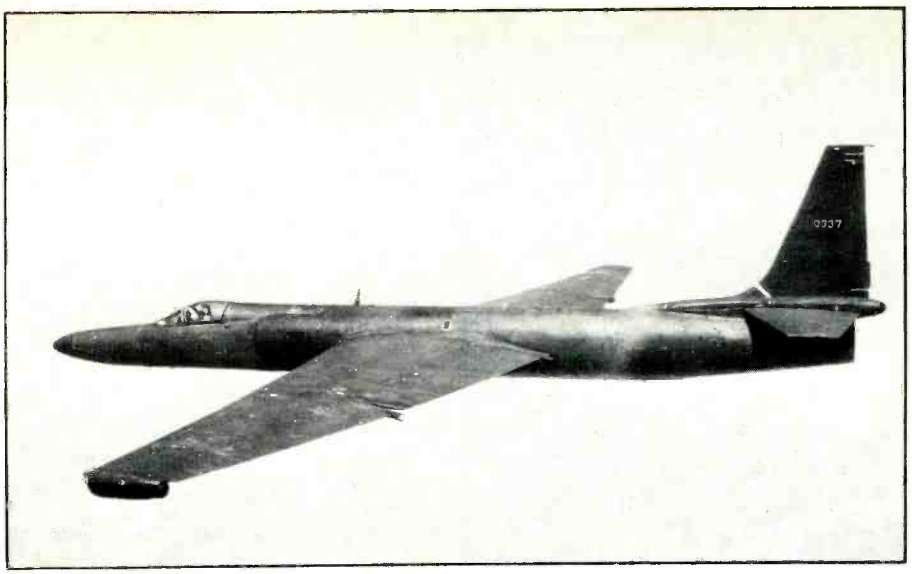
Uncle Sam's Airborne Ears

Electronics Is The Heart Of Our Super-Secret Spy Planes

BY TOM KNEITEL, K2AES, EDITOR



This SR-71 is assigned to the 1st Strategic Reconnaissance Squadron, Beale AFB, California. (Photo courtesy U.S. Air Force)



The U-2R in flight. This aircraft is assigned to the 99th Strategic Reconnaissance Squadron, Beale AFB, California. (Photo courtesy U.S. Air Force)

The RC-135 spy plane was thrust into headlines last year when the Soviets shot down the Korean airliner, thus bringing out into the open (at least a little bit) one of the most interesting and curious weapons of electronic warfare. On 13 September, 1983, shortly after the Korean airliner incident, the *Denver Post* carried a story by Tom Bernard and Edward Eskelson (former RC-135 crew members and long-time USAF experts in communications intelligence) who stated that our government has participated in "a major effort . . . to bewilder the public concerning the capabilities of the U.S. Air Force RC-135 and more importantly, the National Security Agency."

These two specialists said it was unbelievable that the government had stated publicly that there was no RC-135 anywhere near the area in which the Korean airliner was flying—that we claimed such an aircraft was at one time in the area but it had long since flown back to its base (in Alaska) by the time Korean Flight 007 appeared on the scene. They said that since the RC-135 "is always relieved on its orbit prior to the conclusion of its mission," it may well have returned to its base, but it would surely have been replaced by yet another such reconnaissance aircraft before it left its figure-eight patrol route. They sharply disputed our government's depiction of the RC-135 as a simple monitoring aircraft established for the basic purpose of "verifying compliance with arms control agreements." Fact was, they stated, that they viewed the RC-135 as having "a number of capabilities which we view as being offensive in nature."

For instance, Bernard and Eskelson reported that the RC-135 is capable of jamming both radar and communications signals. Furthermore, the RC-135 has equipment which "permits instantaneous reporting of tactical intelligence to the highest levels of government, including the president, from any location in the world." These intercepts are "required to be in the president's hands no more than 10 minutes after the time of transmission."

They described an "internal warning system" which can "monitor the tactical air activity and air defense radars of the target nation." This permits rapid detection of "hostile activity" which has the potential of being deployed against the RC-135 or other aircraft. General R.H. Ellis, former commander of the Strategic Air Command, in the September, 1978 issue of *Air Force Magazine*, discussed the use of such a system aboard American reconnaissance aircraft (such as the U-2, SR-71, and RC-135) by saying: "It is possible to operate these systems in a way that induces the *other fellow* to react in a way that tells us things we want to know. This can't be done with satellites."

What did he mean by this? Possibly a clue was given in 1958 by two former British intelligence agents who ended up in jail for offering the following revelations in a publication put out by Oxford University: "Since the Russians do not always provide the required messages to monitor, they are sometimes provoked. A plane 'loses' its way; while behind the frontier, tape recorders excitedly read the irritated messages of Russian pilots; and when sometimes the aeroplane is forced to land, an international incident is created."

Adding to this was ex-MIG-25 pilot V. Belenko. In his autobiography, he told of the Soviet reaction to SR-71 reconnaissance aircraft as they approached the Russian coastline "taunting and toying with MIG-25's sent up to intercept them, scooting to altitudes the Soviet planes could not reach and circling leisurely above them, or dashing off at speeds the Russians could not match."

Supporting this claim was an item carried by the Knight News Service on 15 September 1983, which said that "the RC-135's transmit confusing radar signals in an effort to prompt the Soviets to scramble (send up) their fighters."

These practices are not without their very definite risks to the pilots and crews of the reconnaissance aircraft. In June of 1958, the Soviets brought down a CIA aircraft along with its crew of nine. In September of that year, another mission over Soviet Armenia suffered a similar fate (it had 17 NSA people aboard). May of 1960 saw the U-2 flight of Francis Gary Powers brought down while flying deep within the borders of the USSR, and less than six weeks later the Soviets shot down an early version of the RC-135 (known as the RB-47) over the Barents Sea. In 1964, two more reconnaissance aircraft were shot down over East Germany, one an RB-66 and the other a T-39.

Nevertheless, the flights have continued and, from time to time, the loss of such aircraft that "accidentally strayed off course" is reported in the world's press. There have been accusations on our part that the Soviets have, on occasion, transmitted false radionavigation signals in an effort to lure unsuspecting aircraft into their airspace. This may well be true, however it would probably be difficult to successfully use such a ploy on most modern military aircraft—especially reconnaissance aircraft, since they are equipped with navigation systems that would hardly be reliant upon signals that could be counterfeited by the enemy.

The December '83 issue of *Counterspy Magazine* reports that, "Apart from the exotic devices like the SR-71, there are still continual spy flights over East Germany by simulated U.S. transport aircraft flying to Berlin. Codenamed *Creek Misty*, these are actually C130E Hercules spy planes. Only six months ago, an RAF Hercules flying the same route was shot at by East German interceptors."

Bernard and Eskelson also reported that the RC-135 is able to operate its communications equipment "over an extremely broad range of frequencies, including those used by other aircraft, both civilian and military, ships, ground stations and air controllers." This capability was pressed into service during the war in Southeast Asia, with the RC-135's letting the B-52 pilots know where the enemy ground radar was located and when it had detected the bombers. This type of mission was described in the May, 1976, issue of *Aviation Week and Space Technology*. In discussing the RC-135's and SR-71, it was said that they operate "peripheral intelligence missions . . . to pinpoint locations and characteristics of potentially hostile enemy emitters . . . Information of this nature helps (the SAC) to develop ways of evading troublesome emitters . . ."

The British publication *New Statesman* (9 September, 1983) noted that American officials don't deny that U-2, SR-71, and RC-135 spy planes regularly fly along the borders of the Soviet Union with a battery of monitoring devices aboard. These aircraft, *New Statesman* reports, are based in Alaska, Greece, Cyprus, Turkey, and Okinawa, and the USAF base at Mildenhall in Suffolk, England.

The magazine noted that in January of

Aircraft Serial Numbers of U2's RC-135's

U2 & Variants

USAF #	Type Aircraft
68-10329 to 340	WU-2C, U-2R
80-1061 & 62	TR-1A
80-1064	TR-1A
80-1065	TR-1A
80-1066	TR-1A
80-1067	TR-1B (trainer)
80-1068	TR-1A

RC-135 & Variants

USAF #	Type Aircraft
61-2663	RC-135S (Eielson AFB, AK)
61-2664	RC-135S (Eielson AFB, AK)
62-4131	RC-135W
62-4132	RC-135M (Mildenhall, England)
62-4135	RC-135W
62-4138	RC-135M (Mildenhall, England)
62-4139	RC-135M (Mildenhall, England)
63-9792	RC-135V
64-14841 to 846	RC-135V
64-14847	RC-135U
64-14848	RC-135V (Mildenhall, England)
64-14849	RC-135U

SR-71 & Variants

(Serial #'s not known.)

Tail numbers often consist of the numerals after the hyphen in the official serial number, thus the tail number on 68-14848 is 14848, etc.

1982, an RC-135V landed at Mindenhall and observers were able to see five small red silhouettes painted on the nose of the aircraft. These looked to be depictions of the Soviet long-nosed Sukhoi interceptors. On the side of a fighter aircraft such silhouettes would acknowledge a "kill." Inasmuch as RC-135's aren't armed, that type of decoration was interpreted by onlookers as meaning that the RC-135 had gotten away with five successful penetrations of Soviet airspace.

In discussing the electronic aspects of the Korean airliner incident, *New Statesman* speculated that the matter "provided a treasure trove of electronic gold. A chain of U.S. listening stations is dotted across the northern coast of Hokkaido Island, Japan, including such huge eavesdropping centres as Misawa Air Base with 1,600 intelligence operators. They routinely listen to and monitor radio signals between Soviet pilots and their ground controllers. Both sides know what the other is doing; on one occasion at least, Soviet radio operators included a Christmas greeting to the specific U.S. station in Japan which was monitoring them."

The ground station data is carefully correlated with the electronics intelligence gathered by the RC-135's. During one 17-hour RC-135 mission, the aircraft records radar signals from Soviet stations on reels of 1-inch magnetic tape. When all of this data is finally assembled by means of computers, the information goes together to form a current and highly accurate map of Soviet radar stations. Such data, which is in a state of constant revision, could be used to guide bombers and long-range missiles to specific targets.

Certainly the Soviets are well aware of the missions of U-2, RC-135, and SR-71 spy aircraft and that they are out to produce maps, charts, and intelligence data which spells out the "electronic order of battle" used by Soviet defense forces. They know that we want to learn the locations of their ground radar sites and how their defenses react to a breach of their airspace, and they know that one of the ways we have of doing this is by deliberately entering their airspace. Because of this, they sometimes react by shutting down their more important defense systems to prevent our eavesdropping.

After noting that the KC-135 was capable of operating on frequencies utilized by the Korean airliner that fateful day last year, Bernard and Eskelson commented, "Within the capabilities of the RC-135 lie the precise reasons we believe that the entire sweep of events—from the time the Soviets first began tracking KAL Flight 007, to 'confusing' it with the American reconnaissance aircraft, to the time of the shootdown—was meticulously monitored and analyzed instantaneously by U.S. intelligence . . . There are serious questions in our minds as to not only what specific role did the capabilities of the RC-135 play in the eventual shooting down of the KAL airliner, but also why these capabilities were never utilized in an attempt to head off the tragedy."

New Statesman's story (by Duncan Campbell) capsulized it all by stating: "For decades, the United States, the Soviet Union, and their allies have fought a secret electronic war in which radar and anti-aircraft defense screens are repeatedly penetrated in order to discover how they operate—and how, in war, to evade them. This dangerous activity has been much more extensive than is generally known. An analysis of the secret war shows that since 1950 the United States has lost at least 27 aircraft forced or shot down and seen 60 others attacked in the course of electronic or photographic reconnaissance duty. At least 139 U.S. servicemen have died in this reconaissance programme."

The airborne electronic war has not ended and it's doubtful that it will end in the foreseeable future, notwithstanding the tragedy of KAL Flight 007. Moreover, the bits and pieces of that event will be surfacing for so many years to come that it is not possible, at this point, to arrive at conclusions about what really happened—and why. There have been deceptions from "both sides," undoubtedly in the cause of security, if not "face saving." The entire grisly incident has, however, brought into focus the role of the electronic spy aircraft such as U-2's, SR-71's, and RC-135's, and—at least to some extent—the depth of their respective roles in modern electronic warfare.

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Spring 1984

Selected English Language Broadcasts

BY GERRY L. DEXTER

Note: This list was accurate at the time of compilation. Hundreds of English language broadcasts are to be found on shortwave every day. This is a representative sampling and not intended as a complete reference. Some stations air only part of their broadcasts in English during a given hour. Others may start at some time past the hour. These are indicated by (15) (30) (45) indicating the starting time in minutes past the hour. Other stations will run their English broadcasts into the next hour or even for several hours continuously and these are not necessarily carried over in this listing. Some major broadcasters such as the BBC, Voice of America, and Radio Moscow maintain virtual 24-hour English services daily. All times are in GMT.

Time	Station/Country	Frequencies
0000	Voice of the People of Kampuchea	9.695, 11.940
	Radio New Zealand	17.705
	Radio Australia	15.160, 15.320
	Radio Canada International	5.960, 11.850
	BBC, London	11.750, 9.915, 7.325, 6.175
	Radio Beijing, China	9.860, 11.650, 11.945
	Voice of Israel	7.410, 9.815
	Radio Tirana, Albania	7.065, 7.120
	Radio Sofia, Bulgaria	9.700
	Radio Japan	17.775, 17.825
	REE, Spain	9.630, 11.880
	Vatican Radio	11.845
	Radio Moscow	7.110, 7.150, 7.440, 9.600, 15.450
0100	Radio Canada International	5.960, 11.850
	Voice of Free China, Taiwan	5.985, 11.825, 15.345
	Radio Moscow	7.440, 9.610, 9.700, 9.765, 11.750, 11.780
	RAE, Argentina	6.060, 11.710, 15.345
	Austrian Radio	5.945, 9.770 (30)
	Radio Beijing, China	9.860, 11.650, 11.945
	Voice of Germany	6.040, 6.085, 6.100, 6.145, 9.545, 11.785
	Voice of Israel	7.410, 9.815, 11.655
	RAI, Italy	5.970, 9.575, 11.800
	Swiss Radio International	6.135, 9.635, 9.725, 11.715 (45)
	Radio Havana Cuba	6.090, 9.525, 17.760
	Voice of Nicaragua	5.950
	Vatican Radio	6.015
	BRT, Belgium	9.880
	Austrian Radio	5.945, 9.770
	Radio Luxembourg	6.090
	Radio Tirana	7.120
	Voice of Greece	9.865
	Radio Japan	15.155
	Radio Norway	9.610, 11.800
	Voice of Indonesia	11.790, 15.150
0200	Radio Canada International	5.960, 11.845
	Radio Sweden International	9.695, 11.705 (30)
	Radio Beijing, China	9.860, 11.650
	HCJB, Ecuador	9.745, 15.250
	Voice of Israel	7.410, 9.009, 9.420, 9.815

Time	Station/Country	Frequencies
0200	Radio RSA, South Africa	5.980, 9.615, 11.730
	Radiobras, Brazil	15.290
	Radio Cairo, Egypt	9.475
	Radio Netherlands	6.165, 9.590 (30)
	Radio Bucharest, Roumania	6.155, 9.570
	Radio Budapest, Hungary	9.835, 12.000
	RBI, East Germany	9.560
	Radio Polonia, Poland	9.525, 11.815, 15.120
0300	Voice of Free China, Taiwan	11.745, 11.825, 15.345
	Voice of Turkey	11.740, 17.760
	Austrian Radio	5.945, 9.770 (30)
	HRVC, Honduras	4.820
	Radio Belize, Belize	3.285
	RBI, East Germany	9.600, 9.620
	Radio Budapest, Hungary	9.835
	Radio Portugal	6.060, 6.075
	Radio Prague, Czechoslovakia	7.345
	Radio RSA, South Africa	9.580
	Radio Tirana, Albania	6.200, 7.120
	Radio Havana Cuba	11.760, 11.930
	Radio Beijing, China	17.855
	Radio Polonia	9.525, 11.815, 15.120
0400	Trans World Radio, Bonaire	9.535
	Radio New Zealand	17.705
	Radio Earth International (WRNO)	6.185
	Swiss Radio International	9.735, 17.715 (30)
	Radio Botswana	4.848
	Radio Uganda	5.027
	Radio Sofia, Bulgaria	7.115
	SCR, Swaziland	4.980
	Radio Bucharest, Roumania	9.510
	Radio Lesotho	4.800
	Austrian Radio	9.770
	Radio France International	9.545, 9.790, 11.875 (15)
0500	Radio Kuwait	11.675
	Trans World Radio, Bonaire	9.535
	BBC, England	9.510, 6.175, 5.975
	HCJB, Ecuador	6.095, 11.910
	Voice of Germany	5.960, 6.130, 9.545, 9.690, 11.705
	Voice of Nigeria	7.255
	REE, Spain	9.630, 11.880
	Radio Korea	11.810
	Voice of Israel	12.025
	GBC, Ghana	3.336, 4.915
0600	ELWA, Liberia	4.765
	SLBC, Sierra Leone	5.980
	Radio Havana Cuba	9.525, 11.760
	Radio Kiribati	16.433 (single sideband)
	Vatican Radio	9.645, 11.740
	HCJB, Ecuador	6.095, 11.910
	Voice of Nigeria	11.770
	TWR, Swaziland	9.730, 11.760
	Radio Malaysia	6.175, 9.750
	GBC, Ghana	3.336, 4.915

Time	Station/Country	Frequencies
0700	Radio Kuwait	11.675
	TWR, Monaco	7.160
	Radio Cook Islands	11.760
	ELBC, Liberia	6.090
	SIBC, Solomon Islands	9.545
	Radio Japan	15.300, 17.785, 17.810
	Radio Bucharest, Roumania	15.335, 17.720, 17.790
0800	Radio Australia	9.760, 11.720
	Radio Pyongyang, North Korea	9.765, 11.830
	Radio New Zealand	11.960, 15.485
	Austrian Radio	6.155, 15.270 (30)
	SIBC, Solomon Islands	9.545
0900	FIBS, Falkland Islands	3.958
	Radio Japan	9.505, 15.195
	Radio Kabul, Afghanistan	15.255 (30)
	Radio Australia	15.415
	TWR, Monaco	9.495
	Radio Pyongyang, North Korea	9.765, 11.830
	Radio Oman	9.735, 11.890
	Radio Korea	5.975
1000	NBC, Papua New Guinea	4.980, 9.520
	AFRTS, USA	6.030
	Radio Vanuatu	7.260
	Radio Kabul, Afghanistan	15.255
	Voice of Vietnam	9.840, 12.035
	Radio Budapest, Hungary	9.835, 11.910, 15.160
1100	Radio Beijing, China	9.820
	Voice of Israel	11.610, 13.745, 15.585, 17.630
	Radio Pyongyang, North Korea	9.745, 9.977
	Radio Thailand	9.650, 11.905 (30)
	Voice of Vietnam	9.840, 12.035
	Radio Veritas, Philippines	9.605, 11.770, 15.210 (30)
	Radio Polonia, Poland	9.525, 11.840, 17.865 (30)
	Radio New Zealand	11.960, 15.485
	Radio Pakistan	17.685
	Radio Japan	9.525, 11.820
1200	Voice of People of Kampuchea	9.695, 11.940
	Radio Bangladesh	17.800 (30)
	TWR, Bonaire	15.275
	Radio Australia	9.580
	Austrian Radio	17.770 (30)
	Radio Finland	15.275, 15.400
	Voice of Greece	9.460, 11.645, 15.630
	Radio Ulan Bator, Mongolia	12.070
1300	BBC (England)	15.215, 15.070, 11.775
	All India Radio	11.810, 15.335
	Radio Finland	15.400
	HCJB, Ecuador	15.115, 17.890
	Swiss Radio International	9.625, 17.785, 17.830 (15)
	KTWR, Guam	9.510
	SLBC, Sri Lanka	9.720
	Voice of Vietnam	15.010
1400	Radio Finland	15.400
	BRT, Belgium	21.815, 17.610
	AIR, India	11.810, 15.335
	Radio Nepal	9.590 (35)
	Voice of Indonesia	11.790, 15.150
	Radio Korea	15.575
	Radio Bucharest, Roumania	11.940, 15.250
	4VEH, Haita	11.835
	Radio Sweden International	17.850, 17.860
	Radio Tashkent, Uzbek SSR	9.650
1500	Radio Finland	15.400, 17.800
	Voice of Greece	9.460, 11.645, 17.565
	Radio Belgrad, Yugoslavia	9.620, 15.240
	Radio Korea	9.750, 15.575
	AFRTS, USA	15.330
	Radio Budapest, Hungary	15.335
	SLBC, Sri Lanka	15.425
	Radio Japan	9.505, 9.675, 11.815
	Radio Australia	5.980, 5.995, 9.580, 9.710
	Voice of Indonesia	11.790, 15.150
1600	Radio Australia	9.770
	UAE Radio, Dubai	15.320, 21.655
	Radio Budapest, Hungary	11.910
	Radio France International	15.300, 17.620, 17.795
	Radio Amman, Jordan	9.560
	Radio Japan	11.840, 15.235
1700	Radio Pakistan	11.667
	BSKSA, Saudi Arabia	11.855
	Radio Pyongyang, North Korea	17.775
	Radio Norway	21.730
	Radio Australia	11.790
	Radio Japan	11.815
	Voice of Nigeria	11.770
1800	Radio Kuwait	11.675
	Voice of Nigeria	15.120
	Radio Portugal	17.880
	BRT, Belgium	17.550
	Radio Canada International	15.260, 17.820
	Voice of Israel	11.600, 13.745, 15.585
	Radio Bangladesh	17.800
	BSKSA, Saudi Arabia	11.855
1900	Voice of Islamic Republic of Iran	9.022, 9.760 (30)
	BRT, Belgium	15.590
	AIR, India	11.620
	Ivory Coast	11.920
	Radio Kuwait	11.675
	RAE, Argentina	15.345 (30)
	HCJB, Ecuador	17.790, 17.825
	RAI, Italy	11.800
	Radio Sofia, Bulgaria	15.110
2000	Radio Kuwait	11.675
	BBC, England	15.260, 11.750, 9.915
	Voice of Israel	9.440, 9.815, 11.655, 11.960, 13.745
	Radio Algiers, Algeria	15.160v, 17.745v
	AFRTS, USA	15.330, 15.345, 14.430
2100	Radio Australia	15.160
	Radio Sweden International	9.710, 9.715
	AIR, India	15.110, 17.755, 9.912
	Radio Pyongyang, North Korea	11.660
	Radio Netherlands	9.715, 11.740 (30)
	Voice of Kenya	9.360
	Radio Belgrad, Yugoslavia	9.620
	RBI, East Germany	9.620
	Voice of Nigeria	15.120, 17.800
	Radio Baghdad, Iraq	9.610
2200	Voice of Turkey	9.510, 9.660, 11.740, 17.760
	RAE, Argentina	15.345, 11.710
	BRT, Belgium	5.895, 5.910, 9.900
	Radio Jamahiriyah, Libya	11.815
	RBI, East Germany	6.080
	RAI, Italy	9.710, 11.880
	Radio Kiev, Ukraine SSR	9.685, 11.790
	Radio Australia	15.160, 15.320
	Vatican Radio	9.615, 11.830, 15.120 (05)
	Radio Belgrad, Yugoslavia	9.620
2300	Radio Sweden International	9.695, 11.710
	Radio Moscow	9.610, 11.750, 15.455, 17.720
	Radio Pyongyang, North Korea	9.745, 15.230
	Radio Douala, Cameroon	4.795
	Radio Sofia, Bulgaria	9.700
	Radio Mediterranean, Malta	6.110
	Voice of Vietnam	9.840, 12.035
	Radio Thailand	9.655, 11.905
	Radio Japan	9.645, 11.740, 15.195, 15.235, 17.755

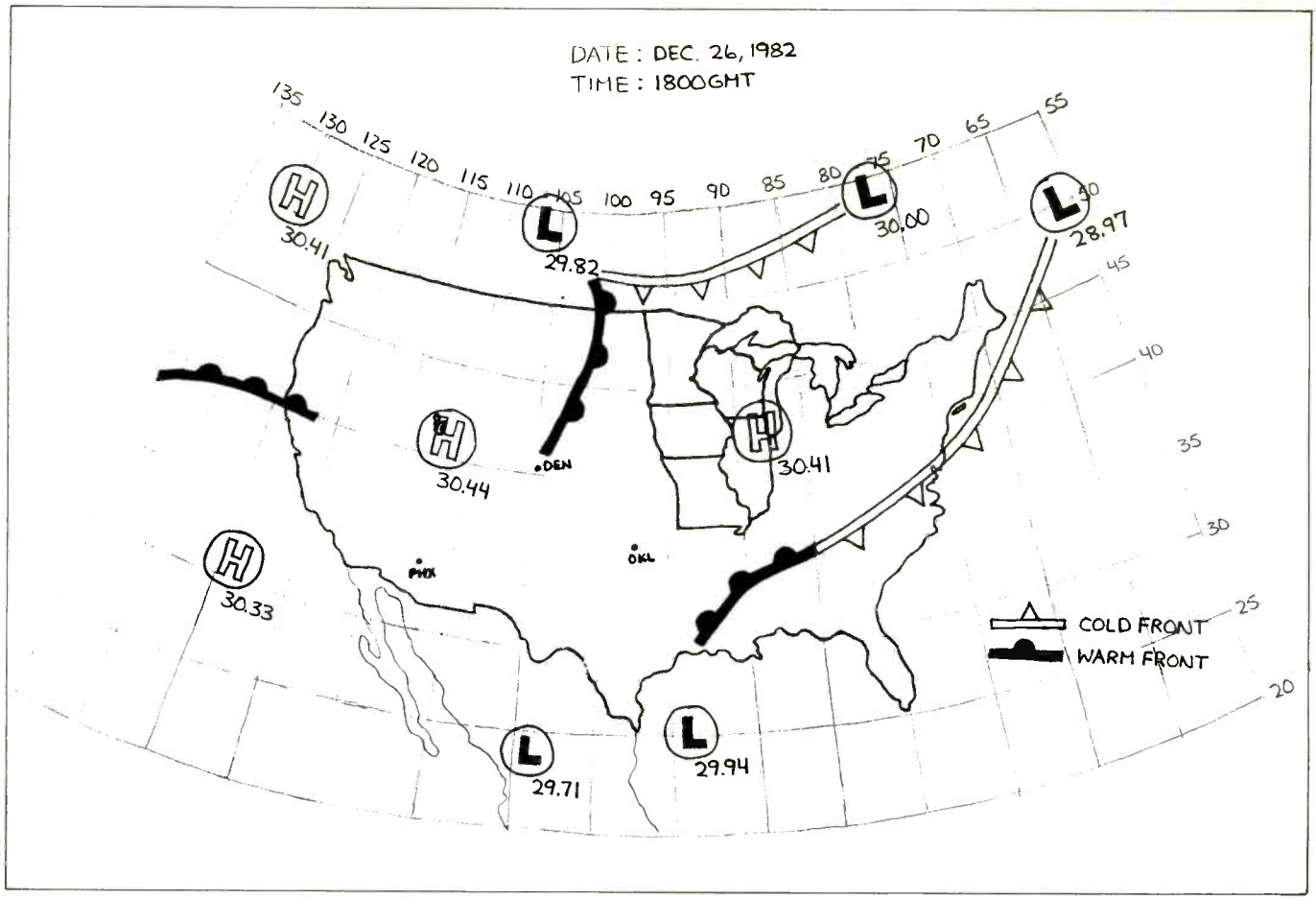

Figure 1: *Author's map of frontal and pressure center positions from data transmitted by the ASUS bulletin.*

Weather By Numbers

Coded RTTY Transmissions On HF

BY CLIFTON A. BROWN, WA7MAD/9

In scanning any portion of the HF spectrum, one is likely to find several stations transmitting sequences of five digit groups. There are no station identifications and the intelligence of the message being sent is a mystery. I had heard that some of these transmissions contained weather data and, because of my interest in both radio and meteorology, I decided to find out what the numbers meant.

The World Meteorological Organization (WMO) is an agency of the United Nations whose purpose as stated officially sums up very well the reason for the RTTY weather stations; it is: "To promote international meteorological cooperation, especially in the establishment of a world-wide network of meteorological stations and rapid exchange of weather data, to promote standardization and publication of observations . . ." There are 154 member countries, and as part of the fulfillment of "rapid exchange of weather data" and "publication of observations", many of these countries maintain stations on HF for transmitting the observations and forecasts. Shifts and speeds may vary, but all of the stations transmit a common code of digits in many of their messages. I have picked up stations from as far away as Saudi Arabia and using the WMO codes have been able to determine the weather conditions for places all over the world. Table One lists some of the stations to be heard.

Although weather from remote locations can be interesting, of more practical value for North American listeners are the transmissions made from the U.S. station, WBR in Miami, Florida. Table Two lists the frequencies used by WBR. There are two sets of frequencies shown, and though both are intended for reception in Central/South America and the Caribbean, they are easily received in North America.

The best frequency to use will vary, depending on your location and the time of day. The first group of frequencies listed will normally transmit hourly observations for Central and South American locations, along with forecasts. Terminal Air Forecasts (TAF's) and hourly observations for some U.S. airports are also transmitted. The second group has transmissions of what are called main hour reports that are made every six hours at 0000, 0600, 1200, and 1800 GMT, in addition to synoptic reports, which describe weather conditions over a certain area. All of the messages I will describe are sent on this group of frequencies. I have only mentioned a tiny portion of what can be received. For the avid listener with the proper decoding information, there are also ship, data buoy, aircraft, and even satellite observations.

You may be wondering at this point if decoding the information is worth the effort. What can you do with the data you obtain? Two examples are shown in Figures 1 and 2. Figure 1 is a synopsis of the weather patterns over the continental U.S. showing the positions of fronts and pressure centers, including the pressure value of each center. I created this map from data sent in a bulletin called ASUS (surface analysis for the U.S.), which can be received four times a day at approximately 0150, 0750, 1350, and 1950 GMT. A very close watch can be kept on storm centers as they approach your area and, if you have a barometer, you will be able to tell if the storm center is passing overhead by comparison of your pressure reading

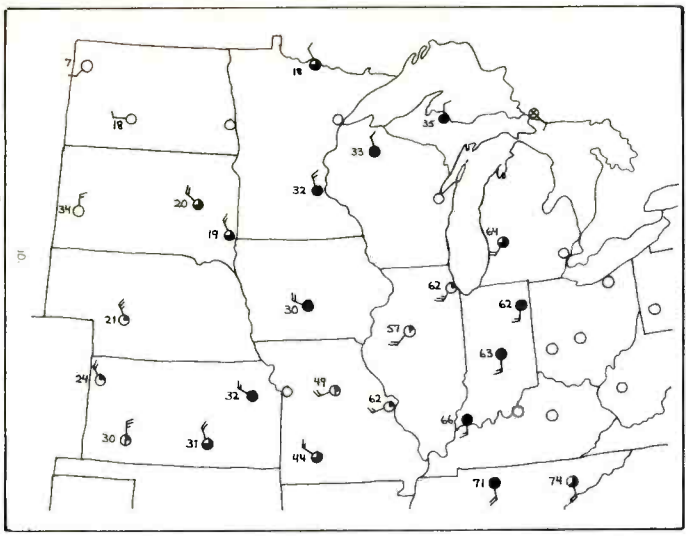

Figure 2: *Christmas 1982 wind, temperature, and cloud cover data for selected central states locations from SMUS bulletins.*

TABLE ONE: Some world-wide RTTY weather transmission freqs

kHz	Station	Shift/Polarity/Speed
4270.9	CFH, Halifax CAN	850/r/74*
7583.0	6VY, Dakar SEN	425/r/50
9347.5	SUC, Cairo EGYPT	425/n/50
11450.0	RDD, Moscow USSR	850/r/50
11453.0	IMB, Rome ITALY	850/n/50
13777.0	ZRO, Pretoria S.AF	425/r/74
13920.0	RNK, Moscow USSR	850/r/50
13963.0	JMI, Tokyo JAPAN	850/r/50
14356.0	GFL, Bracknell ENG	425/n/50
14447.2	PPN, Brasilia BRAZ	170/r/50

*alternates with radiofacsimile

TABLE TWO: WBR frequencies in kHz; all transmissions at 100 wpm 850 Hz shift, normal polarity

Group one
3235
8130
10950
12175
14395
14853
16440

Group two
4061.5
8140
13624
18765

with that of the center. The ASUS message is very simply coded with positions of pressure centers and fronts given in longitude and latitude and pressure values given in millibars. If you are used to using inches for pressure, just multiply the value in millibars by .02953. I drew up a blank map with longitude and latitude coordinates, then ran off some copies. When I receive the ASUS message, I simply plot positions and in less than ten minutes have a nationwide view of the weather.

Figure 2 shows a map of the central U.S. with wind direction and speed, cloud cover and temperature indicated for several midwestern cities. Anyone living in this area should remember the record high temperatures last Christmas and this map quite clearly shows the high temperatures and strong south and southwesterly winds east of the Mississippi. The dark circles indicate overcast skies and the cross within the circle at Sault Sainte Marie indicates a sky obscured by fog rolling in as warm air flows north picking up moisture from cold Lake Huron. This is just a tiny amount of data derived from the SMUS bulletins (main hour synoptic reports for the U.S.), which are normally received at approximately 0030, 0630, 1230, and 1830 GMT.

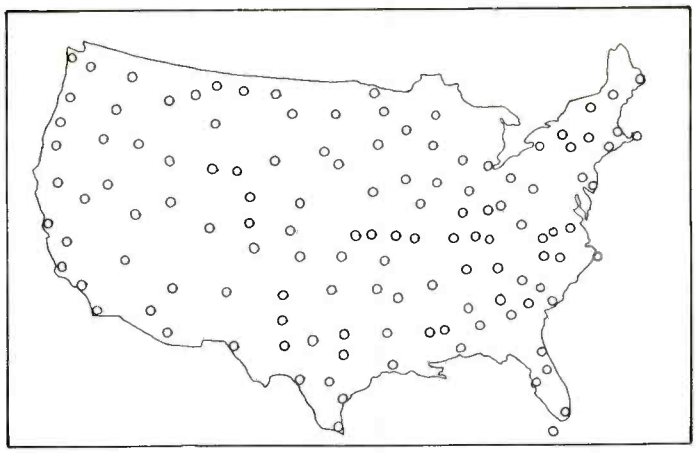

Figure 3: *Locations within the continental U.S. for which weather data is transmitted by SMUS bulletins.*

TABLE THREE: Weather data available from the SMUS bulletin for each reporting station

cloud base height
visibility
total cloud cover
wind direction and speed
temperature
dew point
barometric pressure and tendency
precipitation amount last 6 hours
past and present weather conditions
amount and type of low, middle and high clouds
maximum/minimum temperatures for the day
amount of snow on the ground
amount of precipitation for the day
indication of any records broken for temperature

Figure 3 shows the locations covered by the SMUS bulletins. Wherever you may live in the U.S. you will be able to get weather information for your part of the country.

Table Three lists the information contained in the SMUS message for each reporting station. You will need a key to decode this information, which I will mention.

Figure 4 presents a final example of useful information that can be received. During the hurricane season, you can receive an almost continuous stream of messages similar to that in Figure 4. You can follow the development of hurricanes from harmless tropical depressions to raging storms with winds well over 100 miles per hour. I have a cassette tape filled with messages concerning only Hurricane Debby. With a storm in full tilt, it helps to have a tape recorder for review of the large number of messages that will come in. This is especially true if you are using an RTTY reader, since the words will go by so fast on a single line display. The hurricane messages are called WHCA or WHNT bulletins, which are hurricane warnings to advisories for the Caribbean or the North Atlantic, respectively. They are in plain English, so no decoding is necessary.

A few examples have been given, but what about all the other messages that appear as five digit groups? How is the whole thing organized? At first, all the data being transmitted is baffling. A computer is responsible for collecting the reports and transmitting them from the National Weather Service. Although there is a published schedule, often there is so much data to be sent that messages will fall way behind their scheduled times; so, you must be able to recognize the message when it comes over the air since you cannot expect it to be sent at the same time every day. Many different types of messages are sent, but they all share a common heading format and this is the key to finding the message you are interested in.

Figure 5 shows a sample of the SMUS message heading. The first line will always be "ZCZC" and a WBC number indication. This simply means this message is the 530th issued for the day. The second line starts with the name of the message SMUS1; then the source of the message KWBC, which is the U.S. weather communications center in Washington; and finally 151800, which indicates the message is valid at 1800 GMT on the 15th day of the month. The text of the message follows. I have shown only a single line of the text. This line is the weather data for Jacksonville, Florida at 1800 GMT on January 15th. In a normal message, there would be many additional lines for other stations and the message would end with the typical "NNNN" by itself on a line.

The hurricane message in Figure 4 shows a similar heading, only the name of the message is different and the source is KMIA, which is the National Weather Service office in Miami. Now you can identify the message you want.

This is exactly how the message headings will look if you are using a printer or video display. If you are using a reader, then you will only see the information passing on one line of display, but the "ZCZC" will alert you that the name of the message is coming up.

The message is now identified and I've said that it shows weather data for Jacksonville. How do I know that and what do all the rest of the numbers mean? As much as I would like to give all the information needed right here, I'm afraid it would fill this entire magazine. Though you may have been unaware of it, the information is available at your local library. The U.S. government maintains a system of government document depositories all over the country. You may write to the Government Printing Office for a list or you can call your local library and ask where the nearest one is located. Major cities, state capitols, and universities will often have depositories. If you are not near a depository, your local library can obtain the information you need from a depository for you.

```
ZCZC WBC157
WHNT KMIA 160700
BULLETIN
HURRICANE DEBBY INTERMEDIATE ADVISORY
NATIONAL WEATHER SERVICE MIAMI FL
300AM EDT THU SEP 16 1982

. . . DEBBY THREATENS BERMUDA . . .

SATELLITE AND AIR FORCE RECONNAISSANCE PLANES
INDICATE THAT HURRICANE DEBBY CONTINUES TO
MOVE TOWARD THE NORTHEAST AT NEAR 20 MPH . . .
32KM/HR. GALE FORCE WINDS ARE NOW SPREADING
OVER THE ISLAND AND PROBABLE HURRICANE FORCE
WINDS WILL COMMENCE BEFORE DAYBREAK.

AT 300 AM EDT . . . 0700Z . . . THE CENTER OF HURRICANE
DEBBY WAS LOCATED NEAR LATITUDE 31.9 NORTH . . .
LONGITUDE 66.9 WEST OR ABOUT 90 MILES . . . 145 KM . . .
WEST SOUTHWEST OF BERMUDA. THE PRESENT STORM
MOTION WOULD CAUSE THE EYE TO PASS JUST TO THE
WEST OF THE ISLAND AROUND 6AM THIS MORNING.

MAXIMUM SUSTAINED WINDS ARE ESTIMATED TO BE 110
MPH
```

Figure 4: *Actual off the air hurricane bulletin*

```
ZCZC WBC530
SMUS1 KWBC 151800

72206  32971  62919  10167  20011  40146  58020
80001  333  10172  20033;

NNNN
```

Figure 5: *Example of bulletin (message) format*

Two publications are all you need to decode the SMUS messages I've mentioned. The first is called *National Weather Service Communications Handbook Number 4: Index Numbers for North and Central America, the Caribbean, and U.S. Stations in the Pacific.* This will tell you that 72206 in Figure 5 is the index number for Jacksonville. It identifies all the stations shown on the map in Figure 3 and has a general guide to index numbers used in other countries, which will help you to identify RTTY weather stations. The index number is just a quick way to identify locations without having to spell them out in the weather messages.

The second publication to get is called the *Federal Meteorological Handbook Number 2: Surface Synoptic Codes.* This tells you in very easy to understand language how to decode all the other five digit groups you might encounter in the SMUS message. I keep mentioning SMUS because it is probably of interest to most readers, but weather reports from other countries can also be decoded using this publication since it is a subset of the complete WMO code used throughout the world. If looking up each number group sounds laborious, don't worry. I found that the data is so simply encoded that soon you can recognize the information on sight and many station reports can be quickly scanned for things such as high winds, overcast sky, heavy rain, snow cover, etc. If you own a microcomputer, this is a great use for it. I programmed mine to decode the numbers, so I simply give it the numerical data and it prints a complete station report in English.

It's easy to be discouraged by all the encoded RTTY traffic that is on the air. In the case of the weather transmissions, not only is the key available but the information obtained is useful. Instead of depending on a greatly simplified weather map and report from a T.V. weatherman who probably knows less about meteorology than you do, why not take a trip to the library and find out what you are missing when all those apparently meaningless numbers appear on your RTTY display?

Clean up the computer clutter.

For less than $250 you can make your investment in yourself pay off!

MICRO-OFFICE WORK CENTER

Chances are you have spent a couple thousand dollars on setting up a computer system that gets a lot of your work done. But sometimes it gets to be work to work at it.

I know that when I have to move two program manuals and a pencil holder to boot up the disk drive, it is work. When there is an unlabeled floppy (that I am going to identify some day) on top of the monitor and the business checkbook is on top of the printer . . . and I will remember (I hope) before the next "report" comes through . . . that is work.

I found the annoyance of my own "computer clutter" was even worse than the extra work the disorder created. And that is when I started looking for some practical furniture for my computer set up. Since I had already spent a lot of money on the system itself, I was really dismayed when I found out how much it would cost to get a decent-looking desk or even a data table for my equipment. $400 . . . $500 . . . even more for a sleasy unit that looked like junk! In fact, it was junk! And it took a long time for me to find something that was really worth the money . . . and more.

A lot of my working day is spent with my computer, and I will bet a lot of your time is too. So I figure a "home" for my system—a housing that is good looking as well as efficient to work at—will pay off two ways:

1. Less work: an efficient and orderly layout will save me time and energy.
2. Personal satisfaction: good quality furnishings look better; they just plain feel better to work at too.

So imagine how good I felt to find the "Micro-Office" Work Center! These are fine pieces of computer system furniture that make my office-at-home as pleasant a place to work as it ought to be. And the biggest and best surprise is the low, low price for such good quality.

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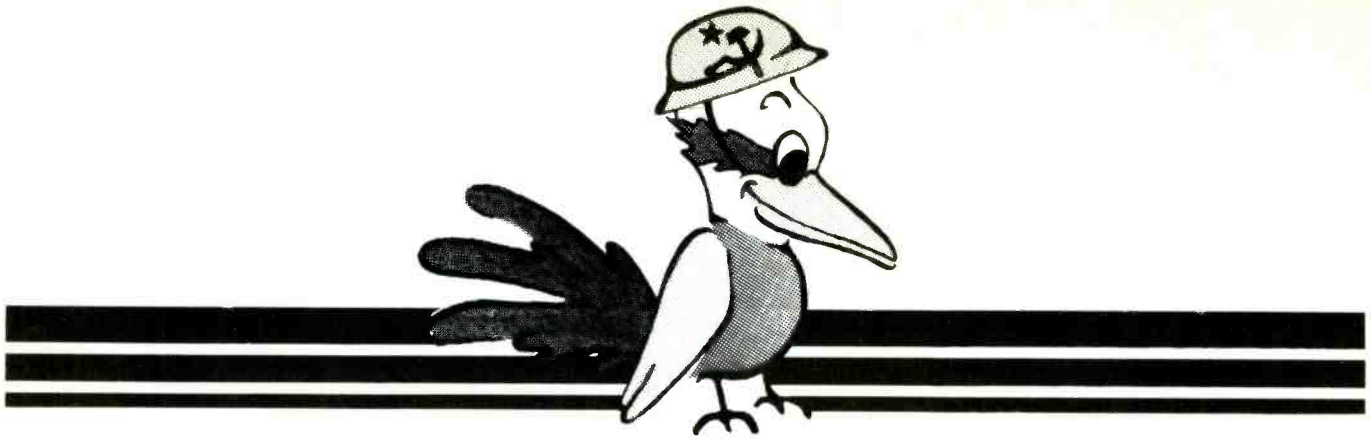


Russian Woodpecker: Hazardous To Your Mental Health?

BY DAVE BEAUVAIS, KB1F

Some of us have long suspected that the truth, the whole truth, and nothing but the truth about the Soviet Woodpecker was not quite known. Five years ago, Ira Einhorn, writing in *CoEvolution Quarterly*, noted the exact synchronicity between the Woodpecker's shortwave pulses and naturally-occurring alpha brainwave frequencies. In his article ("A Disturbing Communique," #16, Winter 1977-78), Einhorn advanced the opinion that the Russians were engaged in a sinister "mind control" experiment of Orwellian dimensions. He traced the design of the Woodpecker transmitter to sketches found in the notebooks of the electrical engineering genius, Nikola Tesla. *CoEvolution's* editors discounted the mind-control hypothesis, while permitting Einhorn to have his say.

But there is new evidence that Einhorn was right. According to an AP report, Dr. Ross Adey, Chief of Research at the Pettis Memorial Veterans Hospital in Loma Linda, California, has obtained from Soviet colleagues a mini-Woodpecker transmitter known as the "Lida." Operating on a frequency of 40 MHz, the mini-Woodpecker "bombards brains with low frequency radio waves," and is being used experimentally by the Russians as "a replacement for tranquilizers and their unwanted side effects."

As mentioned in the October *POP'COMM*, the pulsed radio waves "stimulate the brain's own electromagnetic current and produce a trance-like state," according to the report. Adey has obtained a copy of the Russian-language manual describing use of the mini-Woodpecker. "The manual says it is a 'distant pulse treatment apparatus' for psychological problems including sleeplessness, hypertension, and neurotic disturbances," reports the California researcher. (Soviet psychiatrists routinely classify as "neurotic disturbances" many acts of overt political protest directed against the state establishment.)

Dr. Adey Ross describes his own experiments with the Lida, in which a cat was placed within the pulsed RF field of the transmitter. "Within a matter of two or three minutes (the cat) is sitting there very quietly . . . it stays almost as though it were transfixed," he said. The animal remains "uninterested in its surroundings" for about half an hour after the RF field is shut down.

Could the Soviets be using a higher-power, lower-frequency pulse transmitter to perform surrogate lobotomies at long distance on their own increasingly restive populations? Adey thinks so. "Obviously . . . in the Soviet Union, manipulation of group behavior, whether it be in the classroom, or the workplace, or in assembly halls, crowds and so on, is probably acceptable," he told reporters.

Adey is in fact aware of the controversy surrounding the shortwave Woodpecker as well. The AP report concludes: "The Lida may have been the forerunner of a device that is presently bombarding Europe and the United States with very powerful radio waves in the 6-30 MHz shortwave range, Adey said. The Soviets say the waves are a radar system."

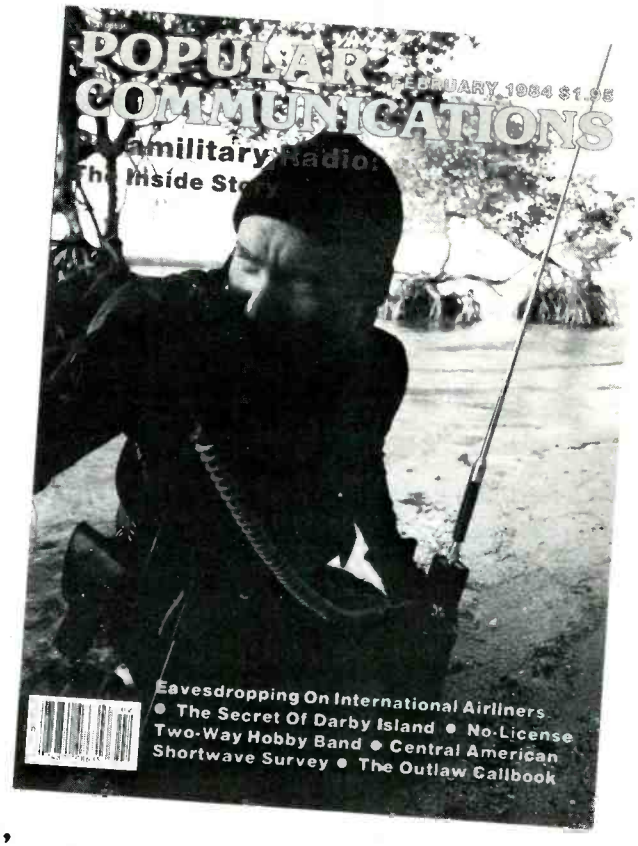
Barring the outside possibility that the mini-Woodpecker is an elaborate piece of Soviet "disinformation," designed to send Western researchers scrambling down a blind alley while the Soviet concoctors of the hoax laugh up their sleeves (though Adey's successful animal tests would seem to quash the "hoax" hypothesis), it now appears likely that the OTH radar "cover story" for the Woodpecker's activities was, at worst, a bald-faced lie; or at best, a less-than-candid account of the device's multiple experimental purposes.

Frankly, there has been little evidence of the Woodpecker's ability to induce a state of catatonic trance in Western hams and SWLs. Its appearance on frequency is much more likely to produce a perfectly healthy, violent urge to smash one's fist through the loudspeaker! But a cautionary note is due: listeners who are prone to epileptic disturbance should be aware of the Woodpecker's ability to activate brain-wave states associated with seizures. And the rest of us should watch for any telltale effects of induced hypnosis, the next time the Woodpecker pays a visit. Most sinister of all is the fact that these devices are meant to be used without benefit of a receiver. The high power pulses are intended to act directly on the electrical energy of the brain, with one's body acting as the receiving antenna. Against such measures of psychotronic warfare, there can be no defense, short of living inside an RF-shielded "Faraday box."

American OTH radar, incidentally, does not use a pulse signal at all, but a square-wave sweep, thus discounting any notion that the CIA may be planning to use similar lobotomizing tactics on our own restive population—their notorious clandestine LSD experiments notwithstanding.

. . . . from the publishers of CQ

You be the judge...



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PRODUCT SPOTLIGHT

Monitoring The UHF Aero Band

One of the most elusive portions of the spectrum for dyed-in-the-wool monitoring enthusiasts is the 216-420 MHz range. Loaded with activity from various federal agencies, this swath of radio spectrum has been ignored by scanner manufacturers.

Who's There?

The 216-220 MHz band is a recent addition, assigned to inland waters communications such as that used on the Mississippi River system. Transmission mode is narrowband FM, as found on other land and sea VHF scanner bands.

The band 220-225 MHz is populated in larger metropolitan areas by amateur radio with FM once again dominating as the popular mode.

The military's equivalent to the 118-136 MHz civilian aircraft band is the 225-400 MHz band. It is AM in operating mode and filled with communications associated with SAC missions, war games, drug-smuggling surveillance, bomber refueling, tactical training, air show coordination, and the like.

The 400-406 MHz band would hardly be considered exciting listening fare, sprinkled with occasional beeps from navigations satellites and weather balloons! But the 406-420 MHz range is a key target; this is where federal law enforcement teams coordinate their undercover communications. Agencies such as the FBI, DEA, ATF, State Department, and many more employ both high-powered repeaters and low-powered hand-helds around the clock.

Can We Listen In?

How is it possible to tune in on these phantom communicators? One way is with the unique Scanverter from Grove Enterprises, 140 Dog Branch Rd., Brasstown, NC 28902.

Connection of the Scanverter to a scanner is simplicity itself; entirely external, it hooks between the external antenna and the scanner's external antenna jack. An AC adaptor is included for home use, although the Scanverter can also be used in mobile and portable installations with a source of 12 VDC power.

While some local reception is possible in these bands with a normal outside scanner antenna, the use of an outside mounted UHF broadband antenna is recommended for extended range.

A discone or ground plane with 10-inch elements can also be used with reasonable results.

The choice of coaxial cable at UHF is crucial to good performance. Cheap cable like RG-58/U CB coax is very lossy at these frequencies. Use a high-quality cable such as RG-6/U or RG/8/U.

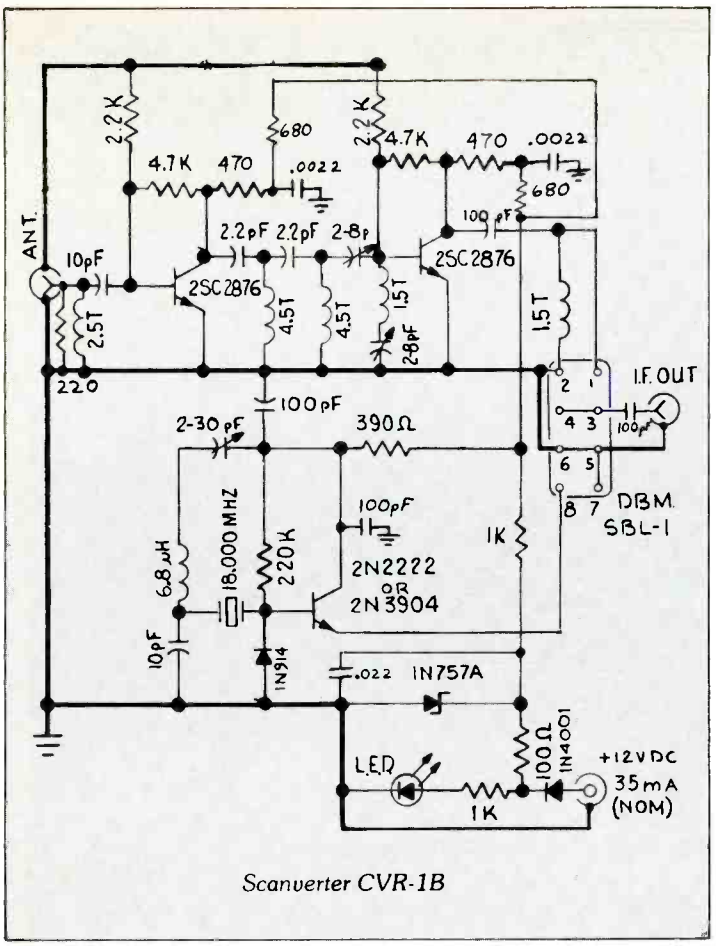
Can I Use My Present Scanner?

Will the Scanverter work with any scanner? The answer lies in your choice of listening fare. To hear the 216-225 FM range, you

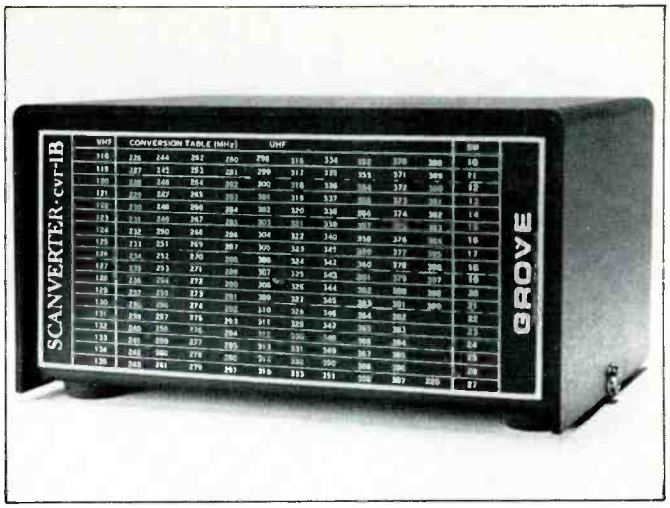
CONVERSION TABLE (MHz)

TO RECEIVE										Set Scanner / Shortwave			To Receive	Set Scanner
MILITARY UHF										AM	FM	AM/SSB		
226	244	262	280	298	316	334	352	370	388	118	154	10	216	162
227	245	263	281	299	317	335	353	371	389	119	155	11	217	163
228	246	264	282	300	318	336	354	372	390	120	156	12	218	164
229	247	265	283	301	319	337	355	373	391	121	157	13	219	165
230	248	266	284	302	320	338	356	374	392	122	158	14	220	166
231	249	267	285	303	321	339	357	375	393	123	159	15	221	167
232	250	268	286	304	322	340	358	376	394	124	160	16	222	168
233	251	269	287	305	323	341	359	377	395	125	161	17	223	169
234	252	270	288	306	324	342	360	378	396	126	162	18	224	170
235	253	271	289	307	325	343	361	379	397	127	163	19	225	171
236	254	272	290	308	326	344	362	380	398	128	164	20		
237	255	273	291	309	327	345	363	381	399	129	165	21	406	442
238	256	274	292	310	328	346	364	382		130	166	22	407	443
239	257	275	293	311	329	347	365	383		131	167	23	408	444
240	258	276	294	312	330	348	366	384		132	168	24	409	445
241	259	277	295	313	331	349	367	385		133	169	25	410	446
242	260	278	296	314	332	350	368	386		134	170	26	411	447
243	261	279	297	315	333	351	369	387	225	135	171	27	412	448
													413	449
													414	450
													415	451
													416	452
													417	453
													418	454
													419	455
													420	456

Frequency Conversion Lookup Chart



Scanverter CVR-1B



The Grove Scanverter turns any aero band scanner into a 225-440 MHz scanner.

Common Military UHF Aero Frequencies

To Receive		Set Scanner
236.6	Air Force control towers	128.6
241.0	Army/National Guard	133.0
243.0	Emergency, all agencies	135.0
255.4	Flight Service Stations	129.4
257.8	Military aircraft to FAA towers	131.8
272.7	Flight Service Stations	128.7
311.0	Strategic Air Command primary	131.0
321.0	Strategic Air Command secondary	123.0
348.6	Military aircraft to FAA towers	132.6
381.8	Coast Guard air Primary	129.8

need a scanner that covers 162-171 MHz FM; 225-400 MHz AM converts to the 118-136 MHz AM aero band; and 406-420 MHz is up-converted to 442-456 MHz.

The first choice is a multiple-band programmable scanner which includes the aircraft band. Obvious contenders are top-of-the-line scanners from Electra (Bearcat), Regency, Radio Shack, and JIL. While a crystal scanner will work, frequency coverage will be limited.

Another option exists for shortwave listeners. A general coverage shortwave receiver can be used with the Scanverter for tuning the 225-400 MHz military aircraft band!

A convenient look-up chart is included with the Scanverter for simple programming of these new frequencies.

What's Inside The Box?

From a technical standpoint, the Scanverter uses a harmonic-rich oscillator to inject a large number of frequencies into the double-balanced mixer; the actual limit of 216-420 MHz is determined by the roll-off characteristics of a 4-stage filter.

While some spurious signals may be heard, this is to be expected from any device which covers such an enormous swath of spectrum.

Sensitivity is better than 1.0 microvolt for squelch break. Long term stability is also good and the crystal oscillator may be precisely tweaked to its 18.000 MHz frequency after aging if necessary. A trimmer is provided for that purpose.

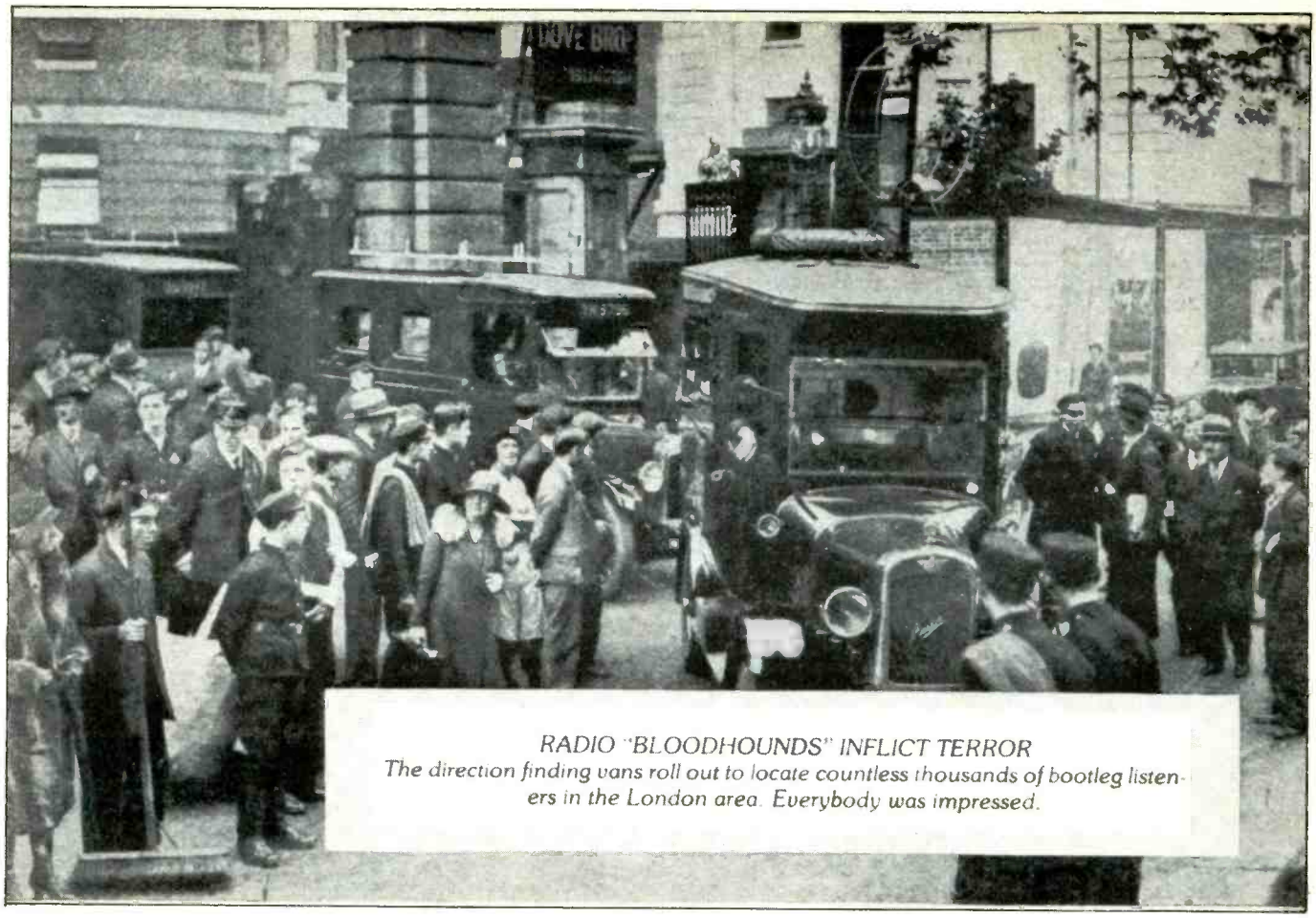
The typical reception range of the Scanverter is 50-200 miles, depending upon terrain and antenna. Naturally, airborne signals will be heard considerably farther than land-based units.

Frequency Data?

Frequency information is readily available. Tom Kneitel's book *Top Secret Registry of U.S. Government Radio Frequencies*, for instance, contains plenty of listings in this frequency range.

For those previously confined to the limits prescribed by our scanner, the Grove Scanverter opens our listening horizons!

(This material extracted from manufacturer's literature and from other sources.)



RADIO "BLOODHOUNDS" INFLICT TERROR
The direction finding vans roll out to locate countless thousands of bootleg listeners in the London area. Everybody was impressed.

The Great British Radio Terror

The Day They Went To Catch "Pirate" Listeners!

BY AUSTEN FOX

In some European nations it has always been the practice to obtain a license for receiving equipment. No test is required. It's a simple matter of paying the government a fee for the right to own a radio receiver or a TV set. Bootleg listeners or viewers in Britain have no fear of being put in jail for their little crime, however there is always the chance that an unlicensed piece of equipment will come to the attention of the government inspectors and they'll come around to collect their fee (or padlock the equipment). Back in the early days of broadcasting, the fee was ten shillings per year (about $2.50). Today, owners of color TV receivers are charged $80 per year for the right to view their programs.

In many ways, the British government perceives its citizens as being basically honest. The people go down to the local post office and buy a license because they feel that a government decree or order is intended to be obeyed and that it is not unreasonable for the government to expect that they shell out a small license fee, part of which goes towards an organization which brings them commercial-free programming. Someone, after all, has to pick up the cost of programming without any commercials. While in the United States there is no similar receiving license fee, if one is to receive commercial-free programming one is expected to pay a fee to a cable TV company, or send a contribution to a non-commercial "educational" broadcaster. While Americans like to think that receiving commercial-free programming without paying any fees was a technique born from their own creativity, the cable-TV "pirates" of the 1970's and 1980's were pre-dated by their British cousins by many decades!

After several years of broadcasting, the British government began to grow slightly suspicious of its honest public. Along about the year 1930, some noble soul began correlating the statistics on sales of radio receivers, parts, etc., and matching them up with the number of licenses which had been issued. The numbers didn't jibe; there were too few licenses. Some officials began whispering nasty innuendos about human nature and all that.

With true British caution and reserve, they did nothing for a while. They carefully rechecked their statistics and discussed the problem from every angle, hoping that they would discover some alternate reason or reasons for the unbalanced numbers. The newspapers discussed it, the radio discussed it, the government discussed it. Nothing came of the fuss and the Post Office (which issues the licenses) decided to lay low and say nothing more of it.

The pirating of programs went on right as before. After all, what could they do about it? To establish a large corps of inspectors would cost far more than it was worth. To send a few here and a couple there to catch and punish offenders might be partially or temporarily effective in a local area, but it left the field pretty well uncovered. To spot the pirates otherwise seemed to be an engineering impossibility.

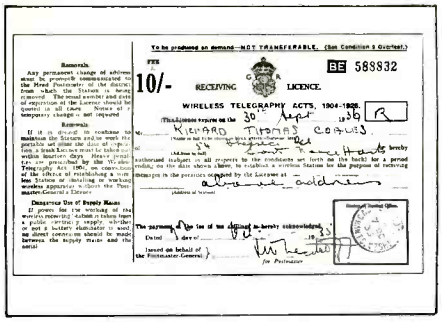
Radio Bootleggers — Warning!

Suddenly, during the fall of 1931, the radio public of England was awakened with a violent shock. Morning newspapers carried a stern announcement from the British Post Office which was quickly picked up and broadcast over all radio stations. They were "out to get" all radio pirates, and they weren't fooling about it either. They didn't mince their words; they called it just so much dishonesty, and said that they would deal harshly with anyone caught. They said that they were tired of letting 50,000 to 100,000 people sit around enjoying those programs on which the BBC had labored so long and lovingly, all at the expense of the honest people of Britain.

Being truly British, they were rather sporting about the warning. They told the public just when they were starting off on their crusade of reform, and they even explained just how they were going to achieve their results. A broadcast from the BBC studios, and broadsides in the press, opened the war against pirate listeners. On a certain fateful day, named and dated in the year of Our Lord 1931, two or more heavily equipped trucks would set forth upon the land, manned by grim, determined engineers, who would stop at nothing (except the houses of pirate listeners), and one after another would bring the evil-doers to swift justice.

The vans would be equipped with everything related to direction finding; all the latest equipment—ultra-sensitive and extra-accurate. They were to cruise the streets of London and the suburbs at first, and then go on to other localities. Dark and mysterious would be their movements, but they would come with a blast of trumpets—or at least horns and bells sounding. There was no intention to sneak into a town and catch people unaware. Everyone would be given a fair warning when they were about and it was just too bad for those who failed to heed this fair play gesture and obtain their licenses before it was too late. They would not question any license which might show a more recent date than the radio receiver, but it would be a sticky wicket for any poor unfortunate who did not possess a license!

For a full week they operated with the grim efficiency of Scotland Yard closing in on a band of criminals, while shivers ran up and down the British radio spine. The British Post Office was issuing communiques as if from a battlefront. They announced that the morning was the best time to work, when the husbands were away and the wives were wiling away their housework hours with a gay melody or two. Not three days after the opening of the campaign, there appeared in both London newsreel theatres—one on Charing Cross Road, the other on Shaftesbury Avenue in the West End—films of these dauntless vehicles in action catching pirates. Audiences were shown the interiors of the vans filled with an amazing array of direction finders, gadgets, dials, meters, wheels, and other doodads. Engineers were shown actually tracking down a set, and the moving camera went right to the front door of a cottage where the inspector rang the bell and demanded to be shown the license. The good wife admitted the inspector and, with very evident embarrassment, confessed that there was no license. She was politely but firmly warned that His Majesty's Government would find themselves obliged to proceed against that family to the full force of the law. In brief and convincing form, the drama was exposed for the public to see.



This is what a 1930's British "Receiving License" looked like. The licensing program is still in effect.

A british newspaper of the day depicted a surprised listener being asked to fork over ten schilling license fee.

The vans moved ever on. They were announced in Richmond, in Westminster, in Mayfair, in Acton Town, and in Poplar, and the horrified citizens of each of these boroughs ran quickly to their branch post offices, "queing up" in long lines to wait their turns to pay their ten shillings for a slip of paper guaranteeing them protection and peace from the stern vans which so inexorably sought them out. The radio detectives went to Oxford, to Cambridge, to Dundee and Glasgow, and from John o'Groats to Land's End, heralded far and near by the ever-vigilant press and the ubiquitous newsreel cameras. And in Glasgow and Plymouth, on the Isle of Wight and on Clydesdale, the lawbreakers fled to cover themselves with licenses.

A Success

At the end of about two weeks, an announcement was made that some 30,000 to 50,000 new licenses had been issued; the vans were proving themselves very effective. They had, in other words, made perhaps about the equivalent of $100,000 for the Post Office and the BBC to split between themselves; and they had instilled a proper respect for the law into many hitherto unpatriotic British breasts. At that point, for a moment, they dropped from the public eye.

Questions

Somewhere along the line, a few cynical voices were heard to question whether any such vans could actually be built and put into operation. How, said these people, could anyone detect a receiving set? Of course, they might wait until some set oscillated, and then take a "bearing" on it, and then take another bearing. Even if one agreed with that concept from a technical viewpoint, the probability is that by the time they had gotten to another spot with their horns and bells sounding the listener would have shut down the receiver and ended the oscillations. A hastily offered explanation from the Post Office suggested vaguely that the vans could cause receivers to radiate even if they were turned off. That explanation was simply too outrageous to be believed, especially in light of the growing number of radio technicians who were loudly saying that the whole campaign was utterly preposterous.

The tide had changed, and the public came to perceive the vans as having been no more than a hoax and publicity stunt to scare the pirates into taking out licenses. It seemed that those who were actually caught during this campaign were either turned in by hostile neighbors or through pure chance, or by the inspectors hearing the radios playing while standing outside of open windows. In 1931 it was a very mild Autumn in England and many people kept their windows open; even an unequipped amateur radio detective could easily have heard many radios playing.

The BBC and the Post Office were rubbing their hands together over the tidy sum they had generated with the ruse. And what about the British public? They were quick to see that a good joke had been played upon themselves and were chuckling at their own gullibility in not even questioning how these vans could find them. They were still chuckling when the British Post Office later announced that it had something even bigger and better in the way of a "radio van" being constructed. This one, it was claimed, would be able to detect any metal antenna over six inches long! No information was given as to how it could distinguish between antennas and drain pipes, lightning rods, household plumbing, household electrical wiring or regimental swords left over from the Boer War.

One only has to wonder what was going through the minds of engineers at the British Post Office, 52 years later, when (in October of 1983) they announced that they were losing the equivalent of $90-million per year because so many color TV sets were being operated without having been issued the equipment license. The solution, they stated, would be to have specially equipped receiver-detection vans roll through the streets . . . I think you could have guessed that.

Famous Radio Firsts

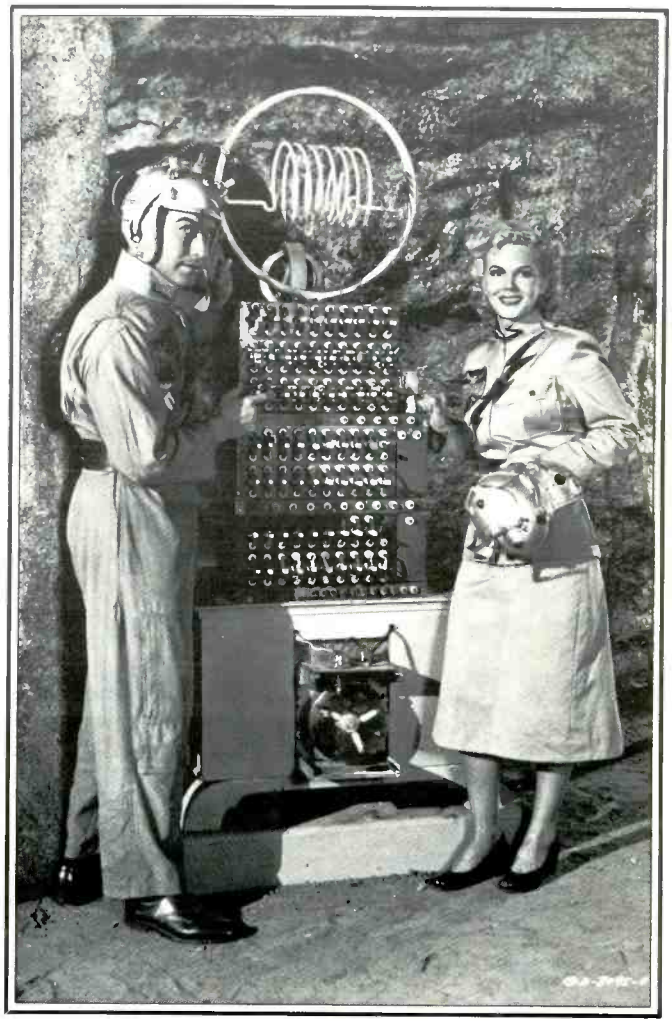
You Never Knew About (Until Now)

First Experimental Stereo Broadcast

In 1931, there was a trial stereo broadcast over New York station WJZ. The two Terdd brothers, Muss and Cuss (left and right in the photo), decided that stereo might be achieved if they stood at opposite sides of the microphone. They were well into the 18th verse of "99 Bottles of Beer" when their noble experiment was rudely interrupted by their brother Sidney, who firmly placed himself in the middle of things and announced that he was conducting the first experiment in double sideband. Claiming that he was the "carrier," Sidney prevailed. It turned out that he was, indeed, a carrier—and by the 91st verse of the song he had caused both Muss and Cuss to come down with a loathesome disease. They later commented that it was the worst come down in their entire career.

First Uttering Of The Expression "10-4 Goodbuddy"

From out of the mouths of babes—how true it is! After more than 15 years of going nowhere, CB radio was skyrocketed to international fame in an instant when (in 1975) little Golly Pardon somehow invented this wonderful expression. Within months they were writing songs, making movies, and driving trucks on the Interstates about her words, and, best of all, everybody went out to buy a radio so that they could spread those words throughout the whole world. By 1980, so many 27 MHz signals had been transmitted that they had pounded large unsightly holes in the ionosphere. At last report, some 300-million signals carrying this curious message had leaked through the holes into intergalactic space and were traversing the cosmos. One electronics trade journal has reported that there are now no less than 258 CB manufacturers on Alpha Centauri anxiously awaiting the arrival of those marvelous words. And what of little Golly Pardon? At the *Giant National CB Coffee Break, Jamboree, & Guano Festival* held last year, one of the giants failed to spot little Golly in the milling crowd and inadvertently stepped on the tot. Many agreed that it was a giant step for all mankind.



World's First Scanner Super Heroes

From deep within the bowels of the earth, Scanman and Scanperson prepare to become the guardians of the airwaves. Equipped with their scanner helmets and special portable 70-channel direction finding scanner, they'll be locating and punishing those naughty persons caught monitoring forbidden stations. Don't worry folks, this is actually a publicity photo promoting a brand new line of designer casual clothing for scanner owners being produced by a company called "Mr. Phyllis Originals." In fact, the guy who designed these stylish threads is the blonde model in the photo. Curiously enough, at least six federal agencies have approached the company in the hopes of signing up Scanman and Scanperson—or, at the very least, renting their mock-up display of a portable direction finder scanner! This unit is now leased to the National Security Agency.

CIRCLE 38 ON READER SERVICE CARD

CIRCLE 67 ON READER SERVICE CARD

LISTENING POST

BY GERRY L. DEXTER

WHAT'S HAPPENING: INTERNATIONAL SHORTWAVE BROADCASTING BANDS

Philip Duffer in his Maple Heights, Ohio shack.

Scarcely a month goes by without a new outlet showing up on the shortwave bands or plans for a new shortwave station being announced.

Trans World Radio's KTWR in Guam is going to have company. Adventist World Radio has announced plans for the installation of a shortwave broadcasting station in Guam which will beam to Southern Asia and the Far East. It will operate as the Adventist Broadcasting Service. An application is now on file with the FCC and an option to buy land has been signed.

AWR also has plans for Central America. The organization intends to put a station on the air in Costa Rica to cover Central America, the Caribbean, and parts of South America. AWR's Union Radio, which went on the air from Guatemala a few years ago, will be phased out once the new operation is on the air. As yet there are no target dates for either of these stations, but we can safely say you needn't bother looking for them next week! We'll try and keep you posted.

Hard-to-hear Haiti is now an easy one. The religious broadcaster 4VEH, a station which has been on the air for years in Haiti while suffering through equipment breakdowns, somehow hung in there through thick and thin and can now be easily heard these days on 4.930. Apparently they've put a new transmitter on the air and it's putting in strong signals in French and Creole during the evenings.

Speaking of Haiti, there's some new clandestine action to report. An anti-Haitian station announcing itself as "Radio Liberte" is on the air Sundays and Wednesdays at 1200, 2100, and 2300 with a one hour program in French and Creole. Signal strength is fair here in the Listening Post but there's a tremendous amount of interference on the frequency 9.610. We're working on digging up more information on this one.

EDXC-84

In the event you plan to be in Europe this summer, here's an event you might want to include in your tour. It's the 1984 convention of the European DX Council. EDXC is the equivalent of the Association of North American Radio Clubs. This year's conference will be held in Stockholm, hosted by Radio Sweden and the Swedish DX Federation, June 8th - 11th. Talks by expert DXers, Jens Frost, editor of the *World Radio TV Handbook*, films, tours, and workshops are on the docket. If you're interested in attending, we suggest you write to: EDXC-84, Radio Sweden International, S-105 10 Stockholm, Sweden for more information.

Mailbag

Our readers continue to be faced by the admittedly rather perplexing question of "what receiver do I buy?" Again, we have to say that it is not our policy to give advice or recommendations on equipment.

We can, however, suggest that you ask yourself what you are looking for. Digital readout? Portability? Extra selectivity for DXing purposes? AM and FM coverage? Fairly easy tuning or something with lots of controls to play with?

Check the sensitivity, stability, and selectivity data on the receiver you're considering, and decide how much you want to spend.

Check the ads in *POP'COMM*. Read Larry Magne's excellent annual equipment reviews in the *World Radio TV Handbook*. You might also write to Media Network at Radio Netherlands, P.O. Box 222, 1200 JG, Hilversum, The Netherlands and get a copy of their free *Receiver Shopping List*.

We're sorry we can't be more specific, but each listener's situation, needs, and tastes are different and we really aren't in a position to recommend one brand over another.

Bill Shortz of Knox, Indiana is a disc jockey and has been an amateur operator for over 20 years. Now he's getting into SWLing. His equipment line-up (see photo) includes an ICOM 720A, Hammarlund HQ100A, and a 1940's vintage U.S. Navy receiver. Bill would like to see a feature story on the BBC. Welcome to the shortwave listening game, Bill. You may see that BBC article one of these months.

Another Indiana reader, Donald Dickerson of Indianapolis has 19 years of listening

Bill Shortz of Medaryville, Indiana looks like he's just logged a rare one.

This nice layout belongs to James E. Hunter of Logansport, Indiana.

in his logs and does a lot of utility and ham band monitoring in addition to SWBC. He uses a Heathkit GR-54 and a longwire antenna. Don is also a ham, N9CUE.

Roman Dementiuk has just moved to South Carolina and is busy setting up his new shack. Roman notes that WRNO in New Orleans has a DX T-shirt for sale at $8.50 including postage. Write the station at P.O. Box 100, New Orleans, LA 70181 and specify small, medium, or large.

Roman also informs us that Spanish Foreign Radio's DX program is offering a record of Spanish music—free! Write Spanish Foreign Radio, DX Program, P.O. Box 150-039, Madrid, Spain.

David E. Salmi of Maynard, Massachusetts uses a Radio Shack DX300 with an inverted V antenna and has been DXing on SWBC and the AM broadcast band for over 15 years.

Kevin J. Klein of Appleton, Wisconsin

Donald Dickerson of Indianapolis at his ham shack and monitoring post.

checks in to ask about Radio Yerevan's 19 meter band frequency, which he approximates at about 15.250. (It was probably 15.260, Kevin). Kevin uses a Sony ICR-4800 and, in his letter, objected to one review of the receiver, feeling that for its size and price it does quite well. There you have one of the main reasons we try and stay out of the receiver recommendation business, Kevin! The reviewer didn't care for the set but it fulfills your needs. It does what you want it to do, and that's the bottom line.

There's an extensive line-up of receivers in the shack of Tom Stovall, Jr., of Haleysville, Alabama. The collection includes three Collins R390/URR's, a Hallicrafters SX-111, a National HFR-2-400, Electra Bearcat IV scanner, and other military-type receivers. Antennas are longwires of 35 and 50 feet. Tom is also a ham, KB4DTF.

Shortwave's wide range of ethnic musical choices is what got Bob Tarte of Grand Rapids, Michigan into SWLing. The station on 4.825 mentioning "Colombia," Bob, is actually Radio Columbia, a new one broadcasting from San Jose, Costa Rica.

Another nice shack photo comes from James E. Hunter of Logansport, Indiana showing off his Radio Shack DX-100, DX-200, and DX-302 receivers plus an eight band Panasonic and Bearcat 300 Ascom Preamplifier. James uses a 70-foot longwire antenna for shortwave.

Philip Duffer of Maple Heights, Ohio sends a photo too, showing his Yaesu FRG-7 receiver with which he's logged 142 stations in 65 countries.

A Kenwood R-2000 with a Sony active antenna and Realistic DX-302 grace the shack of Mike Harris of Grove City, Ohio. Mike wonders what the answer is to getting a QSL out of Radio Cairo. He's sent them four reports over the past year with no answer yet. We don't know of any particular problem with Cairo, Mike. Everyone seems to have at least one easily heard station that gives them fits when it comes to getting a verie. Keep trying and they'll come through eventually.

And that's the bottom of the bag! Hope we hear from you next month! Questions, comments, suggestions, program schedules, shack photos, photos or clean, high contrast copies of your more interesting QSLs as well as general shortwave news items are always welcome along with your loggings.

Remember that *POP'COMM* has columns for pirate and utility/numbers stations, so information on them should go to Darren Leno and Harry Helms. Also, we've received some reports which were obviously not heard by the reporter. Be sure you let us know where your information came from if it isn't something you monitored yourself. And be sure to remember to include frequencies. We had to delete a few reports this month which were missing frequencies and where several possibilities existed. End of lecture.

Listening Reports

Here's what's on. All times are GMT.

Alaska KNLS on 6.170 at 1223-1259 with a music program and announcements in Chinese. (Fravel, WV)

Albania Radio Tirana heard from 0335 to 0358 on 7.300. (Stovall, AL) On 7.075 from 0634-0657 sign off with news and propaganda in English (Fravel, WV)

Algeria Radio Algiers on 9.685 at 2019 to 2028 with pop music and a story on Cypress. (Fravel, WV)

Argentina RAE on 11.710 with English from 0100. Gives address as Casilla Postal 555, Buenos Aires 1000. (Simpson, CA)

Ascension Island BBC Relay on 15.400 at 2023 to 2039 in English with mailbag, then news in Portuguese. (Fravel, WV)

Austria Austrian Radio heard at 2130 to 2200 with music and "Viewpoints" on 9.645. (Stovall, AL)

Australia Radio Australia in English from 0735 to 0820 on 11.720 with DX program (now cancelled, Editor) and world news on the hour. Frequencies for Asia and the Pacific given as 17.715, 11.910, and 11.720. (Millsap, IL) At 1258 on 5.995 with ID in English to Asia and Pacific. (Nomis, FL) To the Pacific on 15.325 at 0300 to 0400 in English. English to Asia from 0530 to 0600 on 15.320, 1600 to 1800 on 11.790. (Stovall, AL) 0300 to 0400 on 17.795, into French at 0330. Requested reception reports. (Simpson, CA) On 21.740 at 0225. (Butterfield, VT)

Belgium Brussel's Calling heard at 0030 to 0115 on 9.925 and 5.902. (Stovall, AL)

Belize Radio Belize on 3.285 with music, obituaries, music, commercials, beauty pageant 0130 to 0505. (Stovall, AL)

Benin La Voix de la Revolution Beninoise in French at 0435 on 4.870. (Nomis, FL)

Brazil Radio Brazil Central in Portugese on 4.985 at 0045 with interference from Ecos del Torbes, Venezuela on 4.990. (Nomis, FL)

Radio Nacional de Manaus on 4.845 at 0035 to 0155 with Brazilian music, very few announcements but occasional identifications in Portuguese as "Radio Nacional de Manaus, ondas tropicais frequenciea de 4.845 kHz . . . kilowats de potencia, uma emissora da Empresa Brasileira de Radiodifusao . . . Radiobras . . ." Address is BR 319, Lote 1.43, Distrito Industrial, Manaus, Amazonas 69.000. (Lazarus, LA)

Radio Nacional de Porto Velho, 4.945 at 0903 to 1005 mixing with the Colombian. A variety of music, some of it Brazilian, announcement by man including "Radio Nacional de Porto Velho em ondas tropicais." (Lazarus, LA)

Bulgaria Radio Sofia, 11.750 at 0430 to 0500. (Stovall, AL) On 7.130 at 0400 to 0431 in English with interference from amateur CW stations. (Phipps, MO)

Cameroon Radio Garoua on 5.010 from 0519 to 0547 in French and English, with English news at 0530. (Fravel, WV)

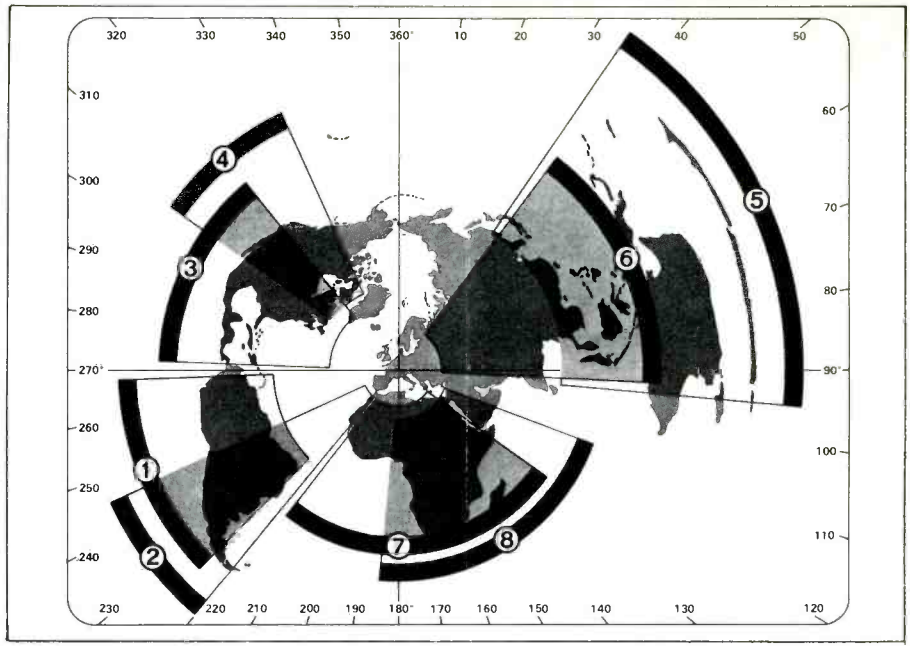
Canada Radio Canada International's African Service in English heard on 15.260, into French after 1830. (Tarsney, MI))

CRFX, Toronto, 6.070 from 1400 to 1600 with news, traffic reports, music, interviews. (Stovall, AL) 1700-1745 with traffic, news, and weather. (Tarsney, MI)

CHNS, Halifax, Nova Scotia on 6.130 at 2330 to 0000 including area weather. (Nomis, FL)

China The Fujien Front Station noted on 4.380 at 1100, in parallel with 5770 which had a better signal. Chinese classical music. (Tarte, MI)

Clandestine La Voz de Sandino at 0415 on 6.210 with usual man and woman announcers and anti-com-



The complete schedule of Swiss Radio. The map indicates beam and target areas.

munist talk. (Nomis, FL) 0100 to 0105 in English and Spanish. Also at 0430 to 0500. (Stovall, AL)

Colombia Radio Bucaramanga, 0330 to 0400 on 4.845 with international news headlines at 0337, lengthy identification featuring complete list of personnel at 0400. (Nomis, FL) Sentimental LA pops and frequent IDs at 0325. (Tarte, MI)

Radio Nacional, 11.975 with identification at 1300 followed by music. (Stovall, AL)

Radio Super 4.875 and 6.065 from 2300 to 0000 in Spanish. 6.065 lost to Radio Canada at 0000. (Nomis, FL) (6.065 is from Bogota, 4.875 from Medellin. Editor)

Ondas del Darien on 6.085 at 2344 with local time check of 6:37, seven minutes slow. (Nomis, FL)

La Voz de Cinaruco, 4.865 at 0139-0158 in Spanish with music. (Fravel, WV)

Radio Sutatenza, Bogota, 5.095 at 0350 to 0400 with possible news followed by anthem and sign off. (Fravel, WV) At 1010 with news, political talk. (Tarte, MI)

Radio Santa Fe on 4.965, rock at 0330. (Tarte, MI)

Radio Caracol (formerly Colosal, Editor) 4.945 with news, LA pops, consistently strong. (Tarte, MI)

Costa Rica TIFC in English from 0256 to 0356 on 5.055 with religious and hobby program. (Stovall, AL) At 0355 with end of English, sign off with list of frequencies and national anthem. (Nomis, FL)

Radio Reloj, 4.832 with easy listening music, time checks from 1013 to 1033. (Fravel, WV)

Radio Impacto, 6.150 at 1300 with ads for flights to Miami, editorial. (Nomis, FL)

Cuba Radio Havana on 7.385 from 0440 to 0500 in Spanish, news at 0500. (Fravel, WV) Moscow's "Mayak" service, via Havana on 4.765, 0617 to 0700. (Fravel, WV)

Cypress BBC relay on 17.885 from 1630 to 1700 with "Letter From America." (Fravel, WV)

Czechoslovakia Radio Prague on 5.930 in Spanish at 0254. (Nomis, FL) With "Mailbag" in English at 0345 on 7.345. (Dickerson, IN)

Dominican Republic Radio Clarin, 11.700 at 0152 to 0230 in Spanish, English ID at 0154. (Stovall, AL)

Ecuador Radio Zaracay, Santo Domingo de los Colorados, 3.395 at 0410 with folk music, romantic Latin pops, frequent IDs but CW interference. (Tarte, MI)

Radio Quito, 4.920, announcing as "La voz del la capital" at 0400. (Tarte, MI)

Radio Iris, Esmeraldas, on 3380.9 at 1000 with folk music. (Tarte, MI)

Sistema de Emisora Atalaya, 4.790 in Spanish with football, time check, music, possible news at 0416. (Paszkiewicz, WI)

Radio El Mundo, Guayaquil, 4.750 at 0526 to 0541 in Spanish with a variety of music. (Fravel, WV)

Radiodifusora del Ecuador 4.656 with beisbol at 0434, sign off at 0519 with address and national anthem. (Nomis, FL)

HCJB, off frequency on 6.138 at 1300. (Nomis, FL)

France Radio France International with "Paris Calling Africa" on 15.300 at 1630 to 1700. (Stovall, AL)

Gabon Africa Number One on 4.810 and 11.940 at 0520 with their usual bang-up signal. (Nomis, FL)

Ghana GBC-1, 4.915 at 0600 with drums, interval signal, identification, news in English and into vernaculars at 0615. (Paszkiewicz, WI)

Greece VOA's Kavala Relay on 17.705 in Romanian from 1819 to 1829. (Fravel, WV)

Voice of Greece on 9.420 at 0130 to 0140 with news in English beamed to Africa. (Stovall, AL)

Honduras HRVC, La Voz Evangelica, with English at 0330 on 4.820. (Nomis, FL)

Hungary Radio Budapest on 12.000 at 0300 to 0328 in English. (Stovall, AL)

India All India Radio, 11.850 in English from 1230 to 1240, news and identification. (Rutowski, CT)

Iraq Radio Baghdad on 9.610 at 2130 to 2200 in English with commentary on Iran-Iraq war, economic news. (Stovall, AL) On 9.745 with news in English. (Tarte, MI)

Ivory Coast Radiodiffusion Ivorienne on 4.940 in French at 0650. (Nomis, FL)

Korea Radio Korea at 0000 to 0049 on 15.230 in English. (Stovall, AL)

Liberia VOA relay on 17.870 at 1630 to 1658 in English with "Nightline Africa." (Fravel, WV)

Libya Radio Jamahiriyah noted on 11.820 (? Ed) from 2230 to 2235 in English giving address as P.O. Box 333, Tripoli, Libyan People's Jamahiriyah and asking for two IRC's if a response is desired. (Phipps, MO) 11.816 in English 2200 to 2250, anti-American and anti-South African programs, *Green Book* excerpts. (Stovall, AL) 11.815, 2215-2233 in English. (Fravel, WV)

Madagascar Radio Netherlands relay station on 9.715 at 2034 to 2100 with "Happy Station" show. (Fravel, WV)

Mexico Radio Universidad de Sonora, 6.115 at 1459 sign on with national anthem, announcements in Spanish by a woman, identification with calls and frequencies, upcoming programs, pop music. (Lazarus, LA)

Morocco IBRA Radio, via Radio Mediterranean, 2030 to 2116 on 6.110 in English with religious program. (Stovall, AL)

Namibia Radio Southwest Africa on 3.295 at 0339 with ballads, easy listening music, soul, talk in Afrikaans. (Paszkiewicz, WI) At 0430 with country-western, pop, man, and woman announcers. (Tarte, MI)

New Zealand Radio New Zealand on 15.485 at 0415 with Pacific news at 0450. (Tarte, MI)

Nicaragua La Voz de Nicaragua, 5.950 at 0022 mentioning new frequency of 6.100. (Nomis, FL) 0155 to 0200 in Spanish, then English news at 0200. (Rutowski, CT)

Nigeria Voice of Nigeria in German at 2155, obliterated by VOA sign on at 2200 on 15.120. (Tarte, MI) 2100 to 2200 in English with news, "Africa This Week." (Stovall, AL) At 0555 with news in English on 7.255. (Tarte, MI)

Paraguay Radio Nacional, 9.735 at 1030 with folk music including lots of harp. (Tarte, MI)

Peru Radio Huancayo, 5.955 at 0810 to 0845 with almost non-stop Caribbean music. A few time checks, IDs, and advertisements. (Lazarus, LA)

Estacion 2000, 9.988 from 1213 sign on. Strong, but faded after about 10 minutes. Announcement included ". . . desde . . . Maldonado 731, Departamento de San Martin, territorio peruano . . . la banda de 31 metros, onda corta . . . Esta es Estacion 2000, una radio con personalidad." (Lazarus, LA)

Rwanda Deutsche Welle Kigali transmitter on 21.600, 1909 to 1929 in German. (Fravel, WV) On 7.225 at 0430 with news in English, "Behind the News." QRM from Tunisia. (Paszkiewicz, WI)

Saipan KYOI on 11.900 at 1400 with rock and roll. (Stovall, AL)

Senegal Radio Senegal, 4.890 at 0719 in French and Arabic, music and talk. (Fravel, WV)

Sierra Leone SLBS 5.980 at 2100 with ID, announcements of local events. (Paszkiewicz, WI)

South Africa Radio RSA noted on 4.990 at 0332 to 0357 with "African Review" and "Interaction" program. (Fravel, WV) On 15.185 at 2100, also on 11.900 and 9.585. At 1400 on 25.790, 15.220 and 9.585. (Butterfield, VT) On 11.730 with interval signal from 0200, identification and news. Address given as Radio RSA, P.O. Box 4559, Johannesburg 2000, Republic of South Africa. (Hall, PA)

South African Broadcasting Corporation on 4.880 at 0350 with sign on and into Afrikaans. (Nomis, FL) 4.835 at 0410 with severe QRM from Radio Reloj, Costa Rica, 4.832. (Tarte, MI)

Spain REE with news and weather at 0100 on 11.935. (credit misplaced)

Switzerland Swiss Radio International from 0130 to 0200 with news and "Dateline" on 6.135. (Stovall, AL) Beromunster transmitter on 3.985 from 0703 to 0714 in English with Swiss news and features. (Fravel, WV) At 0623 in Italian. (Nomis, FL)

Togo Radiodiffusion du Togo, 5.047 at 0555 with American soul music. (Tarte, MI)

Tunisia Radiodiffusion Television Tunisienne on 7.225, 0549 to 0616 in Arabic with music, then news at 0600. (Fravel, WV)

Turkey The Voice of Turkey, 9.560 from 0258 to 0330 with news in English, music. (Fravel, WV)

Uganda Radio Uganda at Soroti on 5.027 from 0304 to 0317 in English with disco music. (Fravel, WV)

United States Current WRNO schedule: 1000 to 2000 on 17.775; 2000 to 2200 on 15.420; 2200 to 0000 on 11.965; 0000 to 0200 on 7.355; 0200 to 0400 on 6.045; and 0400 to 0600 on 6.185. (Butterfield, VT) On 7.355 from 0100 to 0200 and 6.045 from 0200. (Hunsen, IA)

KGEI heard on 6.100 at 1200 to 1214 in Japanese. (Fravel, WV)

WYFR on 15.365 with news at 2050 to 2100. (Tarsney, MI)

Voice of America at Greenville on 17.785 at 1750 to 1810 in English with "People in America." (Fravel, WV) VOA at Bethany, Ohio 21.485, 1838 to 1852 in English with African music. (Fravel, WV)

United Nations Radio, via VOA facilities, 15.420 at 0215 to 0230 with UN Africa program. (Stovall, AL)

Radio Earth International, via WRNO, 6.185 at 0403 to 0458 with mailbag and features. (Fravel, WV)

WINB in English was heard on 17.730 at 1546 to 1602. (Fravel, WV)

USSR Radio Peace and Progress in English on 11.745 at 1652. (Paszkiewicz, WI)

Regional at Ufa or Petropavlovsk on 4.485 at 0630. (Nomis, FL) (Probably Petropavlovsk, Editor)

Radio Vilnius, 2309 to 2328 sign off on 9.750 in English giving address as simply Radio Vilnius, Lithuania, USSR. (Phipps, MO)

Vatican Vatican Radio with English on 11.845 at 0050 to 0110. (Stovall, AL) On 9.605 with news and commentary at 0100. (Dickerson, IN)

Venezuela Ecos del Torbes at San Cristobal with LA pops at 0320 on 4.980. (Tarte, MI)

Radio Rumbos, Caracas, 4.970 at 0120 with soccer, news with chimes, "Radio Rumbos informa . . ." at 0330. (Tarte, MI) Heard with talk in Spanish about radio being your constant companion and of its importance in Venezuela. (Nomis, FL)

Radio Juventud, 4.900 at 0355 with American soul, frequent IDs. (Tarte, MI) 1048-1101 with music. (Fravel, WV)

Radio Lara, 4.800 from Barquisimeto at 1040 with harp and vocal music. (Tarte, MI) DJ and ID in Spanish at 0035. (Nomis, FL)

Radio Barquisimeto, 4.990 at 1030 with multi-announcers, commercials, Latin pops, frequent IDs. (Tarte, MI)

Radio Tropical, 4.870 with music and Spanish talk at 0331-0358. (Fravel, WV)

Radio Mundial Bolivar at 0924-0935 on 4.770 in Spanish with music program. (Fravel, WV)

West Germany Deutsche Welle to North America East Coast: 0100 to 0150 on 6.040, 6.085, 6.100, 6.145, 9.545, 9.565, and 11.785. To the West Coast at 0500 to 0550 on 5.960, 6.185, 9.545, 9.690, and 11.705. (Deutsche Welle) On 6.045 at 0120 with economic news. (Dickerson, IN)

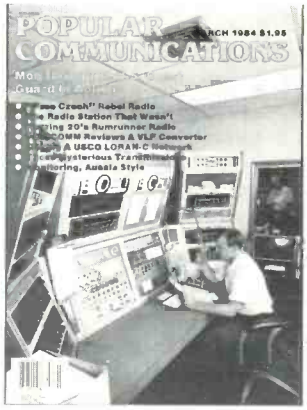
Yugoslavia Radio Belgrad on 15.240 at 1530 to 1555 in English with news and features. (Fravel, WV)

Our thanks to: Henry Lazarus, New Orleans, LA; Sheryl Paszkiewicz, Manitowoc, WI; Mike Tarsney, Alpena, MI; Larry R. Fravel, Clarksburg, WV; Tom Stovall, Jr., Haleysville, AL; Darwin Hunsen, Rowan, IA; Joseph P. Sepulvado, Nekoosa, WI; Monty Butterfield, Rutland, VT; Nek Nomis, Okahumpka, FL; Jim Hall, Pittsburg, PA; Dennis Rutowski, Groton, CT; Stephen Phipps, St. Louis, MO; Jon Simpson, Escondido, CA; Donald Dickerson, Indianapolis, IN; Bob Tarte, Grand Rapids, MI.

Thanks to all. See you next month and until then, good listening!

Coming Soon In

POPULAR COMMUNICATIONS



- Worldwide Bootleg Radio Networks
- DX Ahoy!
- The Violent World of Shortwave
- Britain's Black Radio
- Number Transmissions: The Elusive Mystery
- Radio In The "Gas Bag" Fleet

SURVIVAL

BY R.L. SLATTERY

ESTABLISHING SURVIVALIST COMMUNICATIONS SYSTEMS

Communications Security Threat

Surviving under difficult conditions can be put to no stronger test than conditions of combat. Communications under difficult conditions means essentially the same degree of testing, not only for the ruggedness of the equipment but also for the techniques in communications which will permit messages to be exchanged while still maintaining security. That's the rub, for few communications subjects can arouse more controversy among professional soldiers than that of security. The argument centers on security versus responsiveness, according to Lt. General Charles R. Meyer (one of the top communicators in the U.S. Army until his retirement in 1981). Meyer served in Vietnam and saw these problems in action.

Meyer recognized that the points under debate usually involved the techniques used to gain some degree of communications security, such as changing callsigns and frequencies and using codes for the coordinates and locations and other critical data. According to Meyer in his report entitled "Vietnam Studies: Division Level Communications 1962-1973," to many people, the ideal solution to all but the frequency problem would probably be a small, lightweight, durable, unclassified black box which would automatically scramble and unscramble messages so that only those people with a similar black box could understand the transmission. The black box was not available when U.S. troops were committed to Vietnam. For the most part, such black boxes are still not available to those of us today who are establishing our own survival communications systems. Therefore, there are many parallels to consider.

In Vietnam, Meyer reported, the security measure of changing callsigns was very controversial on two points. One point was the confusion created by changes. Col. Sid Berry, the commander of the 1st Brigade, 1st Infantry Division (June '66 to Feb. '67), summed up the thoughts of many commanders when he observed, "It simplifies communications for units and individuals to keep the same frequencies and particularly callsigns. Frequent changing of callsigns confuses friends more efficiently than enemies." The other point was that new callsigns frequently cast a poor image or were too long. Although there were many complaints about the self-ridiculing image reflected by callsigns, one of the most vivid was cited by Lt. Col. N.E. Archibald (1970 division signal officer of the 1st Cavalry Div.) when he recalled "The signal battalion still had a difficult time selling callsigns like 'Supreme Capon'—the commander said, 'What? You want everyone to call my troops castrated chickens?' "

A Communist transceiver captured in Cambodia is examined by an Air Cavalryman during Operation Toan Thong 43. (Photo courtesy U.S. Army)

Brig. General W.S. Coleman (1967-68 assistant commander of the 1st Inf. Div.), expressed both objections: "Another change that I hated to see was the fancy callsigns that the division was ordered to adopt. Imagine being on the radio and saying 'Sailing Gerta Delta One One Juliet, this is 'Mister Taboo Four Four.' Why, by the time you get the callsigns out, you've forgotten what you wanted to say."

Although these and other complaints were understandable, a communications security problem did exist in Vietnam and had to be dealt with. Early in the war, many people had assumed that the enemy was unsophisticated and that communications security did not warrant much concern. That may have been true when American troops first arrived, but the enemy quickly adjusted.

It soon became evident that he was using our poor communications security to his good advantage: U.S. troops found their own radio equipment when they swept enemy positions; the enemy might disappear from a location just before a planned U.S. attack; B-52 bomber strikes did not produce expected results because the enemy apparently anticipated them. Some plans probably leaked to enemy agents operating within the Vietnamese political structure at the province and district levels, where Americans had to get political clearance for operational areas to ensure that there was no conflict with local defense forces. But even these suspected leaks could not explain the problems in established free fire zones and already authorized areas of temporary locations. There had to be another source from which the enemy was obtaining critical information.

There was! On 20 December '69, elements of the 1st Bde., 1st Inf. Div., overran an enemy position 2½ miles north of Ben Suc and captured 12 enemy soldiers. They also seized an assortment of documents and communications equipment, including three U.S. Army type AN/PRC-25/77 transceivers; one Chinese Communist AM receiver that was compatible with U.S. Army AM radios of the AN/GRC series; seven Sony transistor radios; one Panasonic receiver; one homemade receiver; and one homemade transmitter. All the equipment was in excellent operating condition, and the homemade receiver and transmitter reflected a very high quality of workmanship. With this equipment, this Viet Cong and North Vietnamese Army radio intercept unit could monitor and exploit virtually all nonsecure voice and manual CW communications among U.S. and allied tactical units within receiving range.

Interrogated prisoners indicated that, along with building up equipment, the enemy had utilized a large number of English linguists. These linguists became an integral part of many VC and NVA units such as the intercept unit.

Among the captured documents were several booklets containing extensive instructions on proper intercept techniques and detailed analyses of the communications procedures and exploitable weaknesses of U.S. and allied units. Specific comments were included on the communications procedures of individual U.S. and allied units. These booklets were current, lengthy, and very detailed. On point-of-origin codes the instruction was, " . . . they usually use landmarks or a PO (point of origin) from which they use LEFT, RIGHT, UP, and DOWN to designate a position." In one journal entry a 1st Inf. Div. message had been copied: Presently my one six element is at CPT Coutine (actually Checkpoint Canteen) R.6 U2.2." The actual coordinates were written above the entry. That decoding points-of-origin and shackle codes appeared frequently throughout the journal and proved that deciphering such codes apparently posed no major problem.

The unit also noted the importance of obtaining information from warning nets. By monitoring these nets, the enemy could get data on artillery, air attacks, and the transport of wounded. He could extract all intelligence concerning the units engaged, fire bases, landing zones, and air reconnaissance. He could also get information that would help analyze the traffic intercepted from U.S. advisory and South Vietnamese

unit nets as very productive for intelligence data. It further noted that the South Vietnamese made monitoring very easy because they never changed callsigns or encrypted messages. The journal gave examples of B-52 warning messages. It instructed the monitors to be sure to get the coordinates because they represented the box, or target area, which had to be reported for the security of their own troops.

The captured radio intercept unit was one small team targeted on several U.S. and RVN units. A logical assumption is that by 1969, when this unit was captured, the enemy could reply upon a number of such teams. This attribute of the enemy in Vietnam must be accorded any future enemy; that is, his ability to adjust to American operational techniques and to improve his capacities. The enemy in 1969 was not what he had been. As the situation changed, he changed.

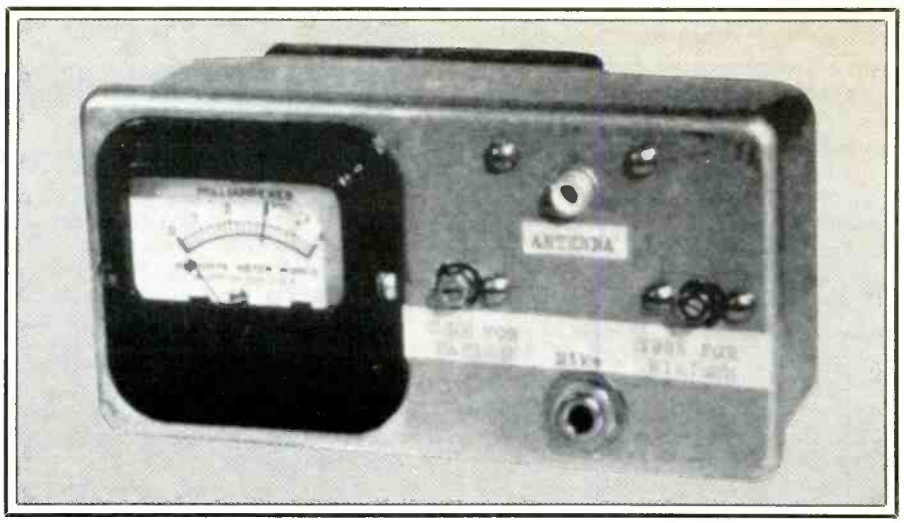
These examples are but a few of how the enemy used U.S. communications means and procedures to gather intelligence and to assist his operations.

There are numerous instances on record of the jamming radio frequencies and sending false messages in U.S. and allied networks. These bogus transmissions used imitation to direct artillery or forces to an area chosen by the enemy. In one case, the enemy tapped into the internal telephone lines of a defensive base and diverted reserve forces from the area the enemy was to shortly attack.

General Abrams, then head of the Military Assistance Command, after examining the captured documents and being briefed on the radio intercept team incident, summed up his reaction: "This work is really startling; the attention to detail, complete accuracy, and thorough professionalism is amazing. These guys are reading our mail, and everyone will be informed that they are."

Of course, for our own part, we were hardly twiddling our thumbs. Captured enemy equipment was carefully scrutinized for information on frequencies used, the accompanying documents were gone over for operating procedures, captured enemy troops were interrogated for additional information. We used every means possible to intercept the enemy's own communications in order to anticipate his activities. This was nothing new. We had done it in WWII and Korea. The new lesson we learned was that even an adversary that we regarded as untrained and poorly equipped, such as the VC and NVA, was not so backward that he didn't realize the importance of intercepting the communications of the "other side," and the importance of establishing his own secure communications.

In establishing your own private communications system, always take into account that your operations are capable of being monitored by others, and, in actual fact, may be being intercepted. On the other hand, if you don't take every opportunity to monitor his communications, then you have severely reduced the effectiveness of all of your own security measures and efforts.



Front panel view of completed instrument. Note that meter has a 5 ma. movement. This was used when a 45-90 volt "B" supply was available. If a 22½ volt supply was used then the meter was a 0-1 milliammeter movement.

The Ultimate In Portable Flea Power!

World War II One-Tube Voice Spy Transmitter

BY ANSON MACFARLAND, KVA4EX

Designing a mini voice transmitter wasn't easy 35 years ago. Regardless of the design, to be small and compact required the use of one tube in either the GT series, loktal, or the miniature types that started to become popular towards the end of the war. The use of more than one tube meant added components and consequently greater bulk and weight.

Where only CW operation was contemplated, there were innumerable miniature tubes from which to select, and the design and construction of such a transmitter was relatively straightforward. The design problems of a one tube voice (AM) required a careful selection of design and components.

This story describes a flea-powered 'phone transmitter which was actually designed for short range use on about 3 MHz for partisans on the ground to communicate with approaching Allied aircraft.

The selection of the tube was dependent upon the available power source and method of modulation. For portable use, it was preferable to use a tube requiring 1.5 or 2 volts DC for the heaters (filaments) and 22.5 to 67.5 volts for the plate supply. Modulation requirements indicated a system of modulation necessitating very little power from the modulation source. For those reasons, suppressor grid modulation was decided upon, and the 1LN5 type tube was selected as the one meeting these requirements. Alternately, a 1LG5 or 1LC5 could be substituted with reasonably good results.

A high level modulation source was the output from a carbon microphone and its associated transformer. This output was sufficient to either grid bias or suppressor grid modulate the RF stage. Where modulation was produced in the oscillator or only RF stage, crystal control was required to keep the carrier from shifting from one frequency to another. Also, it was inadvisable to operate a high power stage similarly, as excessive splatter would heighten chances of the enemy detecting the unit's operation. With those complications in mind, it was thought advisable to stay out of the crystal control grid circuit and instead use suppressor grid modulate.

Modulation of a suppressor grid tube usually called for the suppressor grid to be biased negatively until the plate efficiency falls somewhat less than 35%. Since only reasonable voice quality was required, symmetrical modulation wasn't necessary. Thus, the secondary of the modulation transformer has no bias supply placed between it and ground; that saved the use of an extra dry cell battery. With no bias on the suppressor grid, the negative modulation peaks were undistorted while the positive peaks were clipped off. This corresponds (practically) to single-ended Class B modulation, and in actual practice produced acceptable quality for voice modulation.

The direct current for the carbon microphone was secured from the filament supply. There appeared to be no interaction or feedback from the use of this common supply. The use of this low voltage source for exciting the microphone circuit limited the button current and the available voltage from the secondary of the mic transformer. This, in turn, limited the input power to the RF stage if a reasonable percentage of modulation was to be obtained. Increasing the plate supply without increasing the modulation produced a strong carrier, but at the receiving end all that was noticeable was that the signal-to-noise ratio was sharply increased. It was possible to secure DC from the microphone from the plate supply (through a dropping resistor). In that case, higher button current could have been used, with a similar increase in RF power.

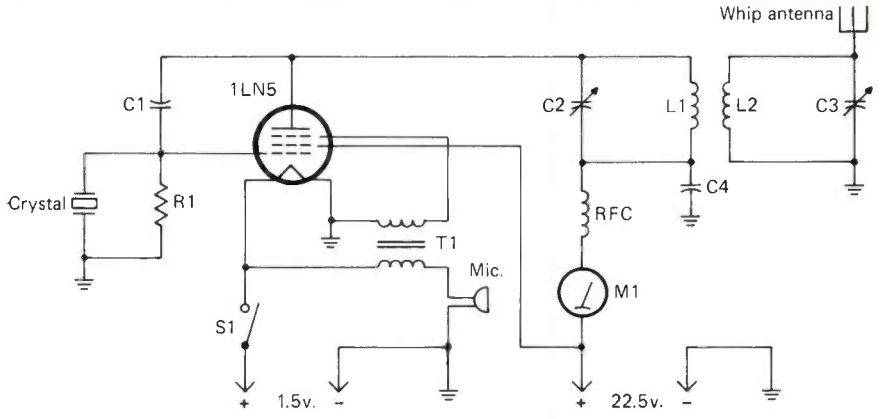
A standard 200 ohm to grid transformer was used for the modulation transformer (T_1). The better the turns ratio, the more voltage was available for modulation. Although the high impedance secondary would not normally be encountered, it was found to be necessary to secure a higher level of modulation.

The carbon button microphone wasn't critical, but the Air Force hand type was handy and did produce 75 milliamperes and was used. An F1 type button, as used in landline telephones (carbon button with diaphragm only) was capable of handling 900 milliamperes.

The crystal oscillator itself posed some interesting problems. Those who are into circuit analysis will probably look at the schematic and think of at least two questions: why such a high value of grid leak resistance, and what about that capacitor connected from plate to control grid? When the oscillator was first constructed, it simply didn't oscillate. After determining that the tank constants were proper for the crystal frequency, that tube and crystal were in good condition, and the wiring was correct,

Parts List

C_1 see text
C_2, C_3 50 pf. midget variables
C4 .002 μf. 200 v. capacitor
L_1, L_2 see text
M_1 0-1 ma. DC meter, see text.
R_1 250,000 ohm 2-watt resistor
RFC 2½ mh. RF choke
S_1 SPST switch
T_1 200 ohm to grid microphone transformer
Crystal Approximately 3100 kHz
Tube 1LN5, 1LG5 or 1LC5
Misc.: Antenna, batteries, case, mic. jack, antenna connector.



Circuit diagram of one-tube transmitter.

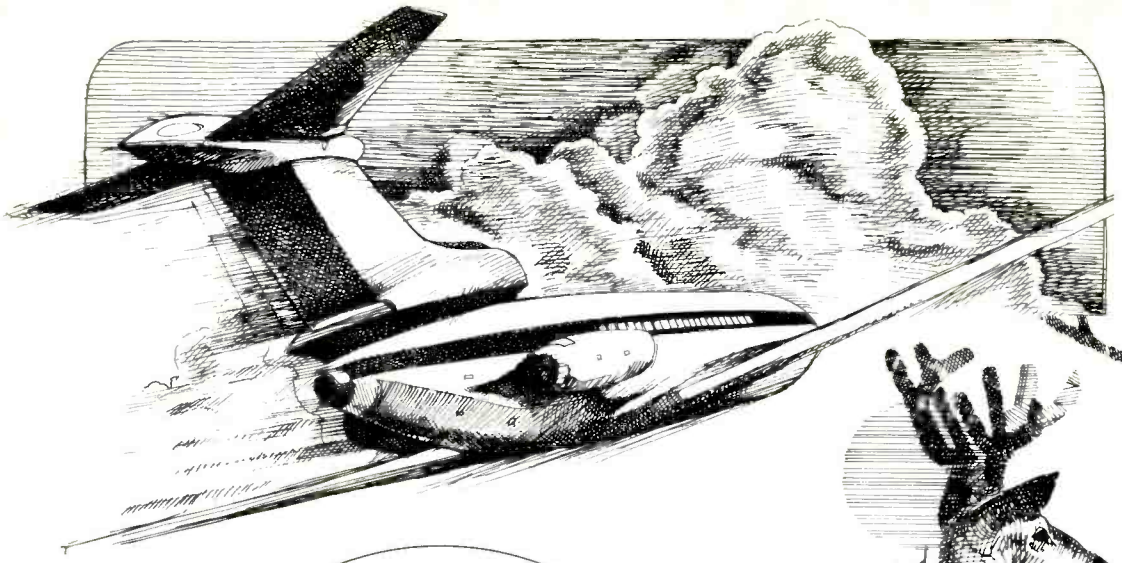
it was decided to analyze the circuit. Upon investigation, it was determined that the interelectrode tube capacities were so low that insufficient energy was being fed from the plate circuit back into the control grid to maintain oscillation. By trial and error, 2 to 5 pf. was selected as being the proper RF bypass between the control grid and plate (C_1). Exceeding this allowable range caused either insufficient feedback or excessive detuning of the tank circuit, resulting in continued failure of the circuit to oscillate.

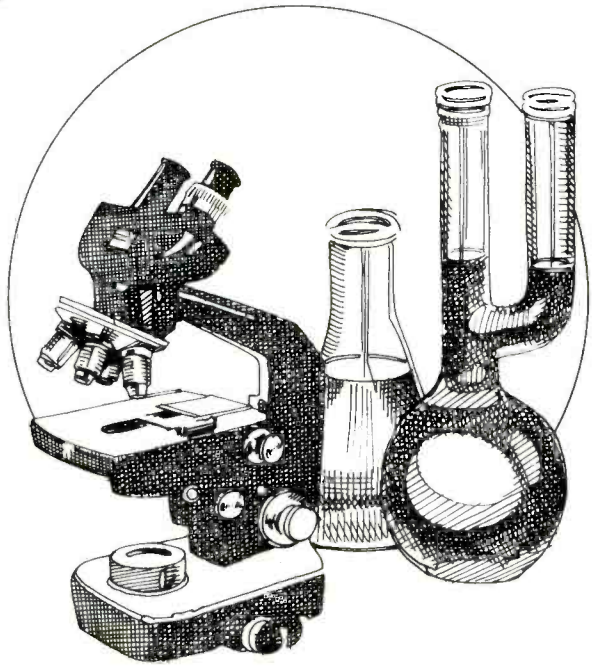
As the grid current flow was very low (due to RF excitation), it was found necessary to go to a high value of grid leak resistance in order to develop the proper Class C bias.

Tuning the transmitter required the use of a 1 milliampere meter. A 5 ma. meter was used where 45 to 90 volt operation was used. The meter was placed in the plate return to indicate only, not screen and plate current. The tank circuit was tuned for the minimum plate current dip and then the antenna loading was adjusted for maximum plate current. A rod or whip antenna anywhere from 60 to 99 inches was found suitable for operation. The antenna coil and capacitor needed to resonate at the crystal frequency in order to voltage feed the antenna system. Those constants used for operation at the 3100 kHz frequency were 50 pf for C_2 and C_3. The tank and antenna coil were wound on the same 5/8 inch form 3/16 of an inch apart. The tank coil was wound about 1 inch long, while the antenna coil was wound only a little more than a half inch long. The antenna coil was wound at the "hot" (or plate) end of the tank coil.

The use of a single flashlight cell for filament power, and a miniature 22.5 hearing aid battery for the plate supply, allowed the overall bulk and weight of the transmitter to be very small. Including the batteries, the transmitter weighed just 1¾ lbs. The batteries were secured externally to the back of the case, 1 inch greater depth allowing the batteries to be carried internally. The case used was only 2¾" × 6" × 2¼" deep.

We are deeply indebted to *POP'COMM* reader J. Halpern of Tuscon, Arizona for filling us in on this interesting circuit he had developed while he was in the OSS during World War II. The photo of a prototype unit was also supplied by Mr. Halpern.





Scanner Frequency Roster

Delta Airlines

AL	Birmingham	KWO885	460.825
CA	Los Angeles	KJE633	460.825
	San Francisco	KQZ656	460.825
CO	Denver	KKO375	460.825
CT	Windsor Locks	KKS633	460.825
FL	Miami	KIB550	460.825
	Orlando	KUV975	460.825
	Tampa	KSN840	460.825
	W. Palm Beach	WZR492	460.825
GA	Atlanta	KYV952	460.70
		KIV519	460.80
		KQX544	460.825
		KUV854	460.875
		KAA4634	462.70
		WQF340	462.75
IL	Chicago	KSI674	460.825
IN	Indianapolis	KCI964	460.825
KY	Covington	KWN762	460.825
LA	New Orleans	KGZ868	460.825
	Shreveport	KTM758	460.825
MA	Boston	KVJ366	460.825
MI	Detroit	KQJ775	460.825
MS	Jackson	KIC617	460.825
MO	St. Louis	KCB390	460.825
NV	Las Vegas	KCB438	460.825
NJ	Newark	KJM275	460.825
NY	New York	KEJ390	460.825
		KZA754	460.825
OH	Columbus	WRC376	460.825
OK	Tulsa	KKO374	460.825
PR	San Juan	KFU874	151.745
TN	Memphis	KAX956	460.825
TX	Houston	KQT382	460.825
	Northfield	KGZ542	460.825
		KVT402	460.65
US	portable	KVT401	460.825
UT	Salt Lake City	WGL382	460.675
VA	Arlington	WXM552	460.825

Environmental Protection Agency

AL	Montgomery	164.45

CA	all areas	40.97
	Los Angeles	167.19
FL	Panama City	164.45
	Pensacola	156.65, 156.70, 157.10, 164.45
MI	Ann Arbor	408.00
MN	Duluth	408.00
NJ	Edison	164.45
	Leonard	164.05
NV	Las Vegas	164.45
	Mt. Potosi	165.4125
NY	Rochester	164.45
NC	all areas	164.10, 164.45
OH	Cincinnati	41.39, 41.47, 164.45, 170.125, 172.30, 408.00
	Fairfield	172.30
	Sandusky	164.45
OR	Corvallis	38.74
PA	Philadelphia	165.4125
RI	Narragansett	164.45, 165.4125
SC	all areas	157.175, 164.25
TX	Houston	164.45
US	all areas	36.25, 40.71, 41.63, 150.98, 156.225, 156.65, 156.70, 157.075, 157.10, 157.125, 158.445, 159.48, 161.58, 164.45, 165.4125, 173.86, 454.00, 459.00

Trans World Airlines

AZ	Phoenix	KJT647	460.675
	Tucson	KSB253	460.675
		WXU968	151.835
CA	Los Angeles	KLT459	460.675
		KAR252	464.525
		KVL226	151.775
	Oakland	KLH856	151.775
	Ontario	KQY503	151.775
	San Francisco	KLT378	460.675
		KMJ690	460.85
CO	Denver	KJT645	460.675
CT	Windsor Locks	KE6607	460.675
FL	Kennedy Space Center	WRM985	154.515
	Miami	WBK799	460.875
HI	Honolulu	WYS827	460.675
IL	Chicago	KBR316	461.75
		KTT668	460.675
IN	Indianapolis	KUK973	460.675
KS	Overland Park	KRO468	151.865
	Wichita	KXA597	460.675
KY	Erlanger	KQW915	460.675
MD	Linthicum	KDP686	460.675
MA	Boston	KJI218	460.675
MI	Detroit	KKZ729	460.80
MO	Kansas City	KFA604	151.865
		KIQ301	464.425
		KVW635	460.875
	(Simulator Base)	KA69172	469.50
	St.Louis	KAL768	460.675
		WYS888	460.875
		WYZ863	465.000
NJ	Newark	KJY407	460.675
NM	Albuquerque	KJT644	460.675
NY	Flushing (LaGuardia)	KAV973	460.675
	Jamaica (JFK)	KEH248	461.7125
		KEN248	461.75
		KJH489	151.715
		KET416/KLY661	460.675
OH	Columbus	KJI217	460.675
	Vandalia	KLQ229	460.675
OK	Oklahoma City	WYS826	460.675
	Tulsa	WXL207	460.675
PA	Philadelphia	KDM870	460.675
	Pittsburgh	KAV972	460.675
TX	Amarillo	WXL206	460.675
VA	Arlington	KQR912	460.675
	Chantilly	KLC377	460.675

National Science Foundation (U.S. Gov't.)

AZ	Kitt Peak Observatory	164.35, 164.50, 409.20
	Tucson	164.35, 164.50
CO	Boulder	164.20, 165.6625, 409.825
	Broomfield	122.9, 164.05, 164.50
	Erie	409.825
	Grover	122.9, 164.05, 164.20, 164.50, 164.70, 410.45
	Roberts Mills	164.05, 164.50, 164.70
	Roseville	165.6625
HI	Hilo	168.725
	Mauna Loa Volcano	167.95, 168.125, 168.55
NM	Augustine	162.025
	Sacramento Peak Observ.	164.35
PR	Arecibo Radio Telescope	49.80, 148.515, 150.195, 163.4875, 165.1125
	El Coto	165.1125
	Los Canos	165.1125
	Ramey	30.325
	Rio Blanco	165.1125
	Rio Grande	165.1125
TX	Palestine	122.8, 138.75
US	(all areas)	138.54, 166.05
WY	Laramie	408.00
	Sherman Hill	164.05, 408.00

ON THE LINE

NEW AND EXCITING TELEPHONE TECHNOLOGY

BY GORDON WEST, WB6NOA

With the break up of Ma Bell, telephone manufacturers have gone all out to bring us the very latest in dialing devices. Accessory manufacturers have also added a line of gadgets to make your present telephone equipment do even more than it now does.

Cordless manufacturers are not waiting for the outcome of General Docket No. 83-325, which would provide ten additional interim channels for cordless telephone operation. Although the present five channels are terribly overloaded, there are hundreds of cordless phones going on the air every day on the present five-channel pair.

General Electric may have figured a good way around the channel congestion problem with a two-frequency cordless phone set-up. If you find that you are on someone else's channel when you bring your cordless phone home, a flip of the switch and you are on a new pair of channels. It would be pretty unlikely that both sets of channels would be occupied by your neighbors.

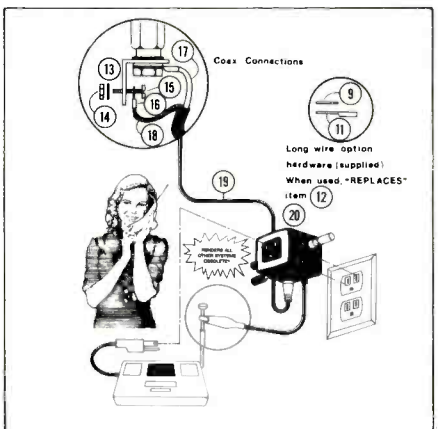
Another nice feature of the General Electric "Voyager" cordless telephone is that there are 256 easy-to-set security codes to keep out unauthorized users with similar-type equipment. They are easy to set and G.E. presets the security code for you.

Another nice touch to this cordless phone system is the second remote recharge cradle that lets you charge the cordless phone apparatus remotely or at the main base. It even hangs on the wall to keep everything out of the way.

The suggested retail of $199.95 makes this a very good value, and our field tests indicate that you get plenty of range with this set-up when everything is hooked up and turned on.

By the way, I cannot overemphasize that good range on your cordless set-up is directly proportional to the amount of time and care in the correct placement of the base transponder unit. Putting the base transponder on the floor and keeping all the cords tightly coiled up will give you less than advertised range. You may wish to try a different location for the base transponder and keep the AC cord stretched out as long as possible. This will allow for you to hear the base set-up at a greater distance, and a higher elevated base transponder will allow it to hear your cordless set-up at a greater range. You may find hot and cold spots in the house where the set-up will work further. This is a trial and error proposition; and if you have enough telephone jacks and AC outlets, a little experimenting certainly will help you get that 1000-foot range as advertised. Pal Firestick® (2614 E. Adams, Phoenix, AZ 85034) offers the industry's first "experimental" range booster antenna system. Several options allow you to fine tune the system for maximum range. For those of you that still need more range (such as a few miles) from a cordless phone set-up, the mobile radio telephone service and/or the cellular radio telephone service is your only alternative. There is nothing that you can do to modify your cordless phone to go over 2000 feet.

A selection of telephones from General Electric, including the two channel cordless phone pictured on the right.



The new PAL Firestick® Experimenter's Range Extension Kit.

Cellular Telephones

There are over 30 cities in the United States that offer commercial cellular telephone service. Chicago was the first city to try out cellular radio telephone, and it worked so well, everyone wants to establish a cellular system network. There are 666 channels between 825 MHz-845 MHz and 870 MHz-890 MHz for 30 kHz channels. As you drive from one "cell" into another within your metropolitan service area, computers automatically keep your signals coming and going loud and clear as if you were talking over a conventional land-line telephone set-up. The fidelity of the cellular system is phenomenal—many times giving a signal more clearly than any of the conventional cordless telephones!

The big advantage of a cellular telephone is that it permits reuse of frequencies within its service area. Users can place phone calls as well as receive phone calls almost anywhere the moment the receiver is picked up. The switch-over time between cells is less than 50 milliseconds and is virtually undetectable by the parties on either end of the phone. Computers keep track of everything as well as the billing, so there is no voice contact with a mobile telephone operator.

Recently, General Electric and Northern Telecom, Inc. unveiled a $2.5 million joint cellular system in Jacksonville, Florida. General Electric calls their new cellular telephone "GE-Star," and these phones are expected to be available by this summer.

Industry analysts estimate that by 1990 about 1.5 million cellular telephones will be in use nationally. But as the initial $2,500 cost of the in-car installation and estimated $200 per month use fees drop, the market should expand rapidly.

"We soon will see hand-held, battery-powered, portable units for people not al-

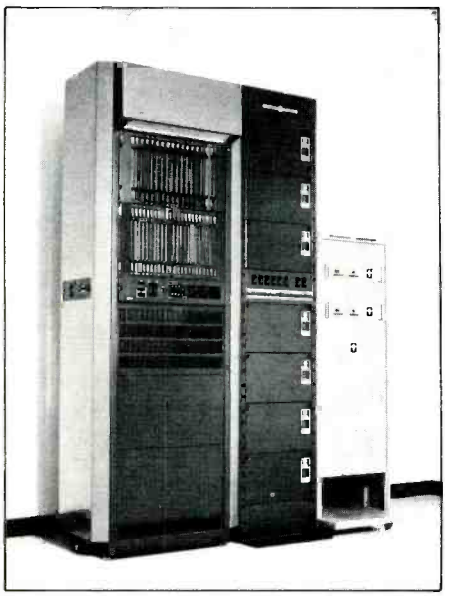
Cellular telephones provide a longer range.

ways in their car to maintain contact with the cellular system. Several automobile makers have already seen the potential of cellular telephones, and General Motors is offering them on one model in the Chicago market, and Ford plans to make them available on all 1985 cars. Three major car rental companies have announced their intention to make cellular telephones available in selected models," comments Jim Harman of General Electric. For more information about the G.E. cellular telephones, as well as their cordless telephones, write Jim Harman, General Electric Company, Electronics Park, Building 5, Syracuse, NY 13221.

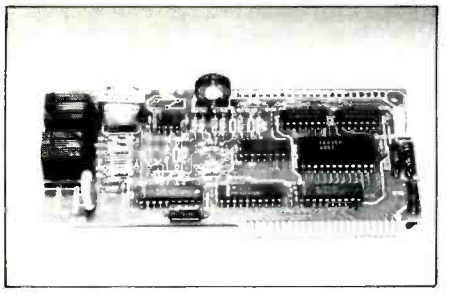
Great Catalogs

The Shaper Image® still continues to publish one of the finest telephone catalogs around. They call it the *Phone Book*™ and it is available by writing The Sharper Image, 406 Jackson Street, San Francisco, CA 94111. They have developed a series of logos that denote the many features that their phone systems may have, or features that they might not have. It makes it easy to pick out a cordless or wired phone for any type of application.

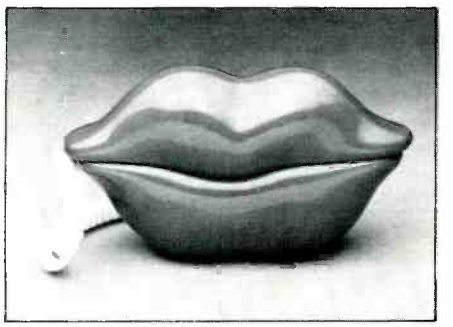
"We find that the infrared speaker phone is one of the most interesting products we



Computers can now track all calls.



The Networker™ Modem by Zoom Telephonics, Inc.



"Hot Lips" is just one of the ultra-modern telephones available from Tele Quest.

handle," comments Bruce Boston, owner, Telcom Industries, 815 E. Third Street, Beardstown, IL 62618. They offer a catalog for $2.50 (refundable with the first order) that is full of exciting telephone products, many at discounted prices. Here's another catalog you might want to send for that gives you the latest on anything to do with telephone accessories. One of the interesting items in the catalog that I had never seen before was the telephone line checker—it's a pocket test device that allows you to check all your telephone lines out for proper power, line reversal, opens, shorts, ring grounds, and a green LED that signals that everything is okay. Plug it in and read it! That infrared phone is also listed in the catalog—and if you are worried about someone with a radio receiver picking up your cordless telephone set-up, this system can't be tapped. It works on light waves, and allows you to roam around a room and talk to a speaker phone without a radio eavesdropper tuning in.

Telephone devices, such as automatic dialers, are getting so complex that one company—Moog Music, Inc., 2500 Walden Avenue, Buffalo, NY 14225, is offering a test along with their equipment to insure that you know everything you need to know before operating it. The test includes such questions as, "How many memory positions?", "How many digits can the memory position accept?", "Where do you send for more extra overlays?", "How does a customer verify a number being dialed?", and "How long will our device continue to call an unanswered line?" If you get a 100 on the exam, they then tell you to go ahead and start using their device. That's an interesting concept. I am not sure how many people will actually take the exam, but if they pass with flying colors, they most assuredly will be able to operate the dialing set-up.

If you are looking for a telephone modem for your Apple II series computer, Zoom Telephonics, Inc., 207 South Street, Boston, MA 02111, has just the package for you. This will allow high-speed transmission and copying of any program or data file through noisy telephone lines. Their modem is compatible with any communications software that uses a standard communications interface, and is FCC-approved for direct connection to any modular phone jack. It can operate at speeds up to 300 baud for your computer.

I like things more simple—like the little "Silencer cord"™, also from Zoom Telephonics, that cancels any type of phone from ringing. It just sits there quietly and allows me to go ahead without ringing in my ear. I just must remember to turn it back on when I leave the room!

Some ultra-modern telephones are available from Tele Quest, 4514 Van Owen Street, Burbank, CA 91505. They have a phone that looks like "hot lips," a super-slim red leather phone, an old-fashioned telephone, and several other models that may strike your fancy. Ham radio operator, Julian Macassey, N6ARE, also insures that each telephone sold will reject incoming radio signals from CB sets and ham radio sets to keep interference to a minimum. Keep up the good work, Julian!

Several companies are combining their cordless telephone with a clock radio set-up. This allows you to conserve space on your nightstand. You can ditch your clock, table your clock radio, and cancel the phone apparatus and replace it all with one handy unit that does all three. It's a clock, entertainment radio, and a cordless phone set-up all in one. G.E. has a nice model called the "Call-Maker" deluxe step-up clock radio telephone. Super Tel, 4151 Beverly Boulevard, Los Angeles, CA 90004, has a wall-mounted, hands-free speaker phone with built-in AM/FM radio and clock that's also an interesting piece of equipment. Put it in the kitchen and it may fry eggs, too.

One final note before we close this month about telephones on the move. There are now telephones that passengers may use in selected airlines as you travel across the country. The calls aren't cheap—probably about $20.00 for the first three minutes—but nonetheless, if you need to get hold of someone on the ground, it's about the only way you can go.

POP'COMM Scans The Missouri Highway Patrol

BY RICK MASLAU, KNY2GL

The information on the Missouri Highway Patrol was furnished by Randy Grimes of Pontiac, Missouri. Randy advises that the MHP has been monitored on the following frequencies: 42.06, 42.12, 42.22, 42.32, 42.38, 154.695, 154.875, 154.92, 155.475, 155.67, 155.73, 156.15, 453.95, 456.275, 456.475, and 456.525 MHz. Liquor control is on 154.77 MHz, while the Boat Commission uses 155.595 MHz.

Randy also passed along the agency's 10-Code to share with *POP'COMM* readers. Readers are invited to pass along frequencies, station rosters, and code signals of state agencies, major city agencies, and also the agencies in larger metropolitan counties.

Missouri Highway Patrol Ten Signals

10-1 Unable to copy, change location
10-2 Signals good
10-3 Stop transmitting
10-4 Acknowledgement
10-5 Relay
10-6 Busy, stand by unless urgent
10-7 Out of service (give location and/or telephone number)
10-8 In service
10-9 Repeat
10-10 Fight in progress
10-11 Dog case
10-12 Stand by, remain alert, stop
10-13 Weather and road report
10-14 Report of prowler
10-15 Civil disturbance
10-16 Domestic trouble
10-17 Meet complainant
10-18 Complete assignment quickly
10-19 Return to _____
10-20 Location
10-21 Call _____ by telephone
10-22 Disregard
10-23 Arrived at scene
10-24 Assignment completed
10-25 Report in person to meet _____
10-26 Detaining subject, expedite _____
10-27 Driver's license information
10-28 Vehicle registration information
10-29 Check record for wanted
10-30 Illegal use of radio
10-31 Crime in progress
10-32 Man with gun
10-33 Emergency radio traffic only
10-34 Riot
10-35 Major crime alert
10-36 Correct time
10-37 Investigate suspicious auto
10-38 Stopping suspicious auto
10-39 Urgent—use light/siren
10-40 Silent run—no light/siren
10-41 Ending tour of duty
10-42 Ending tour of duty
10-43 Information (J1 = confidential)
10-44 Request permission to leave patrol car
10-45 Animal carcass at _____
10-46 Assist motorist
10-47 Emergency road repairs needed
10-48 Traffic standard needs repairs
10-49 Traffic light out
10-50 Accident
10-51 Wrecker needed
10-52 Ambulance needed
10-53 Road blocked
10-54 Livestock on highway
10-55 Intoxicated driver
10-56 Intoxicated pedestrian
10-57 Hit & run
10-59 Direct traffic
10-60 Squad in vicinity
10-61 Personnel in area
10-62 Reply to message
10-63 Prepare to make written copy
10-64 Message for local delivery
10-65 Net message assignment
10-66 Message cancellation
10-67 Clear to read net message
10-68 Dispatch information
10-69 Message received
10-70 Fire alarm
10-71 Advise nature of fire (size, type, contents of building)
10-72 Report on progress of fire
10-73 Smoke report
10-74 Negative
10-75 In contact with
10-76 En route (J1 = prisoner, J2 = female)
10-77 Estimated time of arrival
10-78 Need assistance
10-79 Notify coroner
10-80 Vacation check
10-81 School stops
10-82 Reserve lodging
10-83 Door check
10-84 If meeting _____, advise
10-85 Will be late
10-86 Report to station
10-87 Pick up checks for distribution
10-88 Advise present phone number
10-89 Car to car
10-90 Bank alarm
10-91 Unnecessary use of radio
10-92 Frequency check
10-93 Blockade
10-94 Drag racing
10-95 Give radio test
10-96 Mental subject
10-97 Minor detail (J1 = Station-report, J2 = Station-lunch, J3 = restaurant)
10-98 Prison or jail break
10-99 Records indicate wanted or stolen

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ICF6800W	549.95	($10 UPS)	RFB600	499.95	($9 UPS)	AMECO			SWL Manual of Non Broadcast Stations	12.95
AC9W	12.00	($ 2 UPS)	RF799	229.95	($3 UPS)	PLF2 Preamp	$52.95	($3 UPS)	How to Tune the Secret Shortwave Spectrum	7.95
AC160W	14.00	($ 2 UPS)	RF1405	69.95	($3 UPS)	EAVESDROPPER			The Complete Short Wave Listeners Handbook	11.95
DCC127	29.50	($ 2 UPS)	RF3100	289.95	($5 UPS)	SWL Dipole	$59.95	($3 UPS)	Short Wave Listeners Antenna Handbook	9.95
						MFJ			Whites Radio Log	4.95
						1020	$79.95	($2 UPS)		
						752B	89.95	($3 UPS)		
						304	79.95	($2 UPS)		
						308	99.95	($2 UPS)		

Shipping charges in parenthesis are for continental U.S. only. International orders write for pro forma invoice. Illinois residents please add 7% sales tax.

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RTTY

THE EXCITING WORLD OF RADIOTELETYPE MONITORING

BY JOSEPH JESSON

Tuning across the HF 3-30 MHz spectrum, one hears many changing audio tones—some common, such as CW and standard frequency shift keyed RTTY (FSK) and also not so easily identifiable chirps and buzz-like sounds. With experience, most of the audio noises can be easily tagged. Various modulation schemes are used to transmit digital data and the idea is to use a minimum of bandwidth and to efficiently convey information during changing channel conditions such as fading. Many other parameters are also taken into consideration when a particular modulation scheme is selected by the communications engineer. Simple RTTY consists of a shifting carrier which translates into two audio tones when the receiver's beat frequency oscillator (BFO) is combined (added) to the received carrier. This is recognized by the tweedle-dee sound of the binary (1 or 0) data. In fact, the actual shift can be recognized after some listening practice—425 Hz shift sounds different than 170 Hz shift. A single channel RTTY signal is changed into binary voltage levels and an RTTY FSK demodulation works by converting audio tones into levels of 0 and +5 volts or −9 and 9 volts (RS232C).

After the voltage levels are derived from the FSK tones, this computer input is "read" as binary characters.

During the 1940's and 1950's the need arose in maximizing the amount of information that a particular channel may carry. This was crucial due to the expense of laying underwater cables and hence multiplexing techniques came into being. Costs associated in a typical data communication network have been noted as 35 percent equipment and 65 percent transmission media. What is multiplexing? Multiplexing is the combining of several terminals or specific data sources on one channel. Several simultaneous signals are multiplexed together onto one line.

FDM (Frequency Division Multiplexing) is the oldest and most common type of multiplexing and is a dead giveaway while tuning across the shortwave spectrum. FDM is recognized as a loud buzzing and irritating sound across a 6 kHz bandwidth. It takes advantage of the fact that the bandwidth of a voice-grade high frequency (HF) channel is significantly greater than that required by a low speed data channel and by using many different carriers (or center frequencies), several different data channels share the same HF channel without interfering with each other.

Several narrow shift low speed RTTY data lines are combined using FDM and sent out. The International Telephone and Telegraph Consultive Committee, the CCITT, has recommended a specific spacing numbering system for RTTY FDM. For a 50 Baudot data rate, the nominal mean frequency series are formed by odd multiples of 60 Hz with 120 Hz spacings, and the lowest frequency is 420 Hz. Spacing of 240 Hz is recommended at 100 baud with an audio range of 480 Hz to 3120 Hz. CCITT recommendation R.36 mixes 200 baud, 100 baud, and 50 baud at 480 Hz, 240 Hz and 120 Hz respectively. A set of 12 channels is often referred to as group. When using an extremely broadband media link such as microwave link or satellite transponder, the "group" is combined into five groups called *supergroups* (50 data or voice channels), and supergroups are combined to create mastergroups. Talk about worlds within worlds!

With a crowded HF spectrum, multiplexing is quite popular with military communication systems. An FDM demodulator or terminal unit requires selective audio filters whose center frequency is positioned to allow each particular channel to pass and only that channel. Then, a phase locked loop (PLL) or mark/space filter recovers binary voltages that the microcomputer can handle. The microcomputer will display this serial data. We have gone from a carrier frequency down to the subscrrier frequency level and finally, using the PLL or filter discriminator, have reduced the subcarrier to a baseband lever. The most popular FDM signal found on HF uses a channel spacing of 170 Hz (±42.5 Hz-85 Hz shift mark/space) and 120 Hz (±30 Hz-60 Hz mark/space).

For the RTTY buff, the problem becomes one of filtering out a single narrow channel at a time. Two options are available at present. The first option is to obtain a surplus commercial quality FDM demodulator from Electrovalue Industrial Inc., P.O. Box 376-FB, Dept. PC, Morris Plaines, NJ 07950. Prices range from $35 to $275 depending on model and condition. New,

Scheme of Numbering of Frequencies and Multiplex
CCITT - R 70 bis

																											Interpreted Spacing	Interpreted Shift
Mean frequency (Hz)	420	540	660	780	900	1020	1140	1260	1380	1500	1620	1740	1860	1980	2100	2220	2340	2460	2580	2700	2820	2940	3060	3180	According to Rec. R.31 \ 50 bauds Rec. R.35 /	120 Hz	±30
Channel No.	001 101	002 102	003 103	004 104	005 105	006 106	007 107	008 108	009 109	010 110	011 111	012 112	013 113	014 114	015 115	016 116	017 117	018 118	019 119	020 120	021 121	022 122	023 123	024 124			
Mean frequency (Hz)	480		720		960		1200		1440		1680		1920		2160		2400		2640		2880		3120		Recommendation R.37 50 bauds 100 bauds	240 Hz	±60
Channel No.	201		202		203		204		205		206		207		208		209		210		211		212				
Mean frequency (Hz)	600				1080				1560				2040				2520				3000				Recommendation R.38 A 200 bauds	480 Hz	±120
Channel No.	401				402				403				404				405				406						
Mean frequency (Hz)	540				900				1260				1620				1980				2340				Recommendation R.38 B 200 bauds	360 Hz	±90
Channel No.	301				302				303				304				305				306						
Mean frequency (Hz)	420	540	660	780	900	1020	1140	1260	1560				2040				2340	2460	2640		2880		3120		One example of the application of Recommendation R.36		
Channel No.	101	102	103	104	105	106	107	108	403				404				117	118	210		211		212		2 channels-200 bauds 3 channels-100 bauds 10 channels- 50 bauds	480 Hz 240 Hz 120 Hz	±120 ±60 ±30

Table 1

Frequency	Time	Baud Rate	Source
14386.0 kHz	1900 GMT	75 baud	United States Navy Weather
14388.0 kHz	1900 GMT	50 baud	UPI News
16037.0 kHz	1900 GMT	45 baud	UPI News
20991.0 kHz	2100 GMT	75 baud	Weather

CCIR 436-1, 110 Bauds

Channel Position	Central Frequency (Hz)	Channel Position	Central Frequency (Hz)
1	425	9	1785
2	595	10	1955
3	765	11	2125
4	935	12	2295
5	1105	13	2465
6	1275	14	2635
7	1445	15	2805
8	1615	16	2975

Central frequencies of voice-frequency frequency-shift channels with a channel separation of 170 Hz and a modulation index of about 0.8

(Frequency deviation: ± 42.5 Hz or ± 40 Hz)

these professional Frederick 1202R demodulators had a 1976 price of $1300 each. Electrovalue has a new free brochure worth reading. The surplus Frederick 1202RA uses filters for 170 Hz channel separation (85 Hz shift—most popular on HF) and the 1202RB specs out at 60 Hz shift.

The second option (as described by Dave Wilson) is to use a sharp audio CW filter with 80 Hz width at −3dB centered at 750 Hz. This filter is followed by an audio amplifier in order to correct impedance and audio level.

To offset the 750 Hz center frequency to create the standard 2125 Hz center frequency (used on your standard RTTY demodulator), a tunable audio inversion descrambler "mixes" both signals. Dave uses the K4 kit from Capri Electronics, Route 1, Canon, GA 30520.

Then your RTTY demodulator decodes Baudot, ASCII, or TOR normally. HF FDM broadcasts are usually made up of 8 or 16 channels—most are encrypted but then properly decoded, a few weather channels at 75 baud may be found. A word of warning, though; a very stable receiver is required. Imagine trying to demodulate an 85 Hz shift while your receiver drifts 50 Hz! Pay careful attention to accurate tuning of the receiver while noting the displayed output. Dave has used this technique with the Info-Tech M600A and the Microcraft reader.

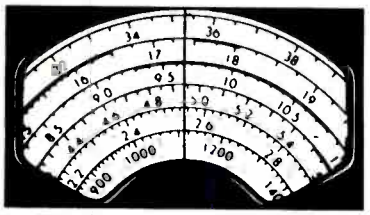
Another multiplexing scheme is TDM or Tine Division Multiplexing. TDM interleaves bits or characters one at a time digitally and can be compared to a rotary switch in operation where each switch position can be thought of as a low-speed channel. If the transmitter is in synchronization with the receiver, each character can be pulled out and separated from the stream of data. A full character is accepted before the "switch" indexes to a new channel. This multiplexing scheme requires a great deal of hardware for storage and interleaving. TDM is seldom used on HF due to the accurate synchronizing required at the beginning of each message block. If the sync preamble is missed, the message is then lost until resync is made.

FDM does not require any time synchronizing, only agreements in center frequency, shift, and baud rate. TDM however, is quite common on satellite links. An entire new adventure is available on satellite. Satellite RTTY exploring can be a rewarding experience, since the entire gamut of modulation schemes are used and identifying each scheme can be challenging as FSK, FDM, TDM, and a host of others will be found. With FDM, end-to-end frequency tolerance on international RTTY circuits should be less than 2 Hz. To keep this accuracy, carrier frequencies used in FDM equipment must be very accurate or a frequency-synchronizing pilot must be used. The foundation of all carrier frequency generation for modern FDM equipment is a master frequency source. The transmitter, or master station, derives the frequency synchronizing pilot from this source. The receiver master oscillator is phase locked to the incoming pilot tone. Hence, any change in the master frequency source ends up being tracked by the receiver link.

Subcarrier FM is another area to explore new RTTY data channels. In the Chicago area, four digital data subcarrier channels are "riding" on the standard FM broadcast stations at a supersonic (67 kHz) center frequency. Two of the four digital RTTY data channels use FDM multiplexing to maximize the number of low speed RTTY lines. A surplus Frederick 1202RB is optimum for demodulating FM subcarrier FDM data. Modifications to a typical FM broadcast receiver, in order to listen to subcarriers, are necessary. Complete subcarrier (SCA) units and kits are available from FM Atlas, Adolph, MN 55701 and Communications Poly Services, Box 3251, Westford, MA 01886.

For a sample of what an FDM signal sounds like, try the frequencies listed in Table 1.

After this sound becomes familiar, you will find many military FDM transmissions from 4-25 MHz and with persistence and careful tuning log nonencrypted news or weather RTTY nestled among encrypted military RTTY data channels. If a satellite system is available, try connecting your stable shortwave receiver to your broadband video output. Conventional satellite service for medium to heavy communications routes uses multidestination carriers occupying the allocated bandwidth on a preassigned frequency division access scheme, with voice and data channels being multiplexed as well. This FDM system normally uses carriers of 24, 60, 90, or 132 channels. This should keep satellite RTTY DXers busy! The commercial earth station receives and demodulates carriers of interest and then demultiplexes those channels of interest. The Intelsat frequency plan defines 800 channels at 45 kHz intervals in a 36 MHz transponder bandwidth. Tine Division Multiplexing is becoming more popular than other access techniques due to the all-digital use flexibility. I am not aware of any low-cost hobbiest TDM gear available on the surplus market. But as it becomes available, I will let my readers know.



COMMUNICATIONS CONFIDENTIAL

BY HARRY HELMS, KR2H

YOUR GUIDE TO SHORTWAVE "UTILITY" STATIONS

George Osier of New York not only managed to hear West German stations DAN (2614 kHz) and DAO (2775 kHz), but he also got QSL cards from them quickly. George sent along copies of his QSLs to share with fellow *POP'COMM* readers. A nice pair of veries that anyone would be proud to have in their collection, George!

Michael Harris of Ohio has also had good luck in QSLing his catches and sent along copies of his prized veries this month. One of the most interesting is from BPM, located at Lintong, China. For many years this station did not respond at all to reception reports, so it is certainly good to see such complete QSLs arriving from them!

You can also share your verifications with other *POP'COMM* readers. Please don't send the original card; instead a good, sharp photocopy will do fine. Don't forget a photo of your listening post either. A black and white photo of it will reproduce better here in the magazine than a color photo.

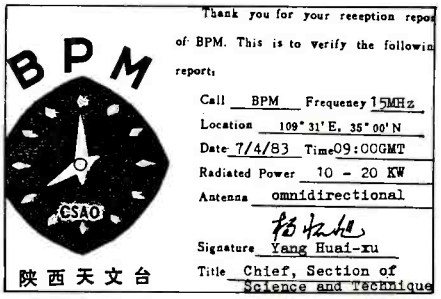
Mystery Beacons Above 1600 kHz

John Ramsey of Connecticut recently sent along a list of mystery beacons he has been monitoring in the evening hours above 1600 kHz. Among those John has heard include KA83310 on 1615 kHz, KA8341V on 1618 kHz, KA83323 on 1628 kHz, and KA83451 and KA83329, both on 1634 kHz. All identify in CW every five minutes. John reports that he has logged about thirty of these stations in the past year. In between identifications, weird "bleep bleep" sounds can be heard.

Stations like this have been reported from time to time in various DX club bulletins. Does anyone out there have an explanation of what these are for? The callsigns fit into United States allocations, and it seems logical that these would be navigations or radiolocation beacons of some sort. But I have yet to run across an explanation or listing of these stations. How about it, listeners? And if you hear any of these stations, please send along their frequencies and calls to Communications Confidential!

Direction-Finding With Loops

A few columns ago, I mentioned the possibility of using loop antennas to perform direction-finding activities. This is one way to pin down the locations of several of these stations. Several of you responded to my requests for listeners with loops who were interested in participating in coordinated monitoring activities. Those who wrote have already received their first monitoring "assignments," and I'll be featuring the results soon in this column. In the meantime, I'd like to hear from others interested in taking part in such activity.


Thank you for your reception repor
of BPM. This is to verify the followin
report:

BPM

CSAO

Call BPM Frequency 15MHz

Location 109° 31' E, 35° 00' N

Date 7/4/83 Time 09:00GMT

Radiated Power 10 - 20 KW

Antenna omnidirectional

Signature Yang Huai-xu

Title Chief, Section of Science and Technique

陕西天文台

A QSL from time signal station BPM received by Michael Harris of Ohio.

Roy Weiss (W9OFF) of Indiana is one listener who employs a loop in his listening activities. Located in the Indianapolis area, Roy finds the four-digit Spanish numbers station on 4670 kHz to be very strong at his listening post, with very little fading. He decided to try and get a bearing on this station using a loop.

With the loop in a vertical position, he was unable to obtain a null. This is hardly surprising, since a loop in a vertical plane can only null local (groundwave/spacewave) signals as a general rule. Tilting the loop horizontally is the way to obtain a null on a skywave signal and also measure the angle at which the skywave signal arrives. Roy used tropical broadcast band stations and WWV on 5000 kHz as his known location points. What did Roy discover? I'll let him describe it in his own words . . .

"Now for the surprise," Roy wrote. "We tuned in 4670 kHz for the numbers station to begin searching for the direction and angle of the skywave. Of course we assumed it was from some southerly direction. We searched and searched, but obtained no nulls from the south, the east, or the west. We really had not considered north, but before quitting altogether, decided to try north. Voila! We obtained consistent and deep nulls, sometimes reducing a S9 + 30 signal to SØ!! Needless to say, we were (and are) quite perplexed. We ruled out a transmission from over the North Pole (no polar flutter). Further exploration indicated the skywave nulled best when the RDF (radio direction finding—Editor) antenna was facing north and tilted at about 70 to 80 degrees from the horizontal. It appears that the signal is coming in from almost overhead (straight up). No, I'm not suggesting a source from outer space, but rather a skywave from a transmitter nearby Indianapolis but somewhere north."

Many thanks for an outstanding example of DXing research, Roy! Is there anyone located to the northeast or northwest of Roy who has a loop antenna? As mentioned before, two listeners located some distance apart from each other could take bearings on the same mystery station, extend the bearings until they intersected, and that would be the location of the transmitter.

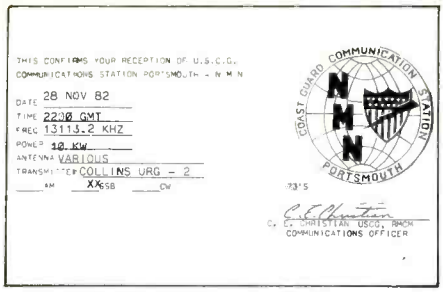
Roy's work is another powerful piece of evidence that some of the numbers stations, particularly the four-digit variety, originate from within the United States. And it is an example of how serious listeners equipped with the proper receiving equipment can start to resolve many of the mysteries we cover in this column. If you have a loop and would like to help, please contact me at the address given in the heading for the "Listening Reports" section. And our thanks again to Roy!

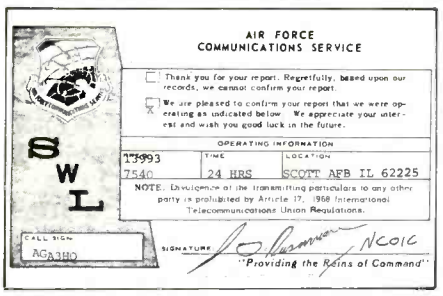
A Numbers Station . . . In Fort Lauderdale???

I recently received a letter from a listener in south Florida simply signed "A Friend." In it was a letter and several photos of an installation located adjacent to the Florida Turnpike in Fort Lauderdale. The building itself is a nondescript corrugated steel structure, similar to the thousands of other pre-fab commercial structures throughout the country. However, there are some differences. The building is surrounded by a tall fence with barbed wire at the top. And atop this building is a gigantic log periodic array—a type of wide frequency range beam antenna which is slightly longer and almost twice as wide as a typical bus. (It's also the same type of antenna you can see atop the Soviet Embassy in Washington.)

We won't mention the name of the company that you can see on the outside of this building. However, the site made quite an impression upon our correspondent. "I happened upon this one day while driving in the vicinity," he wrote, "and almost lost control of my car looking at it." Intrigued, he decided to investigate further.

He found the company located in the telephone directory, and made a phone call to them. The person answering the phone said they were not open to the public, but were a research and development firm contracting to the U.S. government. Among the ser-





Here are some interesting QSLs also received by Michael Harris of Ohio.

vices they performed were radio direction finding, frequency management, encryption, and "special services." When pressed for the agencies using their services, the company representative replied "I cannot divulge the name of the government agency." Our correspondent felt what he heard was not a prepared cover story, and that a refined story is likely in use by now.

Our correspondent observed that cars in the parking lot had Maryland, rather than Florida, license plates. Our correspondent took several photographs of the installation and it is apparent that security at the facility is tight. It also happened that two employees of the facility visited a radio supply shop run by a friend of our correspondent. They purchased some spare parts at the store and one of the men mentioned that he was from Bethesda, Maryland. It also came out during the conversation that the large log periodic antenna was for "international encrypted traffic" and that they were working on "flat pack" mobile direction finding antennas similar to those used by the FCC.

Is this a numbers station facility? No one can say for sure, since the antenna would be equally useful and suitable for transmitting, receiving, or both. It does seem obvious that the facility is being used for some sort of communications intelligence work; it would be an ideal location for traffic from and/or to Cuba and the rest of Latin America!

Our thanks to our mystery correspondent. We welcome similar letters and information from those who wish to keep their identities confidential. I only request that I NOT be sent material or documents belonging to someone else and that no information or material covered by a federal security classification be sent; I can't run it here!

Civil Air Patrol (CAP) Frequencies

Steve Douglass of Texas paid a visit to a local air show and spotted a CAP transceiver with the following frequencies listed on its frequency selector: 4582, 4585, 4507.5, 4504.5, 4467.5, 4464.5, 4599.5, 4604.5, 4627, 4630, 7635, and 12085 kHz. How about keeping an ear on these channels and see what you can hear? Be sure to report your results to Communications Confidential. Our thanks to Steve for these frequencies!

Computer Bulletin Boards For DXers

If you have a modem and microcomputer, you can now access two new computer bulletin boards for SWLs and DXers. One is the Universal Bulletin Board and Information Exchange (UBIX), operated by Universal Amateur Radio, Inc. You can get a copy of their user's guide by sending a self-addressed stamped envelope to Fred Osterman, UBIX SYSOP, Universal Amateur Radio Inc., 1280 Aida Dr., Reynoldsburg, OH 43068. A second bulletin board is the Shortwave Networks Bulletin Board, operated by Ken Reiss, 2605 South 17th St., Grand Forks, ND 58201. Send an SASE to Ken for more information.

Would any DXers who are also active on CompuServe be interested in forming a special interest group (SIG) for SWLs and DXers? If so, please contact me!

From The Mailbag

Pierre Gagnon of Dorval, PQ, Canada passes along new frequencies for both New York and Gander, NF, VOLMETs. You can hear them on 3485, 6604, 10051, and 13276 kHz. If you hear Gander, Pierre says you can send your report to Telecommunications Area Manager, Transport Canada, 89 Edinburgh Ave., Gander, Newfoundland, Canada A1V 1C9. Many thanks for the information, Pierre!

John Nix of Illinois and Gerald Johnson of California both wrote to mention that CW traffic using the characters AA, IM, OE, and OT are almost certainly in the Russian language. That's correct, and thanks for the information!

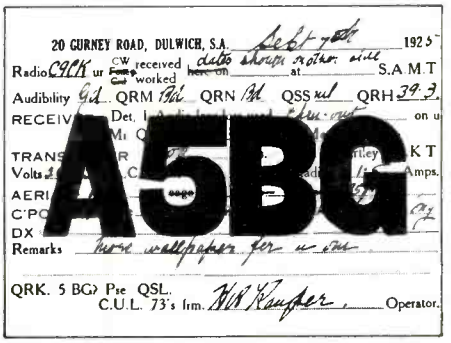
Listening Reports

Here are this month's listening reports. All times are in GMT (that's Eastern standard time plus five hours). Your reports are welcome here; please submit them in the form you see used in this column. Be sure to include enough details (sex of announcers, languages, etc.) to make your reports useful and interesting to your fellow *POP'COMM* readers. Send your reports to Harry Helms, P.O. Box 157, Rockefeller Center Station, New York, NY 10185.

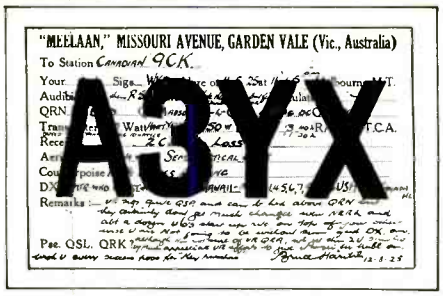
This month we feature loggings furnished by members of the American Shortwave Listeners Club (ASWLC, 16182 Ballad Lane, Huntington Beach, CA 92649), the Association of Clandestine Enthusiasts (ACE, P.O. Box 13225, D.T. Station, Minneapolis, MN 55414), and the LongWave Club of America (LWCA, 45 Wildflower Road, Levittown, PA 19057). ASWLC covers utilities, shortwave broadcast, and AM/FM DX. ACE covers clandestine and pirate radio. LWCA covers activity below 540 kHz. All clubs will be happy to send you a sample bulletin and membership details for $1.00 each. Be sure to tell them that *POP'COMM sent you!*

And now to this month's reports . . .

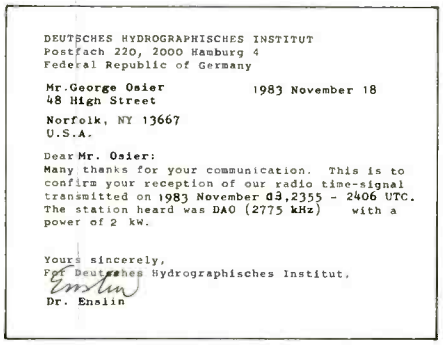
321: XFY, Guaymas, Sonora, Mexico, CW beacon 0959. (Art Peterson, CA/LWCA)
376: ZIN, Great Inagua, Bahamas, CW beacon 0150. (Bill Myers, NY/LWCA)
400: HIV, Santo Domingo, Dominican Republic, CW beacon 0408. (Robert Talbert, NJ/LWCA)
436: WCC, Chatham, MA working ship "Esso Elsinore" in CW 0126 with warning regarding security procedures in Caribbean ports. (Brian Graham, NY)
2614: DAN, German Hydrographic Institute, Norddeich, West German, time signals 2355-0006. (George Osier, NY) Good catch, George! (Editor)
2775: DAO, German Hydrographic Institute, Kiel, West Germany, time signals 2355-0006. (George Osier, NY) Another good one, George. Power listed as only 2000 watts. However, these will be very difficult with the increasing length of daytime and higher warm weather static. But keep these in mind for next autumn and winter! (Editor)
3115: Five-digit Spanish numbers station with female announcer 0504. (Vince Werber, ME/ACE)



This card from ham A5BG (dated 7 September 1925) is one of the first for long-haul low-power use. The A5BG call was used by an Australian operator in the days before present callsign prefixes were placed in use. The QSL is for communications with Canadian station C9CK. A5BG's card says he was running 5 watts! Frequency was 7500 kHz. (Courtesy Tom Kneitel)



Australian op A3YX was running 50 watts into a semi-vertical antenna when he verified his contact with Canadian C9CK in November of 1925. C9CK was located in Port Alberni, British Columbia and ran a 5 watt transmitter operated from storage batteries. The operator at C9CK was Colonel Clair Foster, who also operated from Carmel, California, under the callsign 6HM. (Courtesy Tom Kneitel)



DEUTSCHES HYDROGRAPHISCHES INSTITUT
Postfach 220, 2000 Hamburg 4
Federal Republic of Germany

Mr.George Osier
48 High Street
Norfolk, NY 13667
U.S.A.

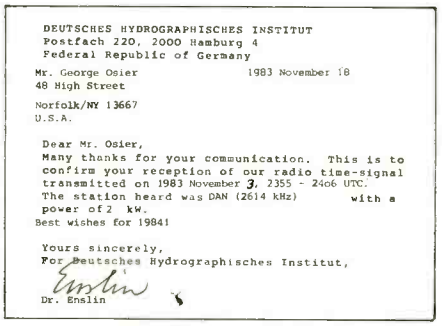
1983 November 18

Dear Mr. Osier:
Many thanks for your communication. This is to confirm your reception of our radio time-signal transmitted on 1983 November 03,2355 - 2406 UTC. The station heard was DAO (2775 kHz) with a power of 2 kw.

Yours sincerely,
For Deutsches Hydrographisches Institut,
Enslin
Dr. Enslin

QSL from DAO received by George Osier of New York.

3367: Five-digit groups in CW 0754. (Vince Werber, ME/ACE)
3446: Five-digit Spanish numbers station with female announcer 0108. (George Osier, NY)
3780: Five-digit Spanish numbers station with female announcer 0700. (J. Lemak, NY)
3875: Five-digit Spanish numbers station with MALE announcer 2232, hum in background. (E.R. Quackenbush, NY)
4078: G3G, Q6B, E2A, G7N, and J1K among the calls heard 0839 in SSB, military traffic of some sort. (Douglas Smith, CA)
4200: Five-digit Spanish numbers station with female announcer 0204. (Thad Admaszek, OH)
4466: Several Civil Air Patrol (CAP) stations on this frequency in SSB 0103. (E.R. Quackenbush, NY)
4625: VEB2 with time pulses every two seconds in SSB, very weak. (George Osier, NY) This station is supposedly located in Canada, but does anyone have any idea as to the actual location or purpose? (Editor)
4670: 0137, carrier noted, followed at 0143 by a female repeating "uno" for ten seconds. At 0143, a sound like footsteps was heard. This continued until 0200, when "cinco quatro cinco" was repeated 135 times (!!!!—Editor). At 0210, the footsteps sound resumed and continued until 0226, when the station abruptly left the air. (George Osier, NY) Thanks for the report, George. You certainly are a patient man to stick with this logging! (Editor) Later reception: 0139, footsteps sound, then at 0141 "896" repeated three times—sounded like a tape being started up. At 0142, there was ten seconds of what sounded like RTTY. This was followed by four-digit Spanish groups read by a woman until 0221, when a man was heard under the transmission saying "break, break" followed by twenty seconds of Spanish! The entire message was repeated at 0224. Was parallel to 5810 kHz. (George Osier, NY) Good stuff, George! (Editor) Four-digit Spanish numbers station with female announcer 0305. (Thad Adamaszek, OH)
4705: A strange "clicking" sound has been noted here most evenings from 0100 onward. A friend of mine told me these were propagation experiments of some sort. (Michael Harris, OH) I really don't know, Michael. Oddball signals have been reported on and near this frequency for several years. (Editor)
4722: MVU, Royal Air Force, Drayton, England, VOLMET weather broadcast in SSB heard at 0054. (Harold Ort, NY)
4759: "KCB" and "KCC" with on-off tone keyed markers 0410. Each sent three seconds of tone followed by seven seconds of silence. However, their tones overlapped so the overall impression was of five seconds tone followed by five seconds of silence. "KCC" identified in CW on the hour and half hour while "KCB" identified in CW at 15 and 45 minutes past the hour. (Ken Eichman, OH) Excellent report, Ken. While these calls are allocated to the U.S., I can find no listing of these anywhere. Ideas, anyone? (Editor)
5015: "Papa November" repeated by female in SSB 0000. (Tom Kennedy, MI) Welcome to the Column! (Editor)
5073: "Lacerate" calling "Juliet Two Yankee" in SSB 0400. (Lester Robison, NV)
5089: "545" repeated in English by female 0109, repeated five times, off at 0110. (Dennis Rutowski, CT)
5511: "Aeroflot 332" working unidentified ground station in English 0348, receiving flight directions. (William Pietschman, OH) Aeroflot is the Soviet civilian airline. (Editor)
5674: "Forward" and "Rear" giving radio checks hourly almost exactly on the hour. "Rear" once mentioned he was changing batteries and would be off the air for several minutes. (Tom Lewandowski, NY)
5688: AFL, Loring AFB, ME, working AIRVAC60183 in SSB 0053-0207, was evacuating two U.S. servicemen injured in Lebanon to Brooks Burn Center in Texas. The flight made an emergency stop at Andrews AFB because of the deteriorating condition of one victim. A surgical team was requested to standby at the runway at Andrews AFB. (Ken Eichman, OH) Exceptional report, Ken. (Editor)
5745: "Mad violin," like a Hungarian folk tune, loud hum in background, poor modulation at 0305 tune in, 0311 man says "terminat" three times, 0312 off. (Thad Adamaszek, OH) Thad, do you remember a few years ago when there was a station on 5110 kHz which read numbers in Czech and interspersed them with dance music? Or the station on 4740 kHz which read Spanish numbers and signed on with the grand march from "Aida"? These "musical" spy stations do pop up from time to time. (Editor)
5810: Five-digit Spanish numbers station with MALE announcer 1130, parallel to 6810 kHz. Was a "3/2" transmission, with a pause between the third and fourth digits of each five-digit block. (Dave Bush, OH) An excellent, unusual logging! This has long been an active frequency range for four-digit Spanish numbers stations. (Editor)
5811: Four-digit Spanish numbers station with female announcer 0200, "footsteps" sound before number groups read. Was parallel to 4670 kHz. (George Osier, NY) This is the most active frequency for four-digit Spanish numbers stations. (Editor) Similar station on 5810 kHz 0401, parallel to 6800 kHz. (Thad Adamaszek, OH)
6245: "U" repeated continuously in CW 0130. (Ken Eichman, OH)
6343.5: UKA, Vladivostok, USSR, QRA marker in CW 0870. (Douglas Smith, CA)
6428.5: VHP, Canberra, Australia, CW traffic 0810. (Douglas Smith, CA)
6508: NOJ, USCG, Kodiak, Alaska calling a USCG cutter regarding a search for a lost tugboat at 0523. (Hugh Miller, WA)
6512.6: LPL30, General Pacheco Radio, Buenos Aires, Argentina, Spanish voice marker with male voice in SSB 0830. (Douglas Smith, CA)
6600: Five-digit Spanish numbers station with female announcer 0531. (Thad Adamaszek, OH)
6680: Auckland, NZ VOLMET with weather information for Christchurch and Wellington in SSB 0850. Excellent signal. (Harold Ort, NY) Also at 0605 with weather information for the eastern Pacific. (Ken Jillson, CA)
6720: Scrambled speech in SSB on this channel 0450. This is an active U.S. Navy frequency. (Tom Lewandowski, NY)



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1983 November 18

Dear Mr. Osier,
Many thanks for your communication. This is to confirm your reception of our radio time-signal transmitted on 1983 November 3, 2355 - 2406 UTC. The station heard was DAN (2614 kHz) with a power of 2 kW.
Best wishes for 1984!

Yours sincerely,
For Deutsches Hydrographisches Institut,
Enslin
Dr. Enslin

A rare low-band QSL received by George Osier of New York.

6725: Various SSB stations identifying as A30, F5G, YOZA, etc., 0530, exchanging radio checks. Likely USAF stations. (Hugh Miller, WA)
6756: CW network at 1229 and 1303; "XMK" was net control and other calls are "MNZ," "LGX," "YLN," "LOK," "DQS," "CAX," "ZFB," "ZMB," "ZXM," "GMF," "RBA," "MOL," "ZXR," and "NXF." (Don Schimmel, VA)
6762: Foxtrot broadcast 1501, opens with two tones and into message composed of phoneticized letters. (Don Schimmel, VA)
6782: Five-digit Spanish numbers station with female announcer 0600. (Lester Robison, NV)
6785: Five-digit groups *in both Spanish and German*! Female announcer 0430, all Spanish numbers except that German "funef" (five) used instead of "cinco" in groups! (Thad Adamaszek, OH) Thad has discovered another station like this on 7845 kHz. A great catch, Thad! (Editor)
6794: "Alfa Whiskey," "Two Echo Juliet," and "Alfa Sierra" working each other in SSB 0719; seemed to be a military training exercise of some sort. Once mentioned a "bogie" (an unknown aircraft) had been spotted and the reply was "It's a green in orbit." (Daryl Duckworth, CO) Anyone know what a "green" is??? (Editor)

6802: Four-digit Spanish numbers station with female announcer 0415. (Lester Robison, NV)
6875: Five-digit Spanish numbers station with female announcer 0435. (Thad Adamaszek, OH)
6988.4: "RLC" calling "TAG" and "TAN" in CW 0204. (Don Schimmel, VA)
7420: Five-digit Spanish numbers station with MALE announcer 1104; a "tap" sound was heard before each digit. Off at 1107. (Dave Bush, OH) Very interesting catch, Dave! (Editor)
7528: Five-digit Spanish numbers station with female announcer 0734. (J. Lemak, NY)
7605: "Victor Lima Bravo Two" repeated by female announcer 2246. (E.R. Quackenbush, NY)
7697: "Green Giant" and "Delta Hotel" passing traffic 2000, military stations of some sort. (Tom Kennedy, MI)
7741: Five-digit German numbers station with female announcer 0111 in SSB, very good signal. (George Osier, NY)
7845: Spanish and German five-digit numbers station with female announcer, "funef" substituted for "cinco," 0600. Similar to station reported on 6785 kHz. (Thad Adamaszek, OH) Okay, readers, keep an ear on both these frequencies! (Editor)
7846: Five-digit Spanish numbers station with female announcer 0636, poorly modulated but very strong. (Douglas Smith, CA)
8056: Five-digit Spanish numbers station with female announcer 0540. (E.R. Quackenbush, NY)
8112: Five-digit Spanish numbers station with female announcer 0600. (Lester Robison, NV)
8150: Four-digit English numbers station with female announcer 0215; same message repeated three days later. (Dave Bush, OH)
8175: Five-digit German numbers station with female announcer 0140; was in SSB with each group repeated twice. (E.R. Quackenbush, NY)
8292: Two-letter groups in SSB 0050, used calls NIZV and NIPO, occasionally confirming groups. (E.R. Quackenbush, NY) Very likely U.S. Navy traffic. (Editor)
8777: "Strongbox" tactical call heard passing coded traffic 2109, had female announcer. (Philip Humes, CA)
8830: Auckland, New Zealand, VOLMET with weather information in SSB 0820 with male announcer. (Harold Ort, NY)
8870: Five-digit Spanish numbers station with female announcer 0500. (Lester Robison, NV) Also heard at 0700. (Curtis Williams, WA) Also heard at 0715. (J. Lemak, NY) Active frequency! (Editor)
8880: Coded "Skyking" broadcast in SSB 0441. (Brian Boyd, OR)
8912: "Sling Shot" and "Four Zero" passing military traffic 2000 in SSB. (Tom Kennedy, MI)
9032: "Arizona Pete" working "Dragnet India" in SSB 2100. (Lester Robison, NV) As Lester notes, this is a NORAD frequency. (Editor)
9043: "K" repeated continuously in CW 0050. (Ken Eichman, OH)
9050: Five-digit English numbers station with female announcer, opens with double beeps 0105. Used "gruppen" instead of "group" and "ende" instead of "end." Otherwise all in English! (Thad Adamaszek, OH) More German intruding on other languages! (Editor)
9057: "U" repeated continuously in CW 2120. (Ken Eichman, OH)
9075: Four-digit Spanish numbers station in SSB with female announcer 0121, interference from station with Spanish-speaking male. (George Osier, NY)
9180: Five-digit Spanish numbers station with female announcer 1309; "crackling" sound like a misaligned tape. (Dave Bush, OH)
9325: "Charlie India Echo Two" repeated by female 2351. (E.R. Quackenbush, NY)
9325: Five-digit German numbers and English phonetics together! 0202, flute sound in SSB followed by female repeating "Uniform November." Simultaneously, a female repeating "Charlie India Oscar Two" was heard; every tenth time, the phrase was announced as "Charlie India Oscar Two Two." At 0205, five-digit German numbers were read until 0215, when "Charlie India Oscar Two" was repeated until 0226. (Thad Adamaszek, OH) A few columns ago, I mentioned speculation that there could be a link between numbers stations and "mystery markers." This reception definitely points toward such a link. (Editor) Just five-digit German groups read by female announcer in SSB heard another day at 0201. (Thad Adamaszek, OH)
9436: Four-digit English numbers station with female announcer 1927. (Vince Werber, ME/ACE)
9463: Five-digit Spanish numbers station with female announcer 0807. (Douglas Smith, CA)
9970: Five-digit Spanish numbers station with female announcer 0217, was in SSB. (Thomas Bucci, VA)
10000: BPM, Shanghai, China, with time signals 0030. Identification sent during 29th minute, first in CW and then by female announcer. (Ken Eichman, OH) Also at 1000-1003 with same format. (Dennis Rutowski, CT)
10135: Five-digit Spanish numbers station with female announcer 0301, off at 0306 with a pulse. (Thad Adamasazek, OH)
10157: Two-way traffic between two men speaking Spanish 0030, traffic was in SSB and consisted of strings of numbers and phonetics. (Lester Robison, NV) Very likely using amateur radio gear covering the new 30 meter ham band. (Editor)
10381: Russian language traffic in SSB 0328. (Douglas Smith, CA)
10415: JJD/JJD2, Tokyo, Japan, VVV and CQ opening call, followed by English language solar and geoalert reports in CW 0700. (Douglas Smith, CA)
10466: Very rapid five-digit Spanish numbers station 0045, with occasional replies from other stations, into voice traffic 0053. (E.R. Quackenbush, NY) Note next item. (Editor)
10467: Two-way traffic in SSB 0055, same description as the traffic heard on 10157 kHz. (Lester Robison, NV)
10500: Five-digit German numbers station with female announcer 0140. (Thomas Bucci, VA) Also heard at 0134. (Thad Adamaszek, OH)
10570: Tones heard until 0100, replaced by a "flapping" sound; at 0125, tones resumed and continued until 0130. At 0130, female began reading three-digit Spanish number groups. (Lester Robison, NV) We had a report several months ago in this column of a "flapping" sound being heard on a frequency used by a numbers station. Perhaps a tape not properly threaded into the reel? (Editor)
11155: "K" repeated continuously in CW 0100. (Ken Eichman, OH)
11174: Air Force Two patching various phone calls through "Crown" (the White House Communications Center) 1535-1555; calls made to State Department and Vice-President Bush's office. (Henry Ponder, NC)
11182: MAC10248 working MacDill AFB in SSB 1207, carrying evacuees from Grenada. (Henry Ponder, NC)
11182: Air Force One working Andrews AFB in SSB 1358, radio check performed. (Henry Ponder, NC) As was pointed out in a recent issue of *POP'COMM*, the identifier "Air Force One" (or Two) is only used when the President or Vice-President is actually aboard the aircraft. (Editor)
11243: Coded "Skyking" broadcast in SSB 0218; tactical calls such as "Bracelet," "Lender," and "Lender" also heard. (Brian Boyd, OR) "Ruthless" noted with "Skyking" broadcast 0000. (Mike Sorton, NJ)
11244: Foxtrot broadcasts noted in SSB 2318 and 0031. (George Osier, NY)
11320: Five-digit Spanish numbers station with female announcer 1801. (Thad Adamaszek, OH)
11387: VLS, Sydney VOLMET, Sydney, Australia, weather information for various Australian cities 0900. (Dennis Rutowski, CT)
11533: Four-digit Spanish numbers station with female announcer 2300. (George Osier, NY) A very reliable numbers station frequency. (Editor) Four-digit Spanish numbers read by female announcer in SSB 0312. (Dennis Rutowski, CT) Good catch, Dennis; usually this frequency is AM. (Editor)
12022.5: KKN50, U.S. State Department Intelligence Service, Washington, DC, QRA/QSX marker in CW 0734. (Douglas Smith, CA)
12022.5: KKN43, VVV marker in CW at 2130. (Tom Lewandowski, NY) This is probably a U.S. embassy, but where? (Editor)
12050: Five-digit Spanish numbers station with female announcer 1628, transmission ended at 1630 and Radio Havana Cuba was audible in the background! (Dennis Rutowski, CT) Very interesting! Several listeners also heard Radio Havana Cuba in the background of five-digit numbers stations in 1975, leading to speculation that the five-digit Spanish stations and RHC share the same transmitter site. This is more evidence for that theory. On the other hand, it would be relatively simple to add in RHC audio "off the air" for disinformation purposes. (Editor)
12328: "U" repeated continuously in CW 2030. (Ken Eichman, OH)
12709: 8PO, Barbados Radio, CW marker with callsign at 2144. (Tom Kneitel, NY)
13144: "This is a ATT communications network" repeated by man in SSB 2335. (Thomas Bucci, VA) This is very likely WOM, Miami, FL. (Editor)
13204: SSB net 1805-2130 using calls such as I5S, A3E, D6W, A8C, B2K, etc. Probably U.S. military training operation as several stations reported sighting enemy tanks, being under attack, etc. The next day, what seemed to be the same net was heard again but using tactical callsigns. The net was apparently being monitored by a communications security team since several times they came on frequency and reported violations such as reused authenticators, etc. (Ken Eichman, OH) Note next item. (Editor)
13205: "Banger Control," "Banger Radio," "Wayside," "Sparky," and "Cheerio" among the tactical calls heard here 1820-1920 in SSB. Similar traffic to that heard on 13204 kHz reported above. (Steve Douglass, TX)
13215: Andrews AFB in contact with SAM501 2300 in SSB, conversation indicated that a congressman was aboard. (Lester Robison, NV) As regular readers of this column know, "SAM" stands for "special air mission," which indicates government bigwigs are aboard. (Editor)
13394: Six-figure groups in CW, five groups per message, at 1451 and 1212. There was a pause of eight seconds at end of message, then the message repeats. (Don Schimmel, VA)
13435: Five-letter CW groups 2145, no calls heard. (Don Schimmel, VA)
13449: Four-figure CW groups 1207, no calls heard. (Don Schimmel, VA)
13786: Five-figure CW groups 1458, sent with zero sent cut as "T." At 1508 sent "MEM NR 88 GR58 BT" and then into five-letter groups. (Don Schimmel, VA)
13790: High speed CW 1648, then "BT BT" sent manually with variable tone. Requested "QSA," then returned to high speed CW. Signal covered 13785 to 13805 kHz with zero beats every 1.5 kHz. (Don Schimmel, VA)
13979: "TAG" and "TAN" were calls of control stations for a CW net 1720, with other calls including "RLC" and "DWM." After QSA exchange with one station, net control sent "bien." (Don Schimmel, VA)
13981: CLP1, Havana, Cuba, working CLP38 in CW 1809 using cut numbers. After message sent, stations in net were advised to observe schedule for 1900 on 13925 kHz. (Don Schimmel, VA) I can't find a listing for CLP38 anywhere, but I would guess this is a Cuban embassy somewhere. (Editor)
13999: Male in Spanish repeating "Hola hola hola paloma paloma" over and over 2112, unable to ascertain his call. (Don Schimmel, VA)
15039: "Skyking" broadcast 2330, double tone at conclusion of message and then message repeated. (J.R. Hollis, WV)
15785: WFM55, New York, NY with facsimile (FAX) transmission 2225. (Lani Pettit, IA/ASWLC)
15908: WEY35, New York, NY, RTTY (425/67N) AFN news in Spanish at 1352. (Tom Kneitel, NY)
16501.5: YBU, mystery station, location unknown. Sending YBU QTC1 in CW at 1407 then into RTTY (425/67R) starting with a long string of 46464646 etc. then at 1511 five-digit coded groups. (Tom Kneitel, NY)
16986: CTP, Oeiras Naval Radio, Portugal. CW marker at 1433. (Tom Kneitel, NY)
17132: ZSJ6, Cape Radio (Navy), calling CQ in CW at 1442. (Tom Kneitel, NY)
17161.9: PPO, Olinda, Brazil. CW marker at 1447. (Tom Kneitel, NY)
17395: Y7A73, Berlin, GDR, RTTY (425/67N) at 1457. Embassy. (Tom Kneitel, NY)
17545.8: RTTY news in German (425/67R) at 1605. (Tom Kneitel, NY)
18220.9: CNM76/X9, Rabat, Morocco with RTTY (425/67R) news in French at 1618. (Tom Kneitel, NY)
18414: C3N, Makwa, Nauru Island, V marker in CW 1454. (Stephen Haupt, LA/ASWLC)
23895: "France Radio control terminal of the French Telecommunications Network. This is a transmission for circuit adjustments." Repeated in SSB 1445. (Thomas Bucci, VA) This is FTX89, Paris, France. (Editor)
24145: VPC24, Port Stanley, Falkland Islands, SSB telephone traffic to London throughout daytime hours. (Don Moman, AB/ASWLC)

Many thanks for your great support! See you next month!

SATELLITE VIEW

INSIDE THE WORLD OF TVRO EARTH STATIONS

BY JEFFREY KEATING, WB4KDH

PACSAT—The "Flying Mailbox"

I find it exciting to be living during the time of the microelectronics revolution. The increasing availability of news and information, as a result of new communications technologies like satellites and personal computers, is making the concept of a global village a reality.

Through the imaginitive use of these technologies we can reduce the gap between the information rich and the information poor of the world. There is now a project underway that will merge satellite and computer technology to expediate the flow of information to the underdeveloped countries.

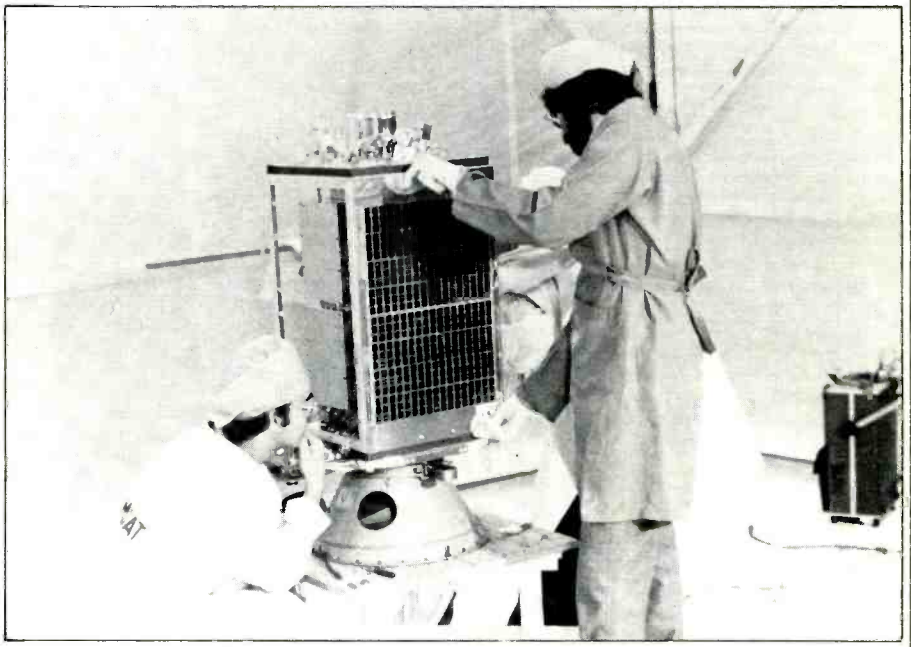
For the past 25 years, Volunteers In Technical Assistance (VITA) has served as a link between what they call "the frontiers of science and technology and the gates of the village." VITA has been answering inquiries from people in the third world who were seeking information on cost-effective appropriate technologies to improve their quality of life. With the present methods of information delivery, it has often taken months for a response to reach its destination; this long delay inevitably has an effect on the progress and success of their projects.

VITA has recently proposed an innovative way of solving this dilemma. By incorporating a communications processing computer into the design of a low earth orbiting satellite, VITA will be able to exchange information between any two or more points on the earth. This satellite computer network will provide a rapid and low cost global communications system that will be independent of land-based telecommunications facilities.

Volunteers In Technical Assistance was created in 1959 by a small group of scientists, engineers, and business people with a sense of social responsibility. It has grown into a major non-profit, voluntary organization that provides technical assistance to people and groups in more than 100 developing countries.

The group offers services in most technical areas, but emphasizes technologies in these fields: renewable energy applications, agriculture and food processing, water supply and sanitation, housing and construction, and small business development. In addition, it is a leader in helping developing countries use modern communications technology to meet their practical information needs in these critical areas.

Collaborating with VITA is the Radio Amateur Satellite Corporation (AMSAT), a nonprofit scientific corporation. AMSAT has undertaken the design, construction, testing, and launching of the satellite.



This is the University of Surry satellite, UOSAT-OSCAR 9. (Photo by Richard Daniels, AMSAT)

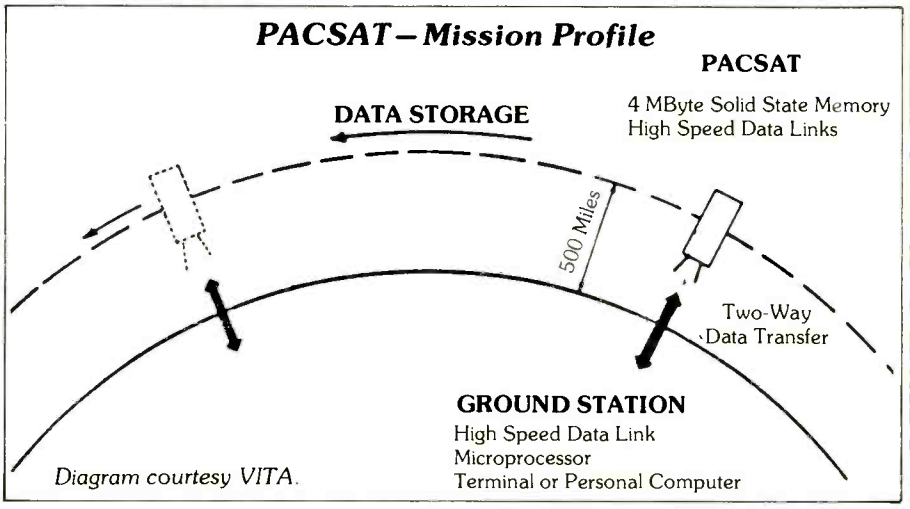


Diagram courtesy VITA.

Founded in 1969, AMSAT has among its objectives the fostering of international goodwill and cooperation through joint technical experimentation and study of space communications technology. Radio amateurs throughout the world participate in these activities on a noncommercial basis.

AMSAT has been responsible for the successful design, construction, and launch of four satellites in the OSCAR (Orbiting Satellite Carrying Amateur Radio) series and assisted with two others. They are currently involved in the "Phase III" project, which launched a long-life communication spacecraft into near-synchronous orbit last June.

This new satellite is nicknamed "PACSAT" for the advanced "packet radio" digital processing techniques it incorporates. By placing it in a polar orbit, PACSAT will pass within view of all points on earth at least twice a day, at the same time each day. Its on board computer will provide message storing and forwarding and computer conferencing capabilities. Properly equipped ground stations will be able to use the bird as a sort of "flying mailbox."

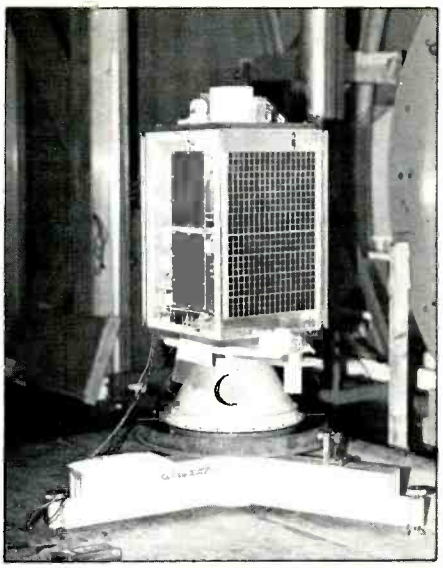
A VITA technician in the field will have a small computer, VHF/UHF ham radio, and a simple (no dish required) omni-directional whip antenna. Where dependable electrici-

ty is a problem, the entire ground station can be powered by several inexpensive solar panels.

The field person simply types messages into the computer, leaves all the radio equipment turned on, and goes about his or her business. When PACSAT comes within view of the ground station, contact is automatically made, the previously prepared messages are transmitted up to the satellite, stored in memory, and later re-transmitted to the correct recipients (who have similar ground stations), all without operator intervention.

A message can be sent to several locations or sent privately to the home office or to a similar project on the other side of the planet. Similarly, any messages waiting for the field person (for example, technical information complete with charts and graphs, in response to a previous request) are transmitted from the satellite to the ground station. For the duration of time the satellite is in view (about 15 minutes), the operator can communicate directly to anyone else in view of the satellite.

Another possible use of PACSAT could be to help pinpoint the location of downed aircraft or emergency relief supplies being transported over land or water during disasters. The position finding mechanism uses the frequency and phase information available from the signal transmitted by the portable ground stations, performing measurements at several points along the mutual field of visibility of the spacecraft and the



The OSCAR 9 satellite carries the first experimental packet radio system. (Photo by Richard Daniels, AMSAT)

ground station. Differential frequency and phase readings due to Doppler shifting of the uplink transmitter's carrier are used to locate stations to an accuracy of around one kilometer.

It is hoped that the first PACSAT will be placed in orbit sometime in the near future riding "piggy-back" with the launch of another spacecraft. It will carry two twin transponders, each capable of backing the other one up. One transponder will provide VITA the opportunity to perform "proof-of-concept" experiments while introducing this new class of satellite service. The second transponder will be dedicated to technical experiments involving large numbers of radio amateurs around the world handling lighter message traffic, and to regional linking of amateur area ground stations.

Since the first PACSAT will be operating on amateur radio frequencies, the operators will have to hold an amateur radio license for the country involved. Future PACSAT systems for information dissemination to less developed countries will be shifted from the amateur bands to commercial frequencies, even though non-commercial agencies will be providing these services. Efforts are already underway to obtain the necessary national and international licenses for operation in appropriate radio frequency bands.

Thanks to VITA and AMSAT for their help with this article. Both are non-profit groups which may accept tax-deductible donations. They also publish newsletters and updates about their projects. For further information, their addresses are: VITA, 1815 N. Lynn, Suite 200, Arlington, VA 22209 and AMSAT, 850 Sligo Avenue, Suite 218, Silver Spring, MD 20910.

If you would like to learn more about satellite television, *The World of Satellite Television* by Jeffrey Keating and Mark Long is available from Solar Electronics International, 156 Drakes Lane, Summertown, TN 38483. The price is $10.00 plus $1.00 for shipping and handling.

Monitoring The

Navy's Search & Rescue Missions

BY HARRY CAUL, KIL9XL

The U.S. Navy has a program known as FACSFAC (Fleet Area Control & Surveillance Facility) which may be of interest to monitoring enthusiasts. FACSFAC offers "scheduling, communication links, control, containment, coordination, Search & Rescue, and a variety of other services to all military and civil aircraft in the Warning Areas and off-shore operating areas along the U.S. east and west coasts and around Hawaii."

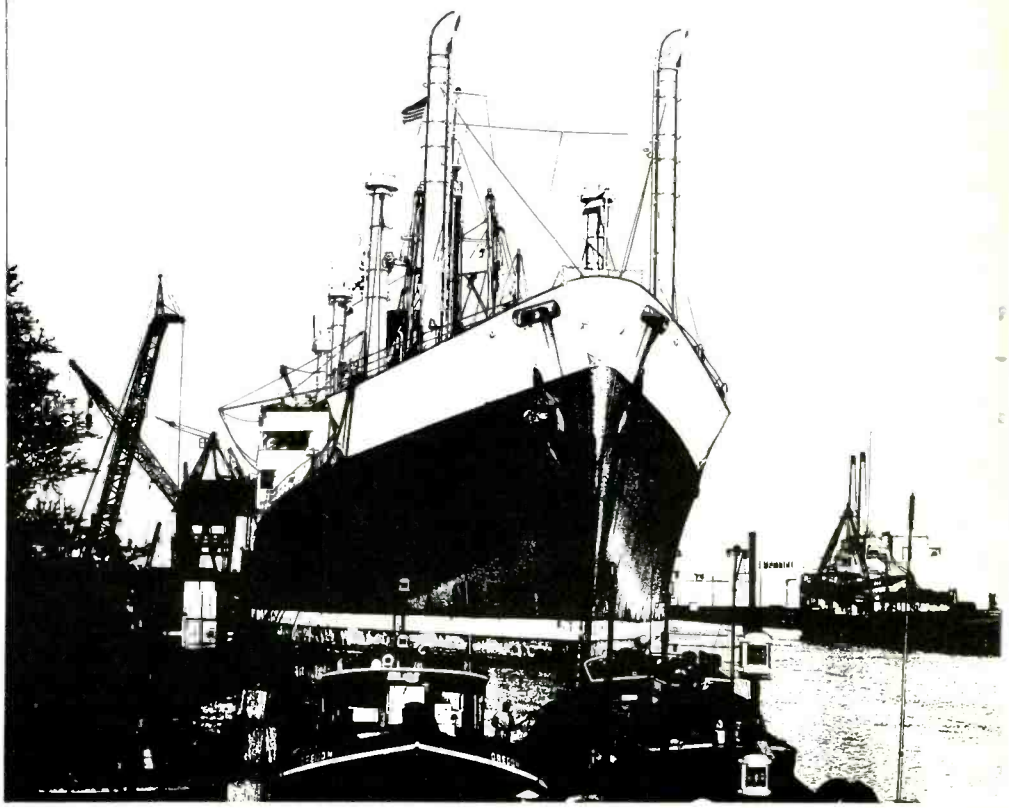
These operations function day and night and in all kinds of weather.

From the information we have available, the following callsigns are used by FACSFAC ground stations:

Virginia Capes: "GIANT KILLER" (Located at Oceana NAS, VA)
Jacksonville, FL: "SEA LORD"
San Diego, CA: "BEAVER"

The frequencies used are:

2252 kHz	(USB) VA Capes
4373 kHz	(USB) VA Capes
6723 kHz	(USB) San Diego
120.95 MHz	Jacksonville (main VHF frequency)
127.65 MHz	VA Capes
134.65 MHz	Jacksonville
135.725 MHz	VA Capes
135.825 MHz	Jacksonville
135.875 MHz	VA Capes
135.925 MHz	Jacksonville
233.7 MHz	VA Capes
251.6 MHz	VA Capes
255.0 MHz	VA Capes
267.5 MHz	Jacksonville (main UHF frequency
272.6 MHz	San Diego
273.1 MHz	San Diego
284.5 MHz	Jacksonville
285.7 MHz	San Diego
289.9 MHz	San Diego (main frequency)
301.1 MHz	San Diego
308.1 MHz	San Diego
310.1 MHz	VA Capes
312.3 MHz	VA Capes
313.7 MHz	Jacksonville
315.3 MHz	San Diego
344.1 MHz	San Diego
350.0 MHz	VA Capes
354.9 MHz	San Diego
376.8 MHz	San Diego
369.9 MHz	Jacksonville



SCANNER SCENE

MONITORING THE 30 TO 512 MHz "ACTION" BANDS

BY CHUCK GYSI, N2DUP

If you're a serious scanner listener, chances are your monitoring notes are chaos.

After discovering a new frequency, figuring out a new radio code you heard, or getting hold of a unit-numbering list, you've probably tossed it into a heap of other notes you've collected over the years. I know because I've done it.

When a publisher of scanner directories approached me about putting together a guide for one particular metropolitan area for which I had been collecting notes, one might say I panicked a little. I had all the information I needed; organizing it was the task. As I started going through almost 15 years worth of notes, I found the chicken-scratch frequencies jotted down on corners of sheets of paper, the dog-eared unit numbering lists and the ever present notepad-size sheets of paper with more jumble of frequencies, listening comments, and system notes. It was amazing that I ever was able to find anything when I needed it; for some reason, I just always seemed to know where to look.

The big trick, though, is to organize your notes before they get out of hand. Have a central place to keep them—I kept notes at home, in the car, and at the office. If you have a need for more than one set of your notes, make photocopies of your organized information and leave them wherever they might come in handy.

Everybody has their own method for keeping tabs of their listening notes. Thus, what may be good for one person may not be manageable for another person. Perhaps the most organized system for radio notes is the use of a computer. A computer data base is a good idea if you have a printer and want to make a copy of all your notes to exchange with another scanner listener, for instance. It's also very easy to update your notes when changes or additions have to be made. Through various programs, you can set up your information on a computer in almost any way that would be most convenient for you to retrieve the data. A friend of mine had one program in which he could punch in the station number of a firehouse he heard dispatched on the radio, and the name of the fire company would pop up on the screen. Likewise, there could be similar sorts on the same program so that you could punch in the fire company's name and find out its station number, callsign, types of apparatus, or any other kind of data you would have entered into the system.

But computers aren't the only way to keep your radio data at hand. Manual-entry systems work well, too. That means the paper-and-pencil routine. For instance, I keep my files for federal government stations on index cards. For each frequency I hear activity on, I have a separate index card detailing the callsign, agency, type of operation, station location, and channel designator. For some frequencies, there might be more than one agency using a particular frequency. That way, if I decide to search through federal government channels on my scanner and I hear activity on 168.525 MHz, my index card says it is used for Veterans Administration hospital operations in two cities, yet used for Postal Service transportation in another nearby city.

In the index card system, I have used tabs to indicate 1-MHz increments, thus, I have separate sections for 162 MHz, 163 MHz, and so on. This makes it very easy to identify what I've heard on a particular channel. I also keep a few separate index cards at the front of the file that show particular systems at a glance. I'll list, for instance, what F-1 through F-5 might be for the Bureau of Alcohol, Tobacco, and Firearms.

Another system is to keep everything organized in a looseleaf notebook. This type of setup is convenient to add lists to when you receive new sheets. You can organize a looseleaf book into different departments as well. You might want to start a separate section for each county you listen to, as well as separate sections for news media, utilities, business, etc. By keeping looseleaf paper in the book, you always can add notes as well. I know a lot of scanner listeners who use this system, and it seems to work best for most.

If you have the space, you could, of course, keep a filing cabinet with separate files on each listening category. The number of methods to organize yourself are endless. You might even want to keep a separate log book for your VHF/UHF monitoring to make note of certain special catches you'd like to remember for the future. In any event, the purpose of this is to try and keep your notes from getting out of hand (like mine) and to develop a method to find your notes when you need them. If you have a particular way you find that works best, why not write to us and let us know. We'd like to share it with our readers.

The Tandy TRS-80® Model 2000 Personal Computer with ultra-high performance MS-DOS System.

Climbing Time

It's that time of year—spring! And like any good radio operator, spring means the time of year you pull out the ladder and teeter up to the rooftop and check to see how the antenna farm weathered the winter months.

The first thing you should check your outdoor antennas for is any damage. Winter months bring damaging wind and ice, and there could be broken elements or radials or cracked plastic parts on antennas. You should try to repair or replace any broken parts and try to find out why it happened. Were the screws loose? Was the antenna assembled wrong in the first place?

Check your coaxial cable to ensure it hasn't suffered any damage. Also, be sure to inspect the connector where it feeds into the antenna. Are the solder points still clean? Is the connector still in good shape or is it corroding? It doesn't hurt to wrap some electrical tape around a new connector to give it a little extra protection from the elements of harsh weather. You also might want to use some kind of sealant to protect water from entering the connector or cable junction point with the antenna.

Also, be sure the antenna is still firmly seated in its mounts. A loose antenna is sure to sustain damage when the wind starts blowing. Also, check your ground connections because lightning season is here once again. Spending just a half-hour on the roof some afternoon this month can prevent some aggravating times later on this year when you want to hear action on your scanner. Ask any good radio operator and he or she will agree—an annual inspection of your antenna is paramount to good operation.

Unused Space?

A recently released report reveals the Ministry of Defense in Britain has exclusive rights to 36 percent of the radio spectrum between 30 and 960 MHz. In addition, the ministry also has rights to 32 percent of the spectrum between 960 MHz and 51.4 GHz. The report, which was published in *New Scientist* and capsulized in Radio Sweden International's DX bulletin, goes on to say that broadcasters and other radio users believe the military is wasting valuable air space.

However, the *Report of the Independent Review of the Radio Spectrum 30-960 MHz* says "there is little scope for reduction." The author of the report, Dr. James Merriman, supports the military claims to the spectrum space; however, the Official Secrets Act in Britain prohibits him from stating his reasons.

Mailbag

John R. Freeman of Rancho Palos Verdes, California, writes in to ask why manufacturers of scanners don't include the 406-420 MHz band on their radios, especially with all the high interest in this federal band. Actually, John, most of the older scanners could not cover this band unless they were tricked into searching the out-of-band frequencies. In some of the more recent scanners such as Regency's M-100, all one has to do is enter a decimal point before entering the out-of-band frequency.

Rumors in the past have been reported that the FCC would not issue type acceptance to scanners that would cover the 406-420 MHz band, mainly to protect federal interests operating on the band. But the manufacturers included the coverage anyway; you just had to know how to program the unit to operate out of band. Most of the new scanners coming out on the market now include this federal band, as well as other federal bands (such as 138-144 MHz) that were excluded on earlier scanners. Take a listen on these bands and tell us what you hear.

We'd also like to get other information and photographs from you. We need frequency lists, radio codes, etc., to make this column as interesting as possible. We also would like pictures of your base or mobile installation or pictures of dispatch centers, radio towers, you name it. You can send your information and photos to: Chuck Gysi, N2DUP, Scanner Scene, Popular Communications, 76 North Broadway, Hicksville, NY 11801.

PIRATES DEN

FOCUS ON FREE RADIO BROADCASTING

BY DARREN LENO, WDØEWJ

A new west coast radio station has recently burst upon the pirate scene. Calling itself KFAT, the station is owned and operated by its main on-the-air personality, Fred Oyster.

Originally a relatively obscure AM operation, KFAT operated well within the legally defined broadcast band on 1560 kHz. Probably as an attempt to find a larger audience, a shortwave service was added late last year.

Kirk Allen of Oklahoma noted KFAT on 7412-7414 kHz drifting slightly in frequency from 0420 to 0448 GMT—when the station signed off abruptly. Details of the programming included ID's by Fred Oyster and an advertisement for a tape on how to speak CB jargon. Artie Bigley of Texas also heard this transmission and reported hearing the station claim 20 watts of power.

In a recent letter, Mr. Oyster stated that his AM service uses 150 watts, and he encourages listeners in California and other western states to keep an eye on 1560 kHz. He said that he has been receiving a few reception reports from his AM service, so he's quite sure the signal is getting out.

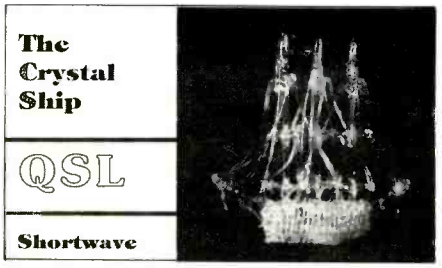
Listeners should look for a curious blend of country and old time fiddle and banjo music. ID's by famous personalities and ads from strange sponsors are also frequently heard.

Reception reports are readily verified from either the AM or SW service. Send all reports to: PO Box 5074, Hilo, HI 96720. Be sure to include at least three First Class U.S. postage stamps.

Another interesting pirate radio station is KPRC in New York City. This station has really become diversified. For quite some time, this AM pirate was heard almost exclusively on 1616 kHz. Recently, this station added a shortwave service. Even more recently, KPRC has been noted on 91.5 MHz in the FM broadcast band. Often, the station will operate AM, FM, and SW simultaneously. If you manage to hear KPRC, you can get one of their sharp QSL cards to verify your reception. Their address is: KPRC, PO Box 747, Exeter, NH 83433.

PRN—Pirate Radio New England—another predominately AM pirate often noted on 1616 kHz, was heard on SW for the first time recently by Kirk Baxter of Kansas. Kirk heard PRN playing rock music and taking phone calls on the air via their loop number. Not being one to be left out of the action, Kirk called the station and had a chat with Capt. Jeff Bleigh and "The Hook." Later, Kirk noted a Frank from New York called in.

That undoubtedly was Frank Decker, a persistant New York AM-pirate hound. Frank was tuned in to PRN on 1616 kHz. During his phone conversation with the crew of the station, he was told that PRN would be on "at least one night whenever the Space Shuttle is up." Take note of this!



The Crystal Ship sends these sharp QSLs to its listeners.

PRN will accept reception reports and anything else that listeners may want to send in through this address: PRN, PO Box 40554, Washington, DC 20016.

KQSB, another pirate known to surprise its listeners, recently did a simulcast transmission on 15060 kHz and on 11550 kHz—two frequencies you usually don't hear pirates on.

Artie Bigley in Texas tuned into this broadcast and heard this announcement: "You are tuned to an illegal transmission from an unlicensed radio station. You are under arrest for conspiracy under Part 15, section 308 of the Communications Act of 1934 and you are hereby ordered to report to the nearest FCC field office for prosecution. For the location of the office nearest you, consult the White Pages under "U.S. Government."

This announcement was part of a taped program produced by DVS Syndications, called "The Old Art at Play." DVS produces very professional programs (usually featuring Progressive Music) for various pirate stations who air them at their convenience.

Radio Clandestine made the "hit and run" tactic of broadcasting famous. You never know where this one will show up, but Fred Roberts heard them on 4890 kHz from about 0450 to 0507 GMT. Radio Clandestine has built up a good reputation among listeners with their fun programming, extremely clean signals, and fair QSL policy; all of this makes RC one of the most sought after pirates by DXers and SWLs alike.

Radio Paradise was noted on 6224 kHz by A*C*E DXer Kirk Baxter. The programming mainly consisted of popular rock music. Kirk thinks this was a live transmission because, he says, " . . . at times the announcer was at a loss for words. Interesting and well done." Check 6224 kHz around 0300 GMT for Radio Paradise.

The Voice of Laryngitis has been heard on 7415 kHz. Tommy Haynes of Mississippi heard them here from 0440 to 0450 GMT. This was the first pirate station that Tom has ever heard, and we at the Pirates Den con-

Here's an interesting shot of the KFAT transmitter as it broadcasts from its "remote swamp location."

gratulate him. The first one's always the hardest, or so it seems. It was probably appropriate for Tommy to hear the V.O. Laryngitis as his first station, since this appears to have been the VOL's first broadcast.

WHOT, an FM pirate that was reported in last month's Pirates Den, is still on according to Al Spremo of New York. Al says he tuned in to 91.5 MHz and heard Jim Nasium and Hank Hayes playing tapes of programming from old pirates they used to run, including WILD (not to be confused with the legal WILD, 1090 in Boston). WHOT was taking phone calls via a loop line for their "sexual fantasy contest," but Al says that the only person who called in was an elderly lady who wanted to talk about dogs.

Clandestines

Nicaragua: Radio Quince de Septiembre, an anti-Sandinista broadcaster, has been heard on 5565, 5730, 7000, and 7050 kHz around 0300 GMT. (We give many thanks to Grant Lochmiller of Iowa and John Pascoe of Washington).

Radio Miskus was heard by Robert Horvitz of Rhode Island on 6965 kHz, USB with a poor signal.

El Salvador: Radio Farabundo Marti has been noted on 6900, 6910, 6920, 6930, 6899, and several other frequencies between 6900 and 7035 kHz. This station jumps around frequently to avoid jammers. (Al Spremo, Grant Lochmiller, and John Pascoe).

Radio Venceremos was also noted by John Pascoe on 6550 kHz from around 0240 to 0315 GMT.

Surinam: Radio Free Surinam has been "hanging out"on 6850 kHz and has been heard from 0100 to 0130. As of this writing, these transmissions seem to be fairly regular. (Terry Krueger, Florida and Dan Miller, Wisconsin)

Euro-Pirates

Podney R. Sixe, our European Free Radio correspondent in Cornwall, England, sends the following:

Radio Free City in Edinburgh, Scotland, made a welcome return late last year on 6275 kHz after a lengthy absence.

Weekend Music Radio made a broadcast on two parallel frequencies—6240 and 6265 kHz. Later, the station was heard engaging in a two-way contact with Prince Terry, the Operator of Westside Radio.

KLA Radio has been heard on both 6529 and 7333 kHz.

Radio WBI and Radio Delta were heard on 7325 kHz co-programming during a special transmission of RWBI.

Radio Gemini made their 11th anniversary broadcast on 6231 kHz from 1000 to 1100 GMT.

Radio Caroline Int'l made their final broadcast on 6310 kHz. DJs were heard saying their goodbyes to the audience. The station left the air because the original offshore Radio Caroline made a comeback.

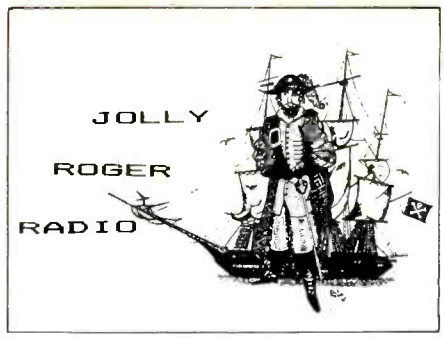
Radio Madison was heard broadcasting in both Dutch and German on 6305 kHz until 1050 GMT.

Electronic Sound Transmission (EST) is normally a small FM operation in Birmingham, England. However, recently they were heard on 7375 kHz at 1100 GMT, apparently in parallel with FM.

Notes

The Clandestine Intelligence Network (C.I.N.) newsletter is a publication for people who are interested in events happening in Nicaragua. C.I.N. intercepts and translates into English broadcasts from the Voice Sandino and Voice of Free Nicaragua. C.I.N. points out that their bulletin can be a useful reference for students, diplomats, and historians as well as DXers and SWLs. I think the newsletter is fairly priced, but please send an SASE to the following address first to make sure it's still being published. The address is C.I.N. Newsletter, c/o Vito Echevarria, Dept. PC, 648 Amsterdam Ave., New York, NY 10025.

If you are thinking of joining a general interest shortwave club, consider the Ontario DX Association. Their monthly bulletin is one of the best I have ever read, and of the highest quality. Besides telling you what's going on in the international broadcasting scene, they frequently run very good articles on pirate and clandestine broadcasters. Send $1.50 for a sample of DX Ontario. The address is ODXA, 3 Camrose Crescent, Scarborough, Ontario, Canada, M1L 2B5. Membership is limited to Ontario, but anyone may subscribe to the bulletin. By the way, ODXA will be hosting the 1984 ANARC convention.



The logo of America's most notorious pirates, Jolly Roger Radio of Bloomington, Indiana.

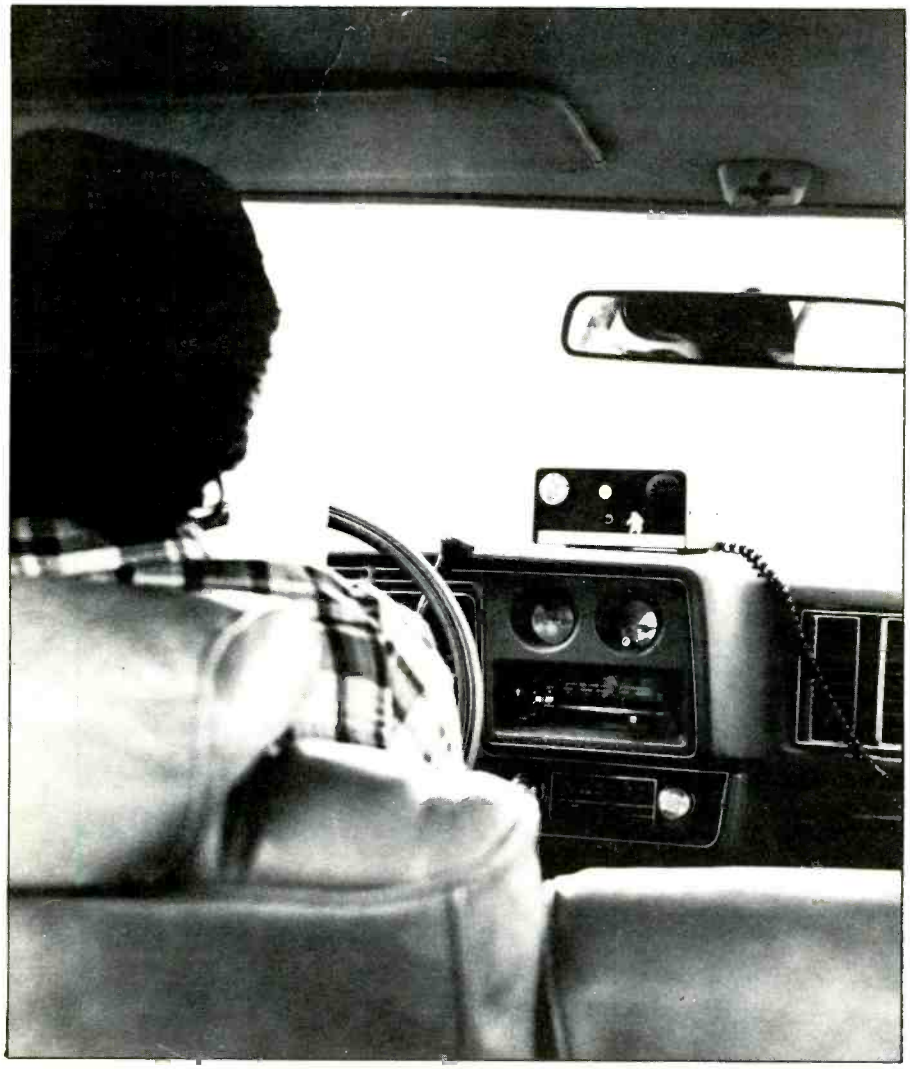
The Associationof Clandestine radio Enthusiasts (A*C*E) publishes a monthly bulletin, *THE ACE*, dedicated to Pirate, Spynumbers, and Clandestine radio stations. For a sample, send $1 (info for an SASE) to A*C*E, PO Box 452, Moorhead, MN 56560. Thanks to the members of A*C*E for their cooperation with this column.

That's going to wrap it up for this month. It's always nice to hear from you, whether you have any information to share or ideas. Please write me through The Pirates Den, c/o Popular Communications, 76 N. Broadway, Hicksville, NY 11801. Hope to hear from you soon.

RADAR REFLECTIONS

RADAR DETECTORS AND THEIR USE

BY JANICE LEE



Measure Would Allow "Home Rule" Traffic Laws

The New Jersey state's control over traffic lights, stop signs, and parking on streets and roads that cross municipal borders would be vastly reduced by legislation that would return to local governments much of the authority that was given to the state to prevent speed traps.

The legislation, which was sponsored by Assemblyman Richard Zimmer, would leave it up to towns to decide the speed limits on all streets crossing through their borders, to determine where stop signs and traffic lights are placed and how parking should be restricted.

The Department of Transportation, which has to make a traffic engineering study to justify traffic controls, would have 90 days under Zimmer's bill to veto a local government's action.

"If the department does not veto the proposal within that time, it automatically goes into effect," said Zimmer.

The legislation is currently in the early stages of the process, but William Gwynn, chief engineer in the Department of Transportation's Division of Operations and Local Aid, said: "We've been on the record all along opposing anything in that direction. If you have a county road going through more than one municipality, it is not proper, safe, or fair."

Zimmer, in a prepared statement said, "State control of local traffic regulations is a recurring source of frustration on the part of municipal officials."

But Gwynn said the state's role is to determine whether a traffic sign or other control would be more of a hazard than a help.

He said the department . . . which has deep concerns about arbitrary actions by municipal officials pressured by residents . . . negotiated with Zimmer when the new law that chips away at the state's authority was under discussion. He said the agreement was that the authority would be limited to self-contained streets, which he said the state felt would not undermine any long-range traffic controls.

Zimmer, however, said the authority over the self-contained streets is severely limited. He said the municipalities should have more authority to combat the frustrations of waiting a year to gain approval of a stop sign.

Zimmer said he does not intend to grant municipalities "absolute authority" but, "they should have more than they have now."

Switzerland Video

A friend recently returned to Lausanne and touched base with an old acquaintance. "You owe me 50 francs," he declared. Fifty francs? That's what was paid for the ticket I received after lending you my car during your last visit to Switzerland. He went on to explain that radar is not used in his country . . . instead they use video. A few weeks after her return to the states, he received a ticket in the mail. The evidence: a videotape of his car making a right turn on red!

More Texas Speedtraps?

Ferris, TX—population 2,200—has a reputation of being a speed trap.

Last year, Ferris police officers wrote more than 8,000 speeding tickets, nearly all of them along I-45. The tickets brought in $278,000 in fines, or nearly half of the city's tax revenues, said city Secretary Nona Epps.

To Ferris city officials, speeding tickets are like a natural resource that brings in money while saving lives. To local businessmen, it's getting to be a natural disaster that's giving the town a bad reputation and stripping them of business.

Ferris isn't the only town that's raising a ruckus over its highway policing activities.

Just north of Ferris in Dallas County, Wilmer police wrote more than $221,000 worth of traffic tickets in one year, nearly all of them along I-45. And city Secretary Hazel Davenport said traffic tickets this year will probably bring in more than $360,000, or 47 percent of the town's tax revenue.

Constitutionality of Roadblocks to Apprehend the Drinking/Driver

The *Georgetown Law Journal* published an excellent article discussing the constitutionality of roadblocks. The article, which is written by Richard A. Ifft, surveys roadblock cases and suggests methods of meeting the constitutional requirements.

The suggested approach for drinking/driving roadblocks includes the following points:

- The element of police discretion should be kept to a minimum.
- All stops should occur at a fixed location and should be designed to accomodate varying traffic flow.

• Steps should be taken to reduce the detained motorists' fright and anxiety by demonstrating that the stop is duly authorized.

• The location of the roadblock must be chosen to ensure the safety of approaching traffic.

• A judicial warrant should be obtained prior to operating a temporary roadblock. Although permanent check-points may be operated without prior judicial approval, temporary roadblocks are more susceptible to discretionary manipulation.

• To qualify a roadblock, a magistrate should authorize a roadblock at a certain time and place based on empirical data to justify a drinking/driving checkpoint.

• Police officers should have an articulable suspicion that the motorist is intoxicated before detaining the motorist for an extended investigation.

We would like to extend thanks to the *Drinking/Driving Law Letter* for the above article.

Mayor and Council Suspended

The mayor of South Coffeyville, Oklahoma and three City Council members accused by a grand jury of misconduct were suspended.

The panel had accused the officials of oppression, nepotism, violating competitive bidding laws, and failure to disclose public funds. Those allegations were not criminal indictments, although the jury had also issued some formal charges.

Washington County Associate District Judge Janice Dreiling formally suspended Mayor Carl Yates and the council members.

Yates was accused of operating a speed trap on U.S. Highway 169. The jury also indicted him and his wife on charges they embezzled more than $4,000 motorists paid policemen for the traffic tickets.

In a hearing before Dreiling, Yates testified that revenue from traffic tickets was $48,000 in the last fiscal year, or about double that of fiscal year 1981-1982.

He credited the acquisition of another patrol car and moving radar guns. He also denied allegations that he required the town's two police officers to bring in a quota of six traffic tickets a day. The charges were contained in a deposition by a former officer.

Suspended Pryor, Oklahoma Policeman Files Lawsuit

A Pryor policeman who claims he was suspended after he disputed the alleged setting of speed traps and selective enforcement of the law sued the city and members of the Police Department to regain his job.

Floyd Wesley Owens also had asked U.S. District Judge H. Dale Cook for injunctions requiring the department to enforce state and municipal laws uniformly and to block a City Council hearing at which his job could be terminated.

In addition, Owens asked for more than $855,000 in damages he claimed he suffered because of attempts to force his resignation or termination.

WASHINGTON PULSE

FCC ACTIONS AFFECTING COMMUNICATIONS

Exclusive Use of Certain HF Amateur Frequencies By Extra Class Licensees Upheld

The FCC denied a request by Malcolm C. Mallette for reconsideration of its action which authorized telephony operation on the high frequency (HF) Amateur Radio Service Bands—14150-14200 kHz, and accorded Amateur Extra Class licensees exclusive operating authority on the frequencies 14150-14175 kHz.

The privileges of Advanced Class licensees, such as Mallette, were deleted in that they are no longer permitted to operate in the frequency band 14150-14175 kHz.

Mallette contended that the notice and comment period was inadequate; that each Advanced Class amateur operator should have been given an opportunity for a hearing before his/her use of the frequencies was eliminated; and that General Class licensees holding a license before 1967, when incentive licensing was implemented, be "grandfathered in" at the level of Amateur Extra Class.

In dehying Mallette's request, the Commission noted that the public notice and comment procedures met Administrative Procedure Act criteria; that Mallette was given adequate opportunity to comment; and that frequency changes effectuated in the context of a rulemaking proceeding are not subject to an evidentiary hearing.

With respect to the "grandfather" privileges, the Commission noted that Mallette's request was untimely. It said that as a result of its action in Docket 15928, more than 15 years ago, frequency segments in certain bands were set aside for the exclusive use of amateur radio operators holding higher class licenses. Its goal in that proceeding was to encourage amateur radio operators to upgrade their license classifications. General Class licensees, Mallette's classification in 1967, retained access only to portions of certain frequency bands.

FCC Reports Improvement in RF Device Compliance

During past months, the Field Operations Bureau (FOB) of the Federal Communications Commission has been conducting a Radiofrequency Devices Marketing Survey. Engineers from FOB's field offices have visited 144 local retail stores and outlets in over 50 cities and towns across the country. During their visits, they inspected 1,746 RF Devices. Their inspections showed that 31% of computers and/or peripheral devices and 18% of coin-operated video games were not properly labeled. This is a violation of FCC Marketing Rules. Overall, the Commission found that 9% of all devices surveyed were unlabeled. The absence of this required label indicates that the equipment has not passed the FCC's rigid standards designed to prevent radio interference.

Although still disturbing, this number represents a 4% improvement in compliance from a survey conducted a year ago. We expect this improvement to continue now that manufacturers have become more aware of the Commission's rules and increased enforcement activity.

Joseph Casey, Chief of FOB's Inspections and Investigations Branch, announced today that the Commission will continue its effort to bring these devices into compliance. He stated that if any of the retailers continue to sell unlabeled devices after being notified of their violations, they will be given substantial fines.

Operation of radiofrequency devices such as cordless telephones, toy walkie-talkies, home computers, and video games can cause interference to radios, televisions, and other radio receivers. The FCC requires that radiofrequency devices comply with technical regulations designed to minimize this interference and that the devices be conspicuously labeled to show compliance with these standards. Sale of radiofrequency devices which do not carry the required label is a violation of the FCC Rules.

New Experimental Stations

The FCC took the following actions:

KE2XMX Univ. of Guam, Mangilao, Guam. Research station to operate on 149.175, 149.220, and 149.265 MHz for participation in the Peacesat and DISP networks with ATS-1.

KM2XPZ, Northrop Radio Services, Inc. Inyokern, California. Research station to operate on 314.6 MHz to communicate with modified F-86 aircraft as required by U.S.Govt. contract.

KM2XQA, Sperry Corp. Clearwater, Florida. Research station to operate on various discrete frequencies in the 500-2000; 2000-4000; 4000-8000; 8000-18000; 200-500; 1000-1400; 2800-3800; 5250-5900; 8300-17200; 2-30; 27-77; and 225-400 MHz bands for test of simulator for Ministry of Defense, United Kingdom.

KM2XQD, Westinghouse Communication Services, Inc., Anne Arundel, Maryland. Research station to operate on 1215-1400 MHz band for developmental production and acceptance testing as required by U.S. Govt. contract.

KM2XQH, Mars Money Systems Division, Delaware River. Developmental station to operate on 9400 MHz for testing ship radar prior to type acceptance.

KM2XQI, Mars Money Systems Division, Chesapeake Bay. Granted License on same frequency and purpose as stated above.

KM2XQJ, Mars Money Systems Division, Folcroft, Pennsylvania. Granted License on same frequency and for same purpose as stated above.

KM2XQK, Martin Marietta Corp. Orlando, Florida. Research station to operate on various bands beginning 2700-2750 and ending 33400-36000 MHz for radio cross section studies.

KM2XQL, RCA Corp., Moorestown, New Jersey. Research station to operate on 1235.0-1365.0 MHz for testing of various antennas.

KM2XQM, Sperry Corporation, Sudbury, Massachusetts. Developmental station to operate on 9320-9500 MHz for development of radar.

KM2XQN, Stratotech Corp., Richardson, Texas. Developmental station to operate on 21,915 and 23,125 MHz for development of microwave equipment.

KM2XQP, David P. Knight, Nashua, New Hampshire. Developmental station to operate on 902-908 MHz band for development of equipment for possible amateur band allocated by WARC 79.

KM2XQR, The Robotics Institute, Pittsburgh, Pennsylvania. Research station to operate on 2000 MHz for mobile robot research.

KM2XQS, Hewlett-Packard Company, McMinnville, Oregon. Research station to operate on various discrete frequencies between 944.075 and 469.5625 for development of medical telemetry systems for export.

KM2XQU, Motorola, Inc. Ft. Lauderdale, Florida. Developmental station to operate on discrete frequencies between 2225.0 to 22226 kHz and between 2003.0 and 6521.9 MHz to develop maritime equipment.

KM2XRA, Bell Telephone Laboratories, Inc. New York & New Jersey Coastal areas, Miami, Florida, California, and Washington state coastal areas. Developmental station to operate on discrete frequencies between 2119.4 and 2599.4 kHz and 156.05-157.425 MHz band to evaluate various commercial and maritime communication systems for operation with coast stations. Equipment is mobile aboard vessels and craft appropriate for systems evaluation.

KF2XBJ, State of California, Within State of California. Reinstated research station to operate on discrete frequencies between 217.000 and 218.500 MHz for the purpose of seismographic monitoring of several geological faults.

KK2XFE, Bell Telephone Laboratories, Inc., Within Continental U.S. Reinstated research station to operate on 63 and 69 MHz to evaluate the perceived man-machine interaction consequences of various computer and terminal devices.

KM2XOT, Western Electric Company, Inc., Within Continental U.S. Developmental station to operate on 825-845 and 870-890 MHz bands for sales demonstration and type acceptance samplings of AUTOPLEX tm cellular mobile radio telephone equipment.

KM2XQV, Milton F. DeMaw, Luther, Michigan. Research station to operate on 13.560 MHz and 18.068-18.168 and 24.890-24.990 MHz bands to study short-range propagation phenomena and multihop ionospheric refriction and to develop and test antennas for these frequencies.

KM2XQW and KM2XQX, Communications Transportation, Inc., Near Corinth, Mississippi and mobile 15 mile radius. Developmental stations to operate on various discrete frequencies between 870.030/879.600 MHz for fixed and 825.030/834.600 MHz for mobile to set up cellular system to be used as a test bed for new cellular control system presently under development. The objective is that which is necessary to the support of the control equipment development and testing, no commercial (for hire) use of the system is proposed.

Ten Year Amateur Radio Licenses Being Issued

The Commission has commenced issuing new, modified, and renewal amateur radio station and operator licenses for ten year terms. The longer-term licenses were authorized in rule amendments adopted by the Commission on October 6, 1983. Before the rules were changed, an amateur license was issued for a five year period. Issuance of ten year licenses was delayed so that necessary changes could be made in licensing programs. (PR Dkt. 83-337).

There will be a two year grace period for expired ten year station and operator licenses.

The Commission emphasizes that the ten year license term is not a blanket extension of existing station and operator licenses. An amateur license that specifies less than a ten year term will show a ten year term on the face of the license when it is either modified or renewed.

FCC Declines Establishment Of "No Code" Amateur License

The FCC declined to establish a class of Amateur radio operator license which would not require proficiency in the international Morse code.

The Commission concluded that the five word-per-minute slow speed Morse code requirement for the present entry-level Novice and Technician class licenses in the Amateur Radio Service does not unduly bar potential applicants. On the contrary, handicapped Amateurs are proud of mastering the Morse code and, generally, do not seek special treatment.

Moreover, the Commission noted there is still substantial everyday use of the Morse code in the Amateur Service, where it is essential to technical advances and experimentation. Proficiency in Morse code is necessary to insure a trained pool of Amateur operators for emergency situations or national defense.

Many Technician Class operators believe that national defense and emergency situations would be better served if technicians were permitted voice communications on the 10 meter (28 MHz) band. Inasmuch as these operators have demonstrated a proficiency in CW, they meet international agreements for such use.

Amateur Reprimanded

On December 14, 1983, the Federal Communications Commission formally reprimanded Amateur radio operator Raymond C. Bower (WA1NMC) of Bath, Maine, for mailing an altered copy of his Amateur license document to the *Radio Amateur Callbook* in an attempt to cause the callbook to list him as an Extra Class licensee when he was actually entitled only to General Class operator privileges. In its official reprimand, the Commission stated that this was a misuse of a Commission license and did not comport with the high standard of conduct expected in the Amateur Radio Service.

72-76 MHz For Low Power Mobile Operations Proposed

The Commission has a proposal to make 10 frequencies in the 72-76 MHz frequency band available for low power mobile operations in the Forest Products Radio Service (FPRS)—72.44, 72.48, 72.52, 72.56, 72.60, 75.44, 75.48, 75.52, 75.56, and 75.60 MHz.

These frequencies would be used for low power communications within the confines of mills, plants, and logging sites on a shared basis with the Manufacturers, Special Industrial, and Railroad Radio Services. They also would augment the current use of 154.57 and 154.60 MHz, which are low power mobile frequencies shared with, but secondary to, the Business Radio Services and which are claimed to be overloaded, particularly in the Northwestern U.S.

The Commission initiated this rulemaking proceeding in response to a request by Forest Industries Telecommunications (FIT).

FIT contended that operations in the FPRS are heavily concentrated in three general areas of the United States: the Northwest (Oregon, Washington, Idaho, and Northern California), the Southeast (Georgia, Northern Florida, South Carolina, Mississippi, Eastern Texas, and Alabama) and the Northeast (Maine, Vermont, and New Hampshire).

They also claimed that annual growth rates of 8-9 percent in the use of radio have caused severe frequency congestion in these three geographic areas.

FIT stated that operations by FPRS users at 72-76 MHz would be in remote rural and forested areas, well away from any significant reception of television stations on channels 4 and 5.

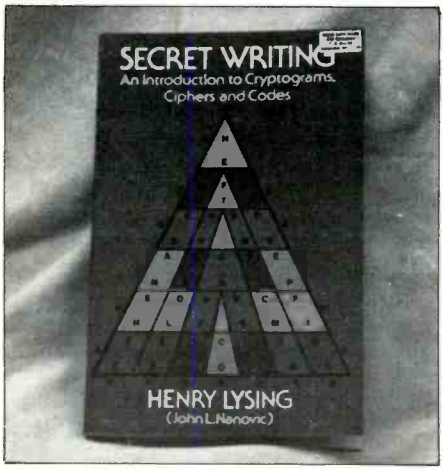
Private Radio Bureau Suspends Filing Of 2.5 GHz Applications

Effective last December, no new applications for the 2.5 GHz Private Operational-Fixed Microwave Radio Service (OFS) H-group channels will be accepted for filing, except for timely filed applications which are mutually exclusive with one or more applications submitted prior to December 31, 1983. Minor changes to an existing application which do not involve a change in the proposed transmitter site will be permitted. See §1.962(c) and §1.962(d) of the Commission's Rules.

This action is necessary to permit the Bureau to begin preparations for resolving pending mutually exclusive application cases. The date on which the Bureau will resume accepting new applications will be announced in a subsequent public notice.

PRODUCTS

REVIEW OF NEW AND INTERESTING PRODUCTS



TAWSTOADAI? HTANSHRWST

If that looks like a lot of gibberish to you, it's not. As explained in the book *Secret Writing* (An Introduction to Cryptograms, Ciphers and Codes), by Henry Lysing, it is a secret message written in Rail Fence Code as used during the Civil War. There are literally thousands of codes like this one—some simpler, some incredibly more complex—that have been developed since the time people discovered the need to record something in secret.

Beginning with simple letter substitutions, Mr. Lysing, in his 117-page book, introduces you to typewriter codes, diary codes, box codes, mathematical transpositional codes and many more. Later chapters cover the more exotic (and much more difficult) codes worked with grids, squares, slides, scales and charts. Interspersed among these are some famous historical codes such as Sir Francis Bacon's near perfect cipher, the Beaufort cipher used by the Mexican Government, and even the famous one described by Edgar Allan Poe in *The Gold Bug*. To help you become adept at cracking secret codes, there is an extensive section on deciphering with frequency tables which professional cryptologists use.

In addition, the author includes discussions on "mind reading" codes (used by performers and stage magicians to transmit messages verbally without audience awareness). These codes offer many interesting possibilities for use in tactical radio communications. Lysing also discusses artificial languages and secret inks (including those that can be made from simple products such as milk and orange juice). You don't need any background in mathematics or cryptography to make full use of the more than 50 practical written/verbal codes in this authoratative book.

Secret Writing by Henry Lysing is available from CRB Research, P.O. Box 56, Commack, NY 11725. The book is $7.95, plus $1 for First Class Postage.

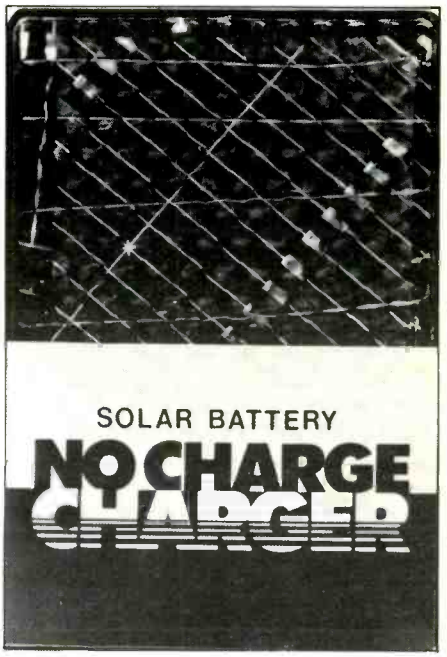
Metz Low-Profile General Coverage Antenna

Metz Communications Corporation, best known for their stainless steel base-loaded VHF antennas, proudly introduces a new line of general coverage receive antennas.

The Metz SW-1 antenna is a low profile general coverage receive antenna for all shortwave frequencies between 1 MHz and 30 MHz. The unique stainless steel base loading coil matches the yard-long whip for full-strength shortwave reception throughout the band. This antenna is ideal for picking up weather facsimile broadcasts (FAX), high-seas marine calls, shortwave broadcast stations, and amateur radio broadcasts in the shortwave spectrum. Tests against "active" shortwave antenna systems by two-way radio authority Gordon West indicate that this almost invisible antenna is indeed an equal performer in pulling in weak shortwave signals. Suggested retail price is $69.

The Metz BC-1 broadcast band antenna is an ideal antenna for AM/FM broadcast radio reception. The unique loading coil matches both the AM broadcast band as well as the VHF-FM music band to one coax connection that plugs into the back of any AM/FM entertainment radio. The whip is slightly longer than a yard and may be bent to accomodate hidden installations in fiberglass boats. Each antenna is precisely tuned to the middle of the AM broadcast band and the middle of the FM music band for maximum signal strength. This antenna will complement any stereo radio installation.

For more information on the complete line of shortwave and VHF stainless steel base-loaded antennas, write Metz Communications Corporation, Laconia, New Hampshire 03246.



Solar Charger

Solar Usage Now, Inc. of Bascom, Ohio presents a new idea in solar battery charging with the "No Charge" solar battery charger. These new, low-cost modular photovoltaic cells are the answer for the do-it-yourselfer who wants to tinker with the p.v. idea before making a large commitment. The cell sections and pieces are laminated and encapsulated in an easy-to-hook-up panel. A plus and minus brass stud and nut are molded into the back and marked. A brass strap is included for possible series hook-up of multiple panels to boost the voltage.

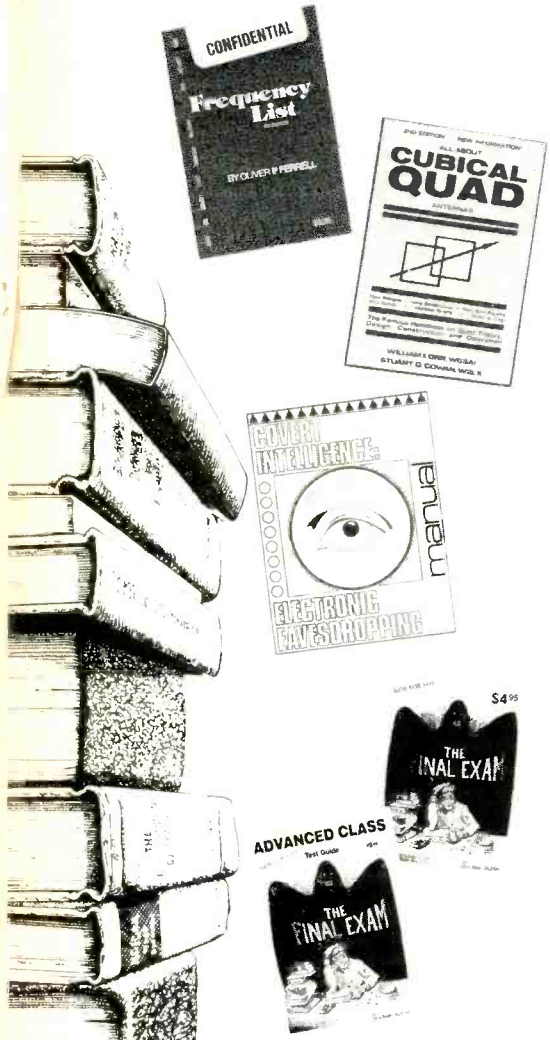
All panels are rated at .45 volts, and are available in 100, 200, 400, and 700 MA. For more information, contact Solar Usage Now, Inc., 420 East Tiffin Street, P.O. Box 306, Bascom, OH 44809, or circle number 110 on the reader service card.

New Software For Scanner Operators

Kentronics has released two new pieces of computer software for the Timex and TI99A computers. *Scanner Log* is a computer log book for the scanner operator. This program stores and searches by Type of Service, Frequency, User, Callsign, Location, and Category. This program was custom designed for the All Ohio Scanner Club and is the first of its kind.

SWL Log has many of the same features except data input relates to Shortwave listening. Both require 16K memory and are taped on computer grade cassette tapes. Send SASE for more information to Kentronics Inc., P.O. Box 586, Vernon, AL 35592, or circle number 105 on the reader service card.

POPULAR COMMUNICATIONS BOOK SHOP



Guide To RTTY Frequencies 2nd ed.
Details on 5500 RTTY stations/frequencies in two lists. "Real" press schedules, inside information on new RTTY techniques, etc. 192 pages, paperback, $9.95. Order #G205.

Radio Handbook, 22nd ed.
by Bill Orr, W6SAI
A state-of-the-art, single-source reference on radio communications and theory for hams, professional ops, techs, and engineers. New coverage includes solid-state devices, Yagis and quads, and H.F. amplifier designs. A hands-on instruction manual, as well. 1168 pages, hardcover, $39.95. Order #S197.

The Radio Publications Group—The "Bill Orr Series"
These easy reading classics belong in the library of any active ham. Loaded with practical how-to information, with tables, charts, and formulas arranged for handy reference.
Beam Antenna Handbook, 200 pages, paperback, $7.95. Order #R143.
Wire Antennas, 192 pages, paperback, $7.95. Order #R144.
Antenna Handbook, 192 pages, paperback, $7.95. Order #R145.
Cubical Quad Antennas, 112 pages, paperback, $6.95. Order #R146.
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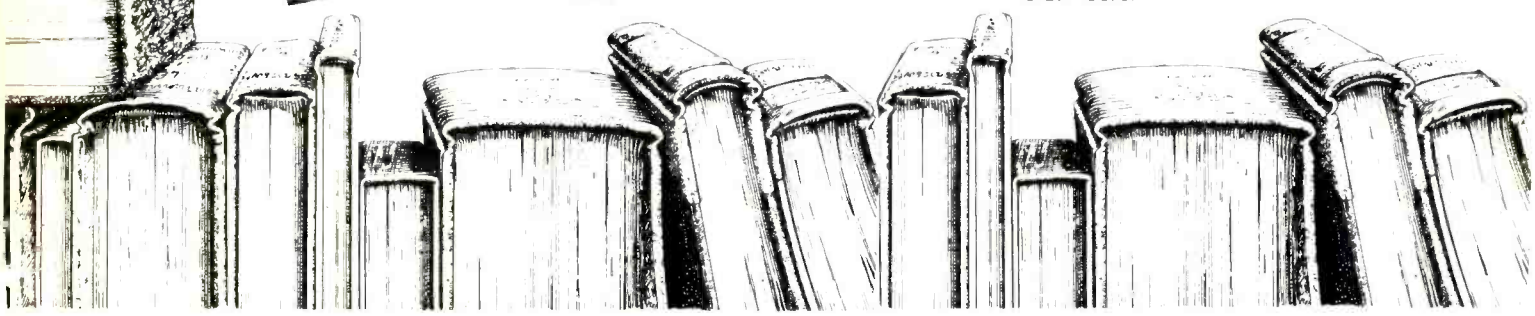

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Beaming In *(from page 4)*

impression that he would have been willing to work out similar arrangements with just about anybody who wanted to take out a broadcasting license on 1490 kHz whenever the frequency became available. Walt was a ham operator too (W4GJ), and his home was wall-to-wall radio clutter. There must have been living quarters there somewhere, but I never could figure out where they might have been located. There was a transmitting tower in his back yard.

WTTT's basic on-the-air duties were handled by three DJ's. One was just known as Lenny, and the other two used the names "Fat Boy Max" and "Sy The Guy." Rumor had it that the only pay they received was a percentage of whatever commercial time they could sell to area merchants. When they weren't on the air they were out selling "time" on their shows, and this often put them in the position of competing against one another. Eventually, "Sy The Guy" left to work at an out of state station and they let me take over his time slot, but the other DJ's split up the rights to sell the commercials so I "wouldn't have to take time out from school work."

In addition to the DJ's, the station sometimes offered live entertainment from Studio A. We had some area high school drama clubs, a couple of homegrown amateur theatrical groups, and sometimes kiddie students from a local music school. Actually, just about anybody who wandered in off the street carrying a guitar, accordian, or harmonica—or someone who could whistle a bit—would usually be shoved in front of a microphone with only minimal auditioning required. Any accordionist who could stumble through eight bars of "Lady of Spain" with at least 75% of the right notes was assured of sufficient air time to play his or her entire repertoire.

With the exception of someone occasionally reading a headline or two from *The Miami Herald* when something really important happened, news programming simply did not exist. Well, there was that one time someone decided that we should broadcast a crucial speech the President was scheduled to deliver. Not having any funds to put towards this purpose, the idea was presented to sneakily rebroadcast the speech right off the air from the NBC affiliate in Miami, WIOD. It seemed profoundly illegal but nevertheless inexpensive and expedient. WIOD was tuned in and just as the President was about to commence we announced, "We now take you to the WTTT facilities in the nation's capital," and patched WIOD through the WTTT transmitter. Figuring that we had at least a half an hour to kill, we walked over to the bus depot for a cup of coffee. It was a shame that President Truman decided to be a man of few words that evening and spoke for only about 10 minutes. By the time we returned to the station, WTTT was 20 minutes into WIOD's programming, complete with station breaks and commercials. Our phone was ringing off the hook with calls from some very curious people, not the least of which was the Manager of WIOD. That cured us of doing news, but for that one half hour, WTTT sounded really great!

We all thought that the presidential speech stunt would surely bring down the wrath of the FCC, but the WIOD folks were good sports and never raised a ruckus. The FCC had long looked upon WTTT with a beady eye and wasn't all that enthusiastic about the station remaining on the air—probably because the station was always in severe debt and the creditors (like the electric company) seemed to be in the practice of informing the FCC that WTTT's owners were ignoring their repeated bills. As I recall, at that time WTTT was on the air only by the grace of continual 30-day temporary extensions of its FCC license. Once a month a telegram would arrive from the FCC and say that WTTT had at least another 30 days of life. It would be the cause for general festivities.

On Sundays, the station offered a change of pace. After a morning religious program (a remote pickup from a small area church), the studio was locked and the rest of the programming originated directly from Walt's house. It consisted almost entirely of a series of boring 15-minute transcriptions provided to the station at no cost by the Savings Bond people and several military services' recruiting bureaus. The problem was that there weren't enough of these arriving each week to fill up the day, so we'd run a lot of old ones mixed in, with repeats of the whole mess every couple of hours. The high point of each of the 15-minute mini-programs (which starred popular recording artists) came near the end when the transcription's announcer said, "And now a word from your local announcer." This was supposed to be the cue for the local station to jump in and fill 30-seconds of dead air time with information on where listeners could join the Marines, buy Savings Bonds, or whatever. At WTTT it meant that listeners had 30 seconds to meditate or else wonder if the station had been struck by lightning or had otherwise suddenly left the air; Walt was not even slightly interested in participating in this programming. Only once I recall, did he interrupt our game of checkers to lean over, open the mike "key" and offer listeners a very dramatic and lengthy descending belch which surely would have qualified for being listed in the *Guinness Book of World Records* had that book existed at that time.

We never really did quite know who or where the listeners were for WTTT, not having been able to afford the luxury of any audience profile data. Up until the antenna tower bent in half during a hurricane, WTTT had an omni-directional signal pattern and the station had a somewhat generalized or non-descript programming policy. The Station Manager's theory on this was that we had an "all-around signal which demanded all-around programming"—it almost seemed to make sense in some crazy irrational way. But after the omni-directional antenna became unusable and we erected the long-wire antenna, we no longer had the coveted "all-around" signal. Basically, we couldn't be heard any longer in most areas; the signal pattern became bizarre and distorted. Taking stock of our assets—that is, what was left of the signal—it was observed that the only usable signal that we had to work with was contained in two signal lobes. By some unknown method that was most mysterious (some suggested by the use of a *Ouija Board*), the boss perceived that those signals would be reaching listeners who would be especially interested in hearing music and information relating to two particular ethnic groups. I can't remember what one of these groups was, but the other (major) one was, he said, "good news for WTTT since we will be the first broadcaster in southern Florida to go after the Polish audience." This concept was apparently supported by the boss' neighbor who said that he knew someone who was Polish who lived in the area of half of the WTTT signal; my guess was that said person may well have been 10% of the potential audience.

"Fat Boy Max" promptly changed his on-the-air name to one which had a Polish ring to it and lost no time at all in striking a deal with a Polish-owned music shop that agreed to supply us with an almost endless supply of Polish recordings in exchange for our mentioning their name and address every few minutes. Thankfully, he also lined up a Polish deli and they kept the hard-pressed and, by then, semi-starving WTTT staff well supplied with generous amounts of Polish ham, kielbasa, and golaski.

I don't know how long WTTT endured after the start of those very trying times, nor do I know if the end came because the station went bankrupt, because the FCC license extension telegrams stopped arriving, or because the entire WTTT staff succumbed to massive gastric collapse as a result of attempting to survive on kielbasa eaten to the accompaniment of unrelenting polka music. The school year ended and, regretfully, my career at WTTT also ended. At some point, the end of WTTT's on-the-air career arrived. The 1490 kHz spot on the dial in the Miami area was quickly filled by others. Right now 1490 kHz around Miami is host to WMBM in Miami Beach—a station which was operating on 800 kHz in the old WTTT days. Feisty old Walt Kinney passed on a couple of years ago—I don't know what became of the rest of the WTTT staff. After my mention of WTTT in the December issue, one of the letters I received was from Vance Murr (W4FWI) of Miami Springs who commented, "Wherever old Walt Kinney is (up or down), he's probably smiling that you still remember his old bucket of bolts, WBAY/WTTT."

Make fun of WTTT? Me? Never! It was unforgettable. It was an education. It was fun. They ought to designate 350 Aragon Avenue in Coral Gables as a National Historical Site dedicated to what must surely have been one of the most resourceful, gutsy, unconventional, and inimitable little radio stations in modern broadcasting. And if *that* wasn't a one-lung radio station, I don't know what was!

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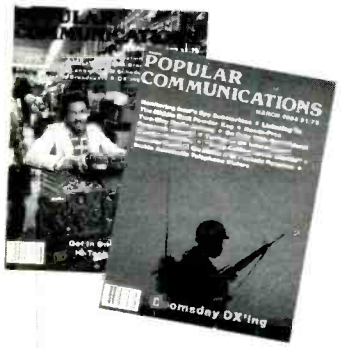

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