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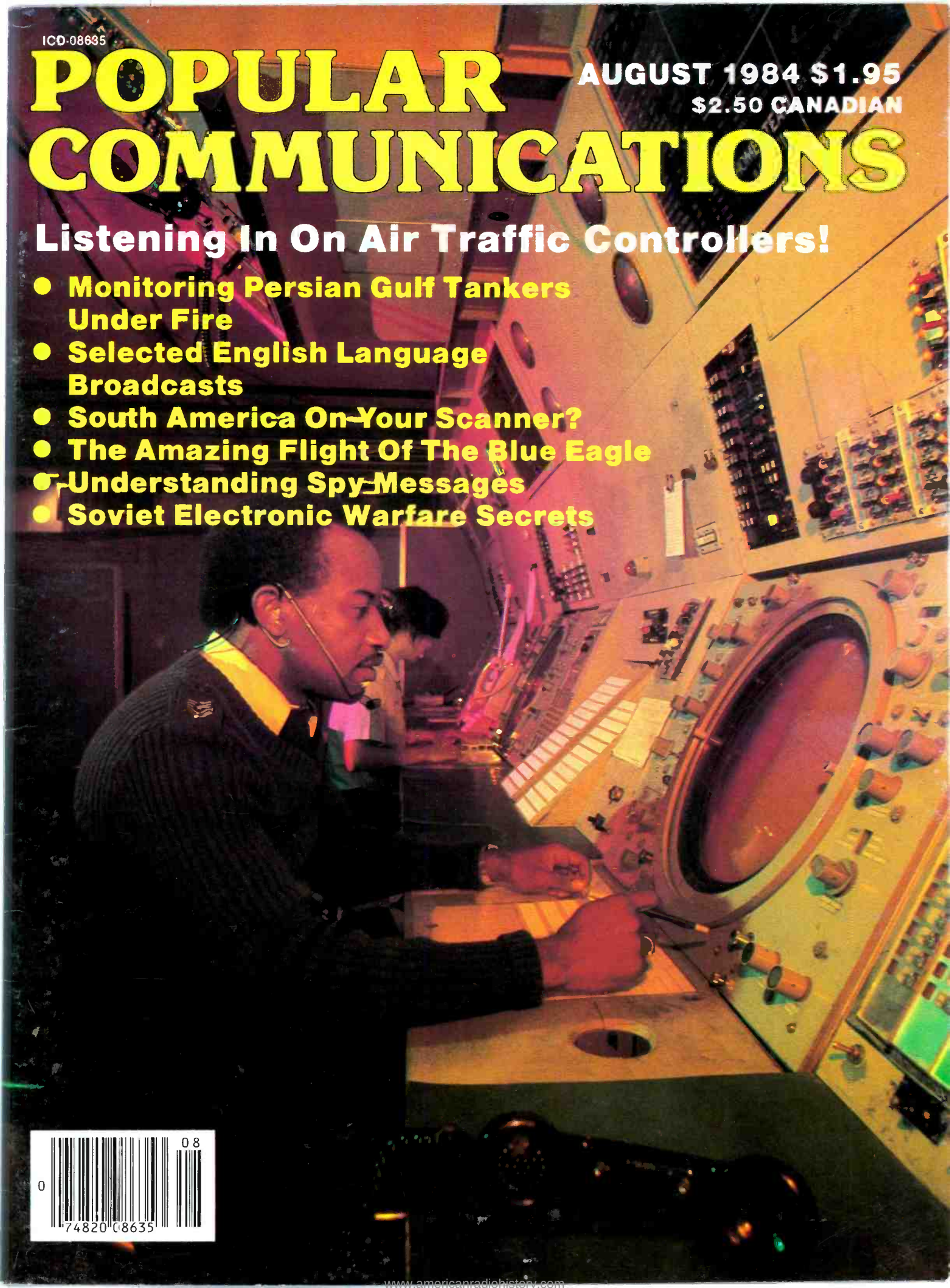

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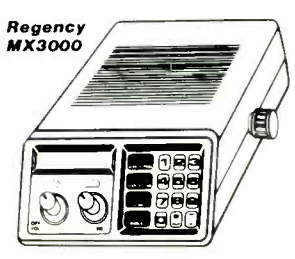

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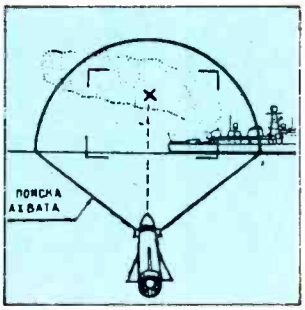

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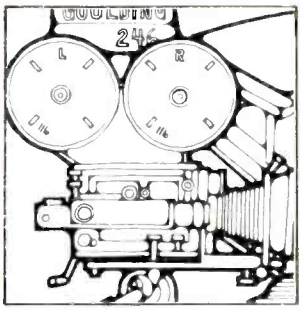
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BEAMING IN

BY TOM KNEITEL, K2AES

AN EDITORIAL

Mixed Bag

One thing's for sure, when you're involved in communications and electronics these days, there's never a dull moment. At any given time there's a torrent of inventions, concepts, and products that are guaranteed to eliminate the need for the morning cup of coffee to get the ol' mind shifted into third gear.

Take for instance the quartz watch with data storage and retrieval, plus a full blown calculator. Seiko Corporation recently brought it onto the market, referring to it as the Data 2000. The watch can store up to 200 lines of information (10 characters per line) and scroll through this material (4 lines on the screen at a time) via LCD's. You can use it to store telephone numbers, radio frequencies, names, dates, appointments, spy messages, stolen company secrets, recipes for chili con carne, or whatever. Once per day you can wipe out the existing data and program in all new information by means of a small pocket-sized keyboard which hooks on to the watch. This little miracle costs less than $200. How's them apples?

Somebody else came up with an invention that you connect to your TV set and you can program it to block out any specific commercials which irritate you. The gadget remembers the offending commercial once you press the destruct button and from then on, every time they try to run it past you, the device automatically remembers how you felt about it and knocks out the TV audio and video until it's over. Can you actually imagine life without "Ring around the collar?" This isn't on the market yet.

In another interesting development, fish are now being implanted with microchips programmed with certain code numbers. Special loop antennas are placed at strategic points in rivers along the fish migration routes and when the computerized fish pass through the loop antennas, they register their individual callsigns for the benefit of biologists. I've seen some pretty fishy QSLs in my day, but this certainly does offer some curious possibilities for "utility" station monitoring, to say nothing of the potentials it offers for human surveillance.

Next we learn that Teleplanet Services Inc., of Sudbury, Massachussetts will send a "SpaceShot" message (25 words or less) from its 18-foot dish antenna. Not just *any* message, mind you, but one which is truly intergalactic in scope, something the company's president calls "high-tech greeting cards." You pay Teleplanet Services a fee and they radio it into the great cosmos. The company says, for instance, "If you wanted to send an anniversary card to your wife, it would go to Venus, the planet of love...then we send her an attractive certificate, a picture of the solar system that includes the destination, when the message will arrive, and what the message was." I suppose that if you wanted to send a message to someone to tell them to go to hell, you'd ask that they aim their antenna at Pluto.

These advances in communications and electronics only *seem* to be mind-blowing, but they're just the mundane events of what's happening. The really heavy stuff doesn't require chips, semiconductors, LCD's, or antennas.

For instance, the Soviets have spent many millions of rubles on psychic experiments and related development work. Most of the similar work done in the United States has been privately financed, amounting to a mere $500,000 per year. But Uncle Sam has finally gotten a mind flash and decided that maybe he should pay bigger money and more serious attention to mental messages flying through the ether. Last year our government even produced a report entitled "Research into PSI Phenomena: Current Status and Trends of Congressional Concern." This report came to the conclusion that there could be some military potential in psychic vibes. Moreover, instead of just swamis, astrologers, parapsychology professors, and gurus at a recent conference held on PSI applications, there were plenty of military officials!

Furthermore, far-out experiments into PSI and instant messages to the cosmos notwithstanding, just the other day *POP'COMM* received a serious press release from "A Creative Company" (675 Fairview Drive, Suite 645, Carson City, NV 98701) which is by far the boldest and most awesome communications proposal yet. They've got what might be the ulitimate state-of-the art transceiver—one which requires no semiconductors, switches, meters, power supply, microphone, computer, antenna, or anything like that. Essentially it is a small emtpy plastic box about the same size as a book. To the unenlightened, it only *looks* like a plain, empty white plastic box, indistinguishable from a box used to hold a videocassette or stack of floppy discs.

Not so! This unit is marketed under the trade name "Godbox" and the press release from its supplier advises that "the box is designed to relay the owner's prayers" directly into the heavenly realms. The instructions state that, "You simply write your problems or desires on a pre-printed...sheet, drop...[it]...in the box..." A lengthy supply of user testimonials was also furnished along with the product information, including one which describes it as "an incredibly powerful

instrument." Presumably, shortly after the message is dropped into the box, a response can be expected directly from "above." I can compare this only to the similar experience of a CB'er who lives in my neighborhood. He went on the air with a 500 watt linear amplifier and, even then, it still took two years for a response directly from the FCC.

I should mention that this new product is actually more than a humble white plastic box—that's only the no-frills model. There are also goldstamped "leatherlike" models, and even one in walnut with a "lasered top and inside cover." For a small extra charge, you can get these personalized with your name in all of its gilded glory. In the absence of detailed specs for any of these versions, one might assume that perhaps they operate with different power ratings than the basic no-frills model on special reserved uncrowded channels, or are for those with higher grade station authorizations, or else they command a faster or suitable response when deployed. Perhaps one box could be used as a linear amplifier for the other, or several boxes could be run in parallel if you had a lot of simultaneous messages to transmit.

This is a real product, no kidding. The press release claims that these are going to be marketed nationally and will be selling for about $15 each (or $26 for a matched pair). When the press release arrived here, I posted it on our bulletin board and it wasn't long before people on the staff were coming over to me and asking, "Kneitel, you made that up, didn't you?"

Me make up something this innovative? No way! The last innovative communications gadget I invented was a transmitter using 816 tube in the final, and that was in the 1960's. I'm still trying to contact someone (anyone) more than 5 miles away with the blasted thing.

Fact is, I don't think I'd want to be the vanguard of the new breed of folks who will be using these empty plastic box communicators, either in their no-frills or leatherlike versions. What happens if you get a busy signal, or a disconnect? Suppose the call is refused, or you are put on hold? Suppose you write your message in English and then find out it's supposed to be in some other language? Do you toss a QSL card into the box along with your message? And what happens if the box malfunctions—like being off frequency, or whatever—and you get a wrong number—even THE wrong number?

There are obviously many aspects of this new communications device that need further investigation and experimentation. It's actually quite doubtful that it will ever replace the old way of making that heavenly contact, the one using the collection plate power supply and the steeple antenna.

It might not be a bad idea for such a gizmo to actually be devised—one offering instant and direct communications—because I've got some unanswered questions that have been bothering me which are at least a few pegs beyond the abilities of my *Ouija Board* while also being something less than one might wish to see sent via the steeple antenna route. For instance, I've always wondered whatever became of McDonald's *McRib* sandwiches? And every day when I go to lunch I look down at the hamburger and unfailingly ask, "Where's the beef?" It could be, of course, that there are no answers to many of these nagging questions. On the other hand, maybe there are answers to be brought forth by these boxes. Guess I'll have to wait for a few pioneers to try them before I take the plunge.

Here are different versions of a communications wonder.

In the mean time, at least I've answered one of my other long-standing questions about how to get started in the morning without a cup of that potent brew which pours from the office coffee pot. All I do to wake up is read my morning press releases.

PC

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.

How Low Can You Get?

I've seen RAK and RBL receivers offered in the used equipment section of several DX club publications. Apparently these receivers cover the low frequencies. Although the prices are reasonable, I don't see these advertised, and communications dealers don't know anything about them. Are these off-brand cheapie imports or what?

P. Ramirez
South Miami, FL

The RAK and RBL receivers are somewhat ancient pieces of military surplus made before and during WW II for the U.S. Navy by The National Company. While they both tune 15 to 600 kHz, and there are still many in use, the RBL is the newer of the two sets. Both receivers have regenerative detectors and a series of sharp filters for enhancing selectivity. The RAK, however, requires a somewhat cumbersome external power supply and that alone gives the RBL the edge, although both units are large and heavy when compared to modern communications gear. Nevertheless they do a fine job on the VLF frequencies and remain quite popular. I had an RBL-2 for many years and have long been sorry that I was coaxed into selling it to someone who badgered me about it for six months. The RBL uses a 6SK7 tube as the 1st RF stage and I found that by making a direct replacement of this tube with a type 717A tube, a considerable improvement in sensitivity can be obtained. In fact that trick will work with any older receiver using a 6SK7 in the RF stage. The 717A tube is, itself, an obsolete military relic but can still be found in the stocks of some surplus equipment dealers and also at dealers who specialize in vacuum tubes; it usually costs only about $6 and does wonders for pepping up some of the older receivers. —Editor

New Shortwave Forum

You mentioned CompuServe in one of your articles and that there is no forum or special interest group dedicated in this area. As Sysop of the Communications Industry Forum I would like to inform you and your readers that I have created a section in the forum for just this. It is called "SHORTWAVES." This section is dedicated to those interested in shortwave, RTTY, scanning, VLF, etc. The Communications Industry Forum is a special interest group on CompuServe that deals with the communications industry. You'll find broadcast radio, TV, communications, and telecommunications professionals on C.I. Forum. I would like to invite you and your readers to become members. To get the forum, enter GO SFP-35 at the function prompt. If anyone would like more information concerning the C.I. Forum, they can contact me at the following numbers and/or address:

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Pine Brook, NJ 07058
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A Winner Of An Idea

Let's say, for instance, that a person is in possession of a highway radio callbox. The callbox is self-powered and operates on 154.45625 MHz and is designed to summon police, fire dept., ambulance, or wreckers. Signals from this callbox can be received on any standard scanner. Would it be possible to use two such devices to establish a private communications system with a friend several miles distant? All hypothetical, mind you.

R. H. N.
Winner, SD

Let's say, for instance, that the person did not object to using a transmitter which is obviously the property of the state of South Dakota and which could not be licensed to an individual in any event. Let's also say, for instance, that the two persons in question had no messages to transmit to one another except to request the police, fire department, ambulances, or wreckers. Under such circumstances, it would be possible to establish the communications system you suggest. All hypothetical, mind you. —Editor

Big Voice From The Small Island

In addition to the airfield that was under construction on Grenada, plus other intelligence that told of Cuban and Soviet military personnel and equipment there, it seems to me that one would have learned quite a bit about the political orientation of the government by monitoring Radio Free Grenada located on the island. Having never heard the station myself, I'm wondering about how that station fit into the picture—the news media never had much to say about it.

J. L. Moran
Saskatoon, Saskatchewan

Originally the station was known as Radio Grenada and ran 1 kW. The Soviets and Cubans installed a 75 kW transmitter, a more efficient antenna system, and changed the name of the station to Radio Free Grenada. The programming of Radio Free Grenada was then enhanced with Cuban (Prensa Latina) and Soviet (Tass) news agency items which took a decidedly dim view of Western politics while vigorously supporting the activities of Cuba and the Soviets. This type of programming obviously supported the decision to send in troops from various nations in the hemisphere. —Editor

Calling All Cassettes

I would very much like to exchange cassette tapes and am especially interested in police, fire, ambulance, and aircraft communications. If you'll send me a cassette of some of these communications in your area, I'll send you a cassette of communications traffic I monitor here in England.

W. E. Harland
192 Oak Street
Abingdon, Oxford OX 14 SDR
England

POP'COMM *receives occasional requests from readers wishing to exchange communications (HF or VHF) tapes, or from readers who want to tapespond with others sharing mutual monitoring interests. We are pleased to run this information in the magazine and invite those who are interested in this actitivity to pass along their name and address along with a brief description of their monitoring specialty or areas of interest.*
—Editor

Taking Pot Luck?

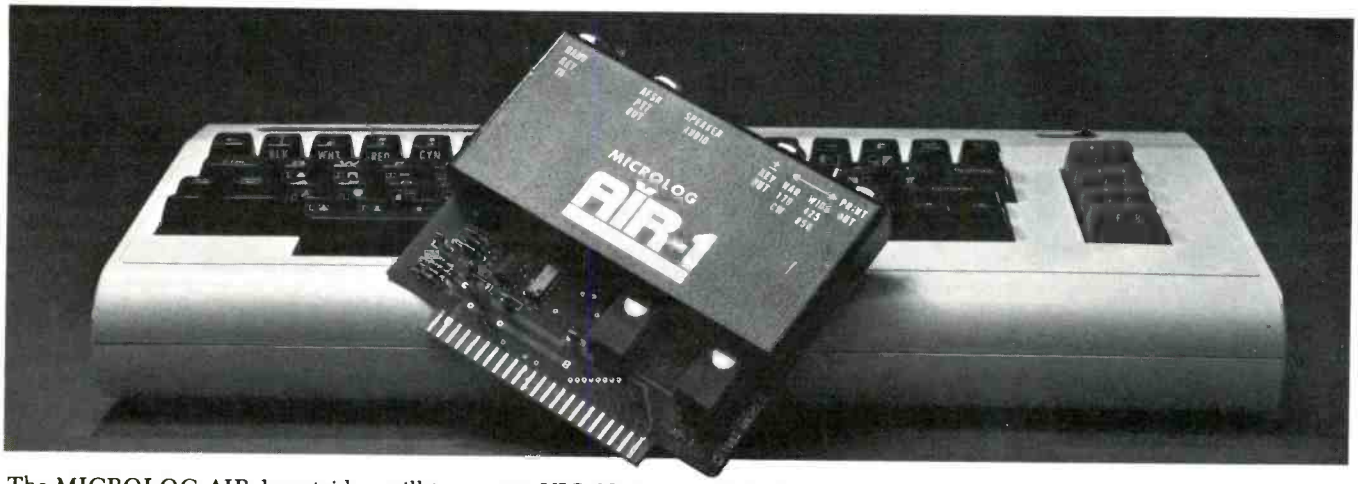
In a few months I'm moving into the Trinity National Forest in northern California. This is a remote area and I'm wondering if there is anything to monitor on my scanner. I asked several scanner dealers here and they have no information.

John Cunningham
Sparks, NV

In view of the fact that the Trinity National Forest is one of the nation's most notorious illegal marijuana farming areas there's every reason to believe that a scanner will most definitely be alive with communications. The Trinity County Sheriff is on 155.115 MHz. The state forestry agency is on 151.325, 151.355, and 169.475 MHz. The U.S. Forestry Service there is on 164.10, 164.80, 169.90, and 415.275 MHz. A word of caution: the big harvest season for the pot farmers there is in Autumn and they don't take kindly to strangers poking around during such activities, especially strangers with scanners. By the way, the pot farmers use VHF radio, although bootleg. Check out 156.425, 156.525, and 156.625 MHz and other maritime intership channels. Since those channels don't have any authorized communications there in the mountains, they are often ripped off for short-range hand-held transceiver use by the pot farmers. —Editor

PC

Make Your Commodore Radio Active



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Please send all reader inquiries directly.

Air Traffic Control Monitoring

It's A Crowded Sky—Just Wait Until You Hear Them Working To Keep It Safe!

BY BILL MARCHAND, KLA5ML

It is a fact of life that so many things included in the terminology of different industries, arts, and sciences are absolutely obscure to outsiders. Aviation is no exception; words and terms such as stopway, separation minima, quota flow control, and transition area are just a few of the seemingly endless number of expressions one comes across in this field. There are a few exceptions, one of them being Air Traffic Control, a term which is quite straightforward.

The sky is crowded with airliners, private aircraft, military aircraft, helicopters, crop dusters, etc. The aim of the art and science of Air Traffic Control is to prevent collisions between aircraft, prevent collisions in the maneuvering area between aircraft and obstructions, and to expedite and maintain an orderly flow of air traffic. This isn't easy, and a large number of highly trained and skilled ATC controllers are at work around-the-clock sorting out the aircraft operating in specific areas. Armed with sophisticated radar and able to communicate with the aircraft on a large number of frequencies, the controllers keep track of what's taking place in the sky. Aircraft communicate with the controllers and exchange information on altitude, direction of flight, routes, and other aircraft in the area. ATC also includes takeoff and landing at individual airfields, as well as GCA (ground controlled approach) which pilots often rely upon, especially when visibility is impared due to weather. Using radar, ground personnel give the pilot using a GCA instructions on making his landing.

ATC facilities include FAA operated Air Route Traffic Control Centers located at major transportation points such as Chicago, New York, Los Angeles, Fort Worth, Boston, Seattle, etc. FAA control towers are also sources of ATC communications. Moreover, military air bases also provide ATC communications, including GCA.

ATC communications take place in the VHF aero band and also the UHF military aero band (225 to 400 MHz). In the VHF band, where all of the ATC communications with private and commercial civil aircraft take place, the frequencies used lie between 118 and 121.4 MHz, 123.675 and 128.8 MHz, and also 132.05 and 135.95 MHz. Most military ATC communications take place in the 225 to 400 MHz band, however there are military aircraft to be monitored on VHF too. Most military air fields have several frequencies assigned in the VHF band. Two of the more popularly used frequencies of this type are 126.2 and 134.1 MHz, although many others are encountered too. The *Air-Scan Directory* of aeronautical frequencies enumerates all military and civilian aero facilities operating in the VHF band and shows their exact frequencies.

Air Route Traffic Control Centers (ARTCC), which operate on VHF and UHF frequencies, are functional on a myriad of frequencies, most being designated for use along specific air corridors or in certain pie-slice shaped sectors. As aircraft pass from one such sector to another, pilots are "handed

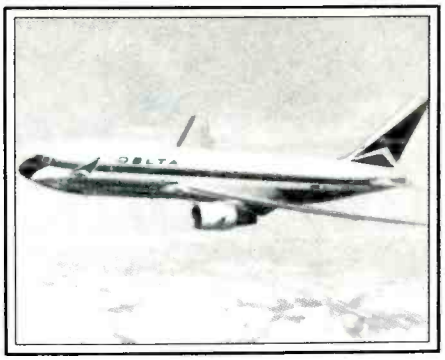
A military C-141 shown at the Amarillo Airport in Texas.

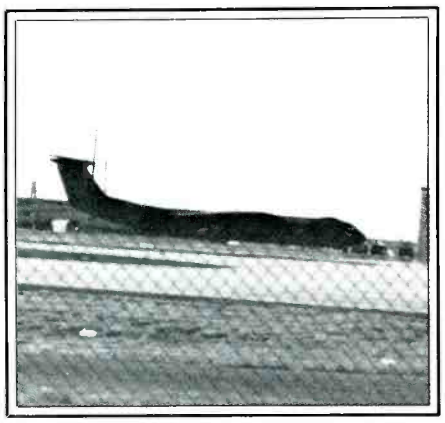
Choppers need clearance from air traffic control for all take-off and landing at airports.

off" to other controllers on different frequencies; or they may be handed over from one ARTCC's jurisdication to another ARTCC.

Because modern jet-powered military and civilian aircraft travel so fast, an aircraft approaching or departing from a specific ARTCC could be in or out of range of a particular ground station before adequate time had elapsed to exchange communications. On the other hand, an airliner approaching a major city generally has to communicate with an ARTCC controller in that city from far beyond the point where VHF communications might be expected to be reliable. Even taking into account that at 15,000 feet altitude an aircraft should be able to communicate to about 175 miles, ARTCC's have remote controlled transmitters located at great distances from their central control point. The Albuquerque (New Mexico) ARTCC, for example, has remote controlled transmitters in Amarillo (Texas), Winslow (Arizona), and about 20 other distant sites. A commercial or military jet aircraft flying from New York to Chicago is within communications range of the Chicago ARTCC ("Center") as soon as it arrives at its operational altitude.

If you haven't yet listened in on ATC activities, why not sample what these communications have to offer? Check out these frequencies in a directory, or put your scanner into the search mode on the bands we've listed here. PC





All aircraft, large and small, have one common denominator—they require the services of air traffic controllers.

Monitoring The Endangered Ships

The Mysterious Middle East Has Been Fatal To Oil Tankers

BY ANTON KUCHACEVICH *ze* SCHLUDERPACHERU

Recent months have proven dangerous to shipping in the volatile Middle East, most especially to oil tankers attempting to traverse the Persian Gulf. These vessels, carrying petroleum products and crude oil (usually to Western nations) have gotten caught up in the strange war between Iraq and Iran. At various times each of these nations—and both of them, too—have backed away from attacking oil tankers in international waters, only to have resumed the attacks after a brief intermission. It does seem, however, regardless of any short term hands-off truce, that the Persian Gulf and surrounding waters are areas where merchant seamen will be keeping their fingers crossed for many months to come.

Persons having communications receivers wishing to tune in on the tanker communications may have some problems eavesdropping on the area communications because so much of the voice traffic takes place on the old 2 MHz maritime band. The opportunities for hearing anything from the other side of the world on 2 MHz are rare, indeed, however there are some higher frequencies also in use where you might have better luck hearing the tankers communicating with shore stations and with one another. Of course, 2182 kHz, the International Calling and Distress Frequency, is a prime candidate for use by a vessel in trouble.

You may wish to take your chances and see if you can pick up any of the ship/ship and ship/shore communications relating to the Persian Gulf. Shown in the chart are some of the voice (SSB) frequencies which are worthy of checking from time to time. In our September issue we will have a complete updated rundown of the international broadcasting stations in the strife-torn Middle East—watch for it!

Middle East Maritime Radio (Voice) Frequencies

Simplex: Vessels & Some Shore Stations: 2096.5, 2214, 4125, 4143.6, 4419.4, 6215.5, 6218.6, 6221.6, 6251.9, 8257, 8291.1, 8294.2, 12429.2, 12432.3, 12435.4, 16523.4, 16587.1, 16590.2, 16593.3, 22124.1, 22127.1, 22130.2, 22133.1, 22136.3 kHz

Location	Callsign	Shore (kHz)	Ship (kHz)
IRAN			
Abadan	EQA	4376	4081.6
	EQZ	4428.6	4130
	EQA	6515.7	6209.3
	EQZ	8789.6	8225.6
	EQA	17245.3	16472.4
	EQZ	17286.5	16491.5
Abbas	EQI	4403.9	4109.5
	EQI	6515.7	6209.3
	EQI	8731.3	8207.4
	EQI	17279.4	16506.5
	EQI	22701.4	22105.4
Bushire	EQM	4369.8	4075.4
	EQM	6515.7	6209.3
	EQM	8746.8	8222.9
	EQM	17319.7	16546.8
	EQM	22602.2	22006.2
Ghosbeh	EQG	4428.6	4130
	EQG	4434.9	4136.3
	EQG	8789.6	8255.6
	EQG	13140.5	12361.5
Golmankhaneh	EQP	(see Ghosbeh frequencies)	
Khark	EQQ	4385.3	4090.9
	EQQ	6515.7	6209.3
	EQQ	13159.7	12388.9
Khoramashahr	EQK	4186	4186
	EQK	6288	6288
	EQK	8580	8580
	EQK	13060	13060
Lavan	EQR	4416.3	4121.9
	EQR	6515.7	6209.3
Nowsahar	EQO	4388.4	4094
	EQO	6515.7	6209.3
	EQO	8768.5	8244.6
Shahpoor	EQN	4360.5	4066.1
	EQN	6515.7	6209.3
	EQN	8805.7	8281.8
	EQN	13193.8	12423
	EQN	22695.2	22099.2
IRAQ			
Um-Qasir	YIU	2665	2665
KUWAIT			
Kuwait	9KK	2750	2750
	9KK	4439.4	4136.3
	9KK5	6518.6	6212.4
	9KK7	8802.4	8278.7
	9KK9	13182.5	12410.6
	9KK21	17328.5	16556.1
	9KK24	22699	22102.3
OMAN			
Muscat	A4M	2607	2607
	A4M	3745	3745
	A4M	4366.7	4072.3
	A4M	4419.4	4125.0
	A4M	8780.9	8257
	A4M	8790.2	8266.3
QATAR			
Qatar	A7S	2370	2370
	A7S	2638	2638

Note: All stations shown can also operate on 2182 kHz. PC

Summer 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 will run their English broadcasts into the next hour or 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	Israel Radio	7.410, 9.815, 11.655
	Radio Australia	15.160, 15.320
	Radio Moscow	9.600, 9.680, 9.720, 9.760, 11.730, 11.770 11.780, 15.140, 15.420, 17.700
	BRT, Belgium (0030)	5.910
	Voice of Greece	7.315, 9.865, 11.645
	Radio Beijing, China	11.650, 15.385, 15.520
	HCJB, Ecuador (0030)	9.745, 15.155, 15.250
	Radio Tirana, Albania	7.065
	REE, Spain	9.630, 11.880
	Radio Sofia, Bulgaria	9.665
	Radio Norway	9.525, 9.590, 11.870
	Radio Japan	15.300, 17.825
	Radio Thailand	9.605, 11.905
	RBI, East Germany	9.730, 11.975
	BBC, England	6.175, 7.325, 9.590
0100	Voice of Germany	6.040, 6.085, 6.145, 9.545, 9.565, 11.785
	Israel Radio	7.410, 9.815, 11.655
	Voice of Free China, Taiwan	11.825, 15.345
	Radio Moscow	9.530, 9.600, 9.700, 9.720, 9.760, 11.730, 11.770, 11.780, 15.140, 15.420, 17.700
	Austrian Radio (0130)	9.545, 9.770
	RAI, Italy	9.575, 11.800
	Radio Japan (0130)	15.195, 17.825, 21.610, 21.640
	Vatican Radio	6.015, 9.605, 11.845
	Radio Budapest, Hungary	6.025, 9.520, 9.585, 9.835, 11.910, 12.000
	Radio Beijing, China	11.650, 15.385, 15.520
	Radio Lebanon (0130)	9.660
	Radio Havana Cuba	6.090, 15.300
	HCJB, Ecuador	9.745, 15.155
	Radio Prague, Czechoslovakia	5.930, 7.345, 9.540, 9.630, 9.740, 11.990
	Radio Canada International	5.960, 9.755
	Radio Tirana, Albania	7.120
	REE, Spain	9.630, 11.880
	Voice of Nicaragua	6.100
0200	Israel Radio	7.410, 9.815, 11.655
	Voice of Free China, Taiwan	5.985
	Radio Australia	15.160, 15.320, 17.795
	Radio Sweden (0230)	9.695, 11.705
	Radio Korea, S. Korea	11.810, 15.575
	Radio Moscow	9.530, 9.600, 9.700, 9.720, 9.760, 11.730, 11.780, 15.140, 15.420, 17.700
	Voice of Greece	7.315, 9.865, 11.645
	Radio RSA, South Africa	5.980, 9.615, 11.730
	Radio Budapest, Hungary	6.025, 9.520, 9.585, 9.835, 11.910, 12.000
	RAE, Argentina	11.710, 11.755, 15.345
	TGMUB, Guatemala	6.090
	Radio Beijing, China	11.650, 15.355
	Radio Lebanon	9.660
	RadioBras, Brazil	15.290
	Radio Cairo, Egypt	9.475, 15.370
	Radio Pakistan	17.840
	Radio Havana Cuba	15.300
	HCJB, Ecuador	9.745, 15.155
	Radio Polonia, Poland	6.095, 6.135, 7.145, 7.270, 9.525, 11.815, 15.120
	Radio Bucharest, Romania	5.990, 6.155, 9.510, 9.550, 9.570, 11.810, 11.940
	HRVC, Honduras	4.820
	Radio Netherlands	6.165, 9.715
	Radio Belize	3.285
0300	Voice of Free China, Taiwan	11.745, 11.825, 15.345
	Voice of Turkey	9.560
	Radio Australia	15.160, 15.320, 17.795
	Radio Moscow	15.140, 15.180, 15.400, 15.420, 17.700
	Radio RSA, S. Africa	5.980, 7.270, 9.585
	Austrian Radio (0330)	5.945, 9.770
	Radio Budapest, Hungary	6.025, 9.520, 9.835, 11.910, 12.000
	TGMUB, Guatemala	6.090
	Radio Beijing, China	11.650, 15.385, 15.520
	Radio Lebanon	9.660
	Radio Cairo, Egypt	9.475, 15.370
	Radio Havana Cuba	15.300
	HCJB, Ecuador	9.745, 15.155
	Radio Polonia	6.095, 6.135, 7.145, 7.270, 9.525, 11.815, 15.120
	Radio Portugal	6.060, 11.925
	Radio Prague, Czechoslovakia	5.930, 7.345, 9.540, 9.630, 9.740, 11.990
	Radio Canada International	5.960, 9.755
	Voice of Nicaragua	6.100
	TIFC, Costa Rica	5.055
	Radio Tirana, Albania	7.300

Time	Station/Country	Frequencies
0400	Radio Australia	15.160
	Radio Moscow	9.580, 11.750, 15.180, 15.400 15.420
	Radio RSA, S. Africa	5.980, 7.270, 9.585
	Austrian Radio (0430)	5.945, 9.770
	Radio Beijing, China	11.650, 15.385
	Radio New Zealand	15.485, 17.705
	FRCN, Kaduna, Nigeria	4.770
	Radio Havana Cuba	15.300
	HCJB, Ecuador	9.745, 15.155
	Radio Bucharest, Romania	5.990, 6.155, 9.510, 9.570
	Radio Canada International	5.960, 9.775
	Radio Lesotho	4.800
	Radio France International	7.125, 9.545
0500	Voice of Germany	5.960, 6.120, 9.545, 9.690, 11.705
	Israel Radio	9.815, 11.655, 12.025, 15.585
	Radio Australia	15.160, 15.320, 17.795
	Radio Botswana	7.295
	Radio Havana Cuba	15.300
	HCJB, Ecuador	6.095, 9.745, 11.910, 15.155
	Radio Portugal (0530)	6.075, 9.575
	SABC, S. Africa	4.835
	Radio Netherlands	6.165, 9.715
0600	Voice of Free China, Taiwan (0610)	5.985
	Radio Australia	15.160, 15.320, 17.795
	Radio RSA, S. Africa (0630)	11.900, 15.220, 17.780
	Radio Douala, Cameroon	4.795
	Radio Havana Cuba	9.525
	HCJB, Ecuador	6.095, 11.835, 11.910, 15.155
	GBC, Ghana	4.915
	Radio Cook Islands	11.760
	Voice of Nigeria	15.185
	Radio Netherlands	6.165, 9.715
	REE, Spain	9.630, 11.880
	Radio Korea, S. Korea	7.275, 9.640
	Radio Malaysia	9.750, 15.295
	Radio New Zealand	11.960
0700	Radio Australia	15.160, 15.320, 17.795
	Voice of Free China, Taiwan	5.985, 11.740
	Radio Berlin International, E. Germany	9.560, 11.890
	Radio Japan	15.300
	Radio Havana Cuba	9.525
	BRT, Belgium (0715)	9.880
	Radio Kiribati	16.434 (SSB)
	Solomon Islands Broadcasting Corp.	9.545
0800	CRFX, Canada	6.070
	GBC, Guyana	5.950
	Radio Australia	9.680
	Radio Cook Islands	11.760
	TWR, Monaco	9.495
	Radio New Zealand	11.960
	NBC, Papua New Guinea	4.890
0900	Radio Oman	11.890
	CKZU, Canada	6.160
	Solomon Islands Broadcasting Corp.	9.545
	Radio Japan	9.505, 15.195
	FEBC, Philippines	11.890
	Radio New Zealand	11.960
1000	Voice of Nigeria	15.120
	Radio Norway (Sundays)	9.590, 15.205, 17.825, 17.860
	Radio Oman	11.890
	BSKSA, Saudi Arabia	11.855
	Radio Pakistan	9.645
	AIR, India	17.825
	Radio Australia	9.680, 11.720
	Radio Korea, S. Korea	5.975
	Voice of Vietnam	9.840, 12.035
	Radio New Zealand	11.960
	Radio Singapore	11.940

Time	Station/Country	Frequencies
1100	Radio Finland	15.400, 17.800
	Radio RSA, S. Africa	15.220, 21.535, 25.790
	Voice of Nigeria	15.120
	Radio Beijing, China	11.860
	Radio Pakistan	17.660, 21.800
	BSKSA, Saudi Arabia	11.855
	Radio Japan	9.505, 11.820
	Radio New Zealand	11.960
	Radio Pyongyang, N. Korea	9.977
1200	Radio Finland	15.400, 17.800
	Radio Australia	9.580
	Austrian Radio (1230)	17.770
	Voice of Greece	9.420, 11.645, 15.635
	Radio Beijing, China	11.650, 11.860
	Sri Lanka Broadcasting Corp. (1230)	6.075, 9.720, 15.425
	HCJB, Ecuador (1215)	11.740, 17.890
	BSKSA, Saudi Arabia	11.855
	Radio Thailand	9.655
	VOPK, Kampuchea	11.938
	RAE, Argentina (1230)	9.690, 11.710, 15.345
	TWR, Netherlands Antilles	15.255
	Radio Pyongyang, N. Korea	9.977
	Radio Tirana, Albania (1230)	9.515, 11.695
	Radio Bangladesh	15.280, 17.800
1300	Radio Finland	15.400, 17.800
	Radio Australia	9.580
	Radio Norway (Sunday)	9.590, 15.175, 15.225, 25.615
	Laos National Radio	7.205
	CHNX, Canada	6.130
	TWR, Monaco	9.495
	SRI, Switzerland	11.740
	RBI, East Germany	17.880
	Radio Japan	9.505, 11.815, 11.840
	Voice of Vietnam	10.040, 15.010
1400	Radio Finland	15.400, 17.800
	Radio Australia	9.580
	Radio Sweden	17.860
	Radio Korea, S. Korea	9.750, 15.575
	BRT, Belgium	17.610
	Radio Veritas, Philippines (1430)	11.955, 15.215
	CBCNQS, Canada	11.720
	Radio Prague, Czechoslovakia	15.110
	Radio Vatican	11.740
	HCJB, Ecuador	11.740, 17.890
	Radio Norway (Sunday)	9.590, 15.205, 17.840
	Sri Lanka Broadcasting Corp.	15.425
1500	Radio Australia	9.580, 11.790
	Voice of Greece	9.420, 11.645, 15.635
	FEBA, Seychelles	11.895, 15.325
	AIR, India	9.950
	Vatican Radio	15.120
	RBI, E. Germany	15.450
	Radio Prague, Czechoslovakia	21.505
	Radio RSA, S. Africa	25.790
	Voice of Vietnam	12.020
	Ulan Bator, Mongolia	12.015
	Radio Japan	9.505, 9.675, 11.815
	Radio Pyongyang, N. Korea	9.977
	Radio Belgrad, Yugoslavia (1530)	9.620, 15.240
1600	Radio France International	9.790, 11.800, 11.845, 15.300, 17.850
	Radio Norway (Sunday)	15.205, 17.800, 25.615
	Radio Pakistan	9.863, 11.670, 15.445, 15.565, 17.660
	Radio Budapest, Hungary	11.910, 12.000
	Radio Canada International	11.955, 17.820
	Radio Korea, S. Korea	9.870, 11.810
	UAE Radio (1630)	11.955, 15.300, 15.320
1700	Radio Norway (Sunday)	9.590, 15.175, 17.800, 25.615
	RAE, Argentina	15.345

Time	Station/Country	Frequencies
1700	BSKSA, Saudi Arabia	11.855
	Radio Budapest, Hungary	11.910
	Radio Bucharest, Romania	15.335, 17.805
1800	Israel Radio	11.610, 13.475, 15.585, 17.630, 21.625
	Radio Kuwait	11.675
	Radio Kiribati	14.801
	BSKSA, Saudi Arabia	11.855
	Radio Bangladesh (1815)	11.755, 15.205, 15.270
	SLBC, Sri Lanka	11.800
	SRI Switzerland	15.125, 17.830
	Radio Portugal	15.245
	RBI, E. Germany	11.840, 15.255
	Radiobras, Brazil	15.280
1900	VOIRI, Iran (1930)	9.022
	Radio Kuwait	11.675
	Radio Norway (Sunday)	15.175, 15.225
	Radio Afghanistan	15.077
	BSKSA, Saudi Arabia	11.855
	Radio Canada International	11.905, 17.815, 17.875
	BRT, Belgium	15.590
	Radio Bangladesh	15.280, 17.800
	Radio Japan	11.815, 15.300
2000	Israel Radio	9.440, 9.815, 11.655, 11.960, 13.745
	Radio Kuwait	11.675
	Radio Norway (Sunday)	9.525, 9.590, 11.800, 15.175
	RTA, Algiers	9.641, 17.745
	BSKSA, Saudi Arabia	11.855
	Radio Bucharest, Romania	9.690
	AIR, India	11.620
	Radio Havana Cuba	11.840
	Radio Netherlands	9.715, 11.740, 17.605
	Radio Portugal	9.740
	BBC, England	11.750, 15.260
2100	Radio Australia	15.160
	Radio RSA, S. Africa	9.585, 11.900, 15.155
	Libyan Radio	11.815
	Radio Havana Cuba	11.725
	Radio Sofia, Bulgaria	9.665, 11.735
	AIR, India	11.620
	Radio Canada International	11.945, 15.150
	BBC, England	11.750, 15.260
2200	Voice of Turkey	9.560
	Radio Australia	15.160, 15.320
	Radio Moscow	9.760, 11.730, 11.770, 11.780, 11.790, 11.850, 15.140, 15.420, 17.700
	Radio Norway (Sunday)	6.015, 9.610, 9.670, 15.175
	Radio Tirana, Albania	9.480
	Radio Baghdad, Iraq	9.610
	Radio Vatican	9.615
	Libyan Radio	11.815
	Radio Sofia, Bulgaria	9.615, 9.700, 11.720
	BBC, England	9.915, 11.750, 15.260
	Radio Japan	9.645, 15.210, 15.235, 17.755
	Radio Belgrad, Yugoslavia	9.620
2300	Radio Australia	15.160, 15.320
	Radio Sweden	9.695, 11.710
	Radio Moscow	9.680, 9.720, 9.760, 11.730, 11.770, 11.780, 11.790, 15.140, 15.420, 17.700
	Radio Japan (2345)	15.300, 17.825
	Radio Pyongyang, N. Korea	15.230
	BBC, England	6.175, 9.590, 9.915
	CBCNQS, Canada	11.720
	Radio Canada International	5.960, 9.755
	Radio Vilnius, Lithuania	9.685, 9.750, 15.100

PC

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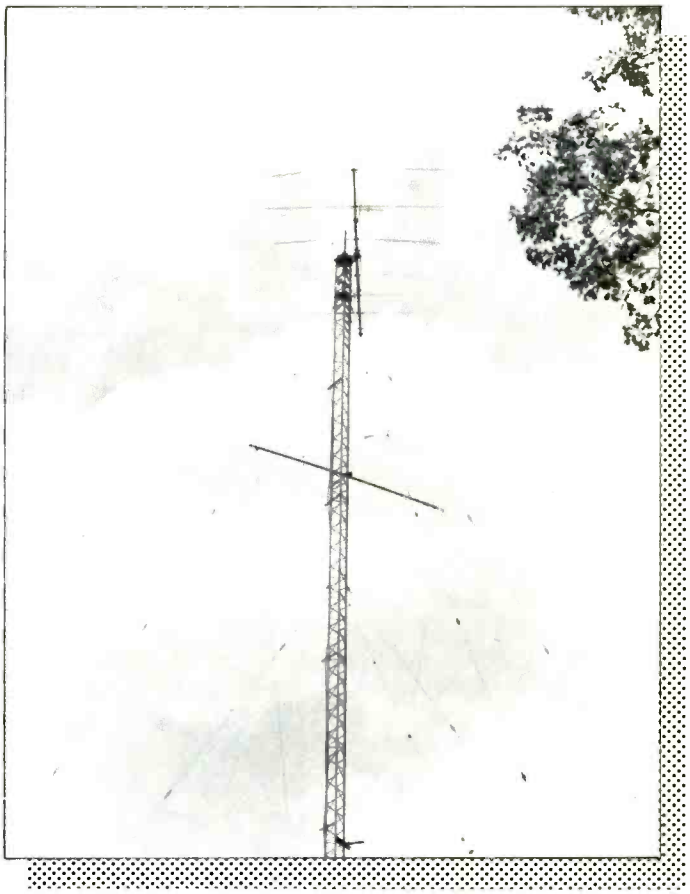
CIRCLE 5 ON READER SERVICE CARD

These number transmissions seem to be directed by anyone having a shortwave receiver, no matter how unsophisticated. That must say something about these transmissions, but what?

Number stations blanket the world but appear to be beamed to certain locations.



"Atencion: Cinco Uno Tres"

Speculations On Spanish Language 5-Digit Number Transmissions

BY ROBERT M. DYQUETTA

There are several types of number transmissions easily heard throughout North America. Of these, the Spanish language, female voiced, 5-digit type, is probably the most often encountered. This is the familiar AM mode broadcast that uses, "Atencion ### (plus group count)," as a repeated s/on ident, and "Final, Final" as her s/off. I shall refer to this type as simply SS/YL.

The SS/YL transmissions have been active since the early to mid 1960's. Hence, she is a 20-year veteran of the numbers game. But in all the intervening years, very little concrete evidence has ever surfaced. We have been told (via alleged FCC sources) that the SS/YLs come from Cuba, yet those same FCC sources have never provided any substantiating proof or amplification on that one line statement. We must take their word as fact. This is *not* acceptable—first for the lack of corroborating data to support the statement, and second, because the FCC is an agency of our government.

The SS/YL has been active for roughly 20 years, yet in all that time, no one directly involved with them has stepped forward to expose the operation. You don't have to be Albert Einstein to come to the conclusion that the security surrounding the SS/YL is excellent. There is only one outfit that can provide virtually a 100% security blanket over such a long period of time. That outfit is the U.S. government. Ask anyone who was involved in a classified operation, and they can tell you about the awesome clout of government imposed secrecy.

I'm not suggesting that the U.S. government is directly involved in the SS/YL transmissions. What I am saying is that the U.S. government knows all about the SS/YLs, but refuses to divulge the information. The reasoning for this is straightforward. Number transmissions are well heard in the USA. Even if all came from foreign sources, certain branches of our government would do their utmost to learn everything about them. If some are U.S. generated, then quite obviously, the information on them is known. Ergo, the real question here is not so much what the government knows, but instead, why won't they let it be known?

As any "number" investigator can attest, query the U.S. government agencies and the replies range from passing the buck to outright absurd. It was in the mid-1970's that the alleged FCC one liner, "They're from Cuba" first appeared. At the same

time, the U.S. Coast Guard was pointing the finger at the Cuban fishing fleet. Not to be outdone, and (unnamed) intelligence agency claimed that they had never heard about these number transmissions before until a number monitoring buff brought it to their attention . . . Yes Virginia, there is a Santa Claus, and it snows in Death Valley in the summertime.

In other words, the U.S. Government looks to have an all-encompassing agency-wide directive not to divulge any pertinent information on the SS/YL. To further confuse, two buffs can ask an agency the same question, and each will receive a very different reply. When all else fails, quote the alleged one liner from the FCC. Would it surprise you to learn that the FCC, depending on the circumstances, denies that it ever made the "They're from Cuba" statement?

For whatever reason, the U.S. Government protects the SS/YL operation from public disclosure. The FCC is a government agency. Nuff said.

Does the government deliberately lie, deceive, and conceal information from its citizens? Normally no, but in areas of national interest and security, and diplomacy and intelligence related matters, they sure do.

Most interesting is that the government may not be protecting itself. There are countless foreign embassies on U.S. soil, principally in the New York City and Washington DC areas. All utilize radio as a means of communicating with their respective state departments. Since they are diplomatic, by law and agreement, we protect their privacy. That includes radio communications. It is all part of the diplo/intel game—you keep quiet about our activity, and we'll do the same for yours. So where does one find the truth, or at least valid clues? Namely via individual or groupwise investigating.

Number buffs monitor, investigate, and compile data. Some follow their own gut feelings, while others go along with the prevailing theory. Here we will examine some SS/YL traits, via observation and speculation.

Overall, the SS/YL has, in the past few years, utilized over 100 different frequencies, ranging from 3 to 21 MHz. In fact, of all the frequencies tied to number transmissions, the SS/YL 5-digit accounts for roughly 40% of the total. Many number buffs compile frequency lists and proceed to cross check them, seeking correlations between frequency and user. This is a valid investigative method, but in the case of the SS/YL, you usually end up with many diverse user corrolations. It is a somewhat futile line of probing. Number transmissions are clandestine, so they will use any frequency they so choose, and the more random the correlations it can produce, the better to confuse the investigator. In such a reality, specific frequency tabulations are useful only to denote which frequencies are used by which number type.

This frequency arena deserves a different approach. Ask youself, why would a single site utilize so many different frequencies? There isn't much logic to utilizing 100 plus frequencies, all of which are easily found and identified as being of SS/YL origin. No, not by one site, but 100 plus suggests that *more* than one transmission site is involved.

Moreover, through frequency/QSA/QSB/time/season/solar-geomagnetic activity observations, these strongly indicate multiple sites for the SS/YL transmissions.

As experienced number buffs know, the SS/YL can run as many as four separate transmissions during the same hourly period. Some are grouped in the 6700 to 6900 kHz and 7300 to 7900 kHz regions. From a QSA/QSB standpoint, SS/YL transmissions in these areas should have roughly the same signal strength/propagation characteristics—the assumption being that they all come from a single transmitter site utilizing an omni-directional antenna. As you know, this is not the case during actual monitoring of separate transmissions in these two groups.

Two frequencies most often used are 6772 and 7846 kHz. At times they are paired for the first and repeat transmissions. At other times, one frequency is used to broadcast run #1 first transmission, and run #2 repeat transmission. In many instances, when used in the paired mode, the QSA/QSB traits are virtually the same. When used in the cross-over mode, these traits are often dramatically different.

Only two rational possibilities exist: (a) a single site using a highly directional antenna, beaming at different bearings for different transmissions; (b) multiple sites with omni-directional radiated signals.

A component to these observations are transmitter noises and modulation. When SS/YL transmissions are heard at good levels, one can hear background noises associated with the transmitter equipment. These noises are not consistant frequency to frequency, especially during multiple hourly transmissions. Hence more than one transmitter is being used (this in itself doesn't necessarily indicate multiple sites).

Modulation ranges from excellent to very poor. A percentage of SS/YL transmissions has less than ideal modulation. Taking into account, then ruling out QRM, there remains a sizable portion of SS/YL transmissions that are of poor audio quality. This does not suggest that the radio technicians are necessarily incompetent, but rather that the culprit is old, worn out transmitter equipment. It seems very odd to go through all the time and trouble to make these broadcasts and then turn around and use equipment that should have been retired years ago.

Another approach is the message text itself. Many buffs record and transcribe number broadcasts. Numerous attempts have been mounted to decode the SS/YL broadcasts. To date, no one has succeeded. Some have claimed to, but when their techniques were scrutinized, they failed to justify the results. Here is another area, familiar to all, but few realize its importance.

In 1983 I conducted a 12-week monitoring survery of the SS/YL transmissions. The time period was from 0000 to 0500 GMT. A total of 77 different frequencies

were encountered, and 230 different message texts were logged (this total excludes the second repeat transmission).

There were two objectives of this survey which revolved around the s/on ident and the group counts. The s/on ident is the 3 numbers following "Atencion."

The s/on ident has been viewed by some to indicate: (a) a specific encode/decode table reference, and (b) a routing code—such as to agents or location. There is another possibility . . .

During the survey, 190 different s/on idents were used, ranging from 010 to 997. These monitored s/on idents and associated group counts are shown in Table A.

As you can observe, the s/on idents are seemingly random. No amount of correlation produced any identifiable patterning. We will temporarily leave Table A, and move on to Table B.

Table B depicts the group counts, broken down into 9 unit divisions—that is, those having group counts ranging from 0 to 9, 10 to 19, and so on. Table B shows: Units, group count, number of times the group count was used.

Table C is a distillation of Table B. It denotes the group count sequences arranged by total number of times used.

It is apparent in Table C that the group count sequences are very bizarre. Forty 5-digit groups were transmitted 25 times, utilizing 22 different s/on idents. And 9.6% of all group counts were devoted to just the forty 5-digit group. In fact, group counts transmitted 10 or more times constituted 59.4% of the entire total.

What does all of this suggest? Forty 5-digit groups total out to 200 numerics. If we assume for the sake of argument, 2 numerics per character (letter or number), then there were 100 characters used in this message. Now what are the chances of 22 messages (that is one that is conventionally worded) to each total out, when encoded, to 200 numerics? Granted, each individual message may not have used all 200. The last 5-digit group could have 2 or 4 nulls added to complete the 5-digit group set up. Even as such, is it conceivable to have 22 different messages all ending up with between 98 and 100 characters (this is assuming 2 digits equal 1 character)?

In reality, it could be 3, 4, or even 5 digits per one character. If 5 is the reality, then we have a very short message of only 40 characters. It is curious to note that if we examine the "5 equals 1 concept," then *every* group count has the same number of characters as the group count itself (group count times 5, divided by 5). Is this nothing more than a simple exercise in arithmetic, or does this odd interrelationship herald a clue?

Why hasn't anyone ever decoded SS/YL transmissions? Standard cryptanalysis is based on a singular premise, namely that the text consists of words. In any language, certain letters which constitute words, are used more frequently than others. This is called letter frequency.

In the English language, the letter frequency is:
ETOANIRSHDLCWUMFYGPBVKXQJZ

In Spanish, the frequency is:
EAOSRINLDCTUPMYQGBHFVJZKWX

Further cryptanalysis includes: 2 and 3 letter associations, double letter associations, one letter words, and most common 2 letter words. Letter frequency assessment is a basic procedure of cryptanalysis. By trial and error (and generous computer assistance), all possibilities can be checked until the encoded messages reveal the glimmer of its plain text.

The most simple of codes is letter for letter substitution—"A" equals "P." Converted to their numerical equivalents (01 to 26), we have 01 equals 16. To confuse matters, one can rearrange the numerical arrangments. Whereas 01 equals A and 26 equals Z, 01 could equal D and 26 could equal K.

This substitution system is easily decipherable, and under analysis it does betray a letter frequency usage alignment.

Almost all paper and pencil produced ciphers are breakable. However, there is one that is the opposite called the phrase code. An example of its operation is thus: My phrase code is "I TOOK A WALK THROUGH A LUSH RAIN FOREST." This phrase is repeated as often as required to cover the plain text message length.

My plain text message is: MEET AGENT RIPCORD AT SITE X GIVE AGENT THE PHOTOS. The message is entered below my phrase. It would start out as:

ITOOKAWALKTH
MEETAGENTRIP

For encoding, we convert the letters into their equivalent numerics:

09 20 15 15 11 01 23 01 12 11 20 08 . . .
13 05 05 20 01 07 05 14 20 18 09 16 . . .

The columns are added together and then assembled (for this example) into 5-digit groups. The entire message is now transmitted as such: "22252 03512 08281 53229 24213 03911 09213 13039 13420 81836 11162 51033 40292 82031 19164 31631 . . ." To further foil analysis, we could, be prearrangement, add 3 nulls (having no meaning) to the start of the encoded text. We then change the entire character of the encoded message: "39122 25203 51208 28153 22924 21303 91109 21313 03913 42081 83611 16251 03340 29282 03119 16431 63193 . . ." The number "93" was added to the last 5-digit group to round it out. These are also classed as nulls.

To decode, merely reverse the procedures. Since the phrase is unknown, this makes unauthorized decoding most improbable. Letter frequency analysis cannot be employed.

The phrase code has an infamous cousin—the one time code pad. The pad is made up of random numerics arranged in groups.

It has the same low breakability ratio as the phrase code system. Most one time code pads have page numbers. For this reason, some number buffs believe the s/on ident refers to the pad page number. As the name implies, the page is used only once, then destroyed.

There are other encoding/decoding methods, some based on mathematics requiring computers to do the actual encode/decode. But the phrase or one time code systems fit neatly into our concept of an agent in the field going about his cloak-and-dagger business.

Some of you are saying, "so that is why no one can break the SS/YL coded messages." If you believe this, can you then answer why forty 5-digit groups were utilized for 22 different messages? The highly structured group counts suggest that something other than a conventionally worded message is present. To put it another way, there is the possibility that the SS/YL encoded texts have no words in them at all.

How is this possible? Everything can be broken down into numerical equivalents. The U.S. Air Force weather recon aircraft do it every day. All weather-related information has a 1 or 2 number correlation. When a weather recon aircraft sends its observation to one of the "Monitors," it is read off of a standardized form and is copied down in the same exact form at the monitor facility. The message may make no sense to you, but it fills in each category on the form. If you didn't realize that these 5-digit transmissions were weather observations and tried to "decode" via letter frequency methods, your efforts would be futile. There are no words, only numerical equivalent relationships.

Others have suggested that the SS/YL transmissions are in fact numerical references to words (as opposed to letters). In other words, 5 numbers equal a specific word. An example: 57183 12160 33932 47519 80803 69285 27772 90090 . . . The message reads: REPORT ON SHIP MOVEMENTS AT NAVAL BASE XRAY. This system makes use of a listing from 00000 to 99999. Each of the 99,999 entries have a word or commonly used phrases for each. Words that are used quite often may have multiple entires. A companion listing would present the words in alphabetical order, followed by the numerical entry. In our above example, #57183 shows the word REPORT, #12160-ON, and so on and so forth.

Now can't you just picture an agent in the field lugging around or trying to hide a list containing 99,999 entires? We're talking something the size of a little book. Doesn't seem probable, does it? But for that matter, who says that the SS/YL transmissions are to agents in the field?

Let us return to the one time code pad. The operational use of this is—one use, then destroy. For this very reason, the one time code is *not* being used by the SS/YL. Check back to Table A (s/on idents and group counts). Notice how many idents were used for more than one message. Idents 292 and 926 were used for 4 different messages. Thus, a one time code system was not utilized for the SS/YL transmissions.

Following this reasoning, and the s/on ident may not be a specific reference to a particular encode/decode list.

But what about the phrase code system? Some 190 different s/on idents were recorded during the survery. To know which ident equals which phrase requires a listing of some sort. But this could be avoided. Phrase codes (called keys) are such that they are best used by memorizing them (ergo, no paperwork laying about). If an agent memorizes 7 phrase keys (one for each day of the week), then he would also have to memorize 7 s/on idents to know if the message was for him. With 999 possible idents, this means that there are 142 agents (if all use 7 phase keys) in this network. Admittedly, this arithmatic exercise is purely hypothetical. If we use the same reasoning, then during my 12 week survery, only 27 agents were contacted. Regardless of the hypothesis, it does prove that a s/on ident denoting a code listing is, after all, possible.

What we've discussed so far has to be interfaced with the next aspect of the SS/YL transmissions. As we know, the SS/YL has a distinct habit of repeating the same transmission beyond the first/repeat sequence. All SS/YL transmissions (as well as all other number types) operate out of a rigid schedule. This is based on a Day-Time-Frequency pattern—aka: DTF. It is absurd for a so-called cloak-and-dagger operation to adhere to a rigid DTF pattern, but they all do. During this survey, some DTFs stand out . . . *Tuesday-0600 GMT-8117/7343 kHz. The s/on ident was "Atencion, 373-100." For 12 consecutive weeks, during the same DTF, 373-100 was transmitted. Digit for digit, the 100 group message was identical . . . *Monday-0500 GMT-8872/ 7525 kHz ran the "Atencion, 926-121" message for seven consecutive weeks. Others ran repeats ranging from 2 to 5 weeks. One numbers investigator, back in the mid 1970's, logged an "Atencion 160-102" transmission, running seven days a week, for an incredible period of almost 180 consecutive days!!!

What all of this seems to suggest is that (many) of the SS/YL transmissions are not sending messages that have any critical time frame relevance. An order or instruction has a limited time frame usefulness, after which the order becomes academic. So if the SS/YL is passing actual messages, does it make any sense to repeat it 12 weeks in a row, much less for almost half a year?

If there is no time frame relevance for the SS/YL broadcasts, then it follows that the text isn't a conventional type message.

Could the s/on idents refer to a specific agent, department, or location? There were 190 idents recorded during the 12 week survey, and this only covered 5 hours out of the 24-hour day. Projected forward, between 700 and all 1,000 possible s/on idents, could be used. This is a big number, and if nothing else, suggests a very large operation. Combined with the QSA/QSB variables, we could be talking about a network

that spans the entire western hemisphere.

Let's examine the idents some more. Many buffs take for granted that the SS/YL message text is an encoded message. Therefore, the s/on idents identify the code used. As I've been showing, it may not be as simple as that.

The SS/YL s/on ident is not a reference to a day, a date, or a time. It does not go beyond and use 4 or more digits. Therefore, whatever it refers to has a 999 limitation. Is this limit finite or infinite? In other words, is the 143 ident we hear today referring to the same thing as when it was used 6 months, 1 year, or even 20 years ago? If so, then it is quite improbable that 143 refers to a specific code list. Why? Does it make any sense to use the same code list for years in a cloak-and-dagger operation?

Does the whole ident setup have a specified time frame limitation? Say this limit is one year. When day one of the next year begins, the whole s/on ident sequence refers to something different—in this context, 999 new code lists.

A one year turnover is probably much too long. During the 0000 to 0900 GMT hours, our SS/YL runs anywhere from 2 to 4 separate transmissions per hour (not counting the customary repeats). If this is a normal, all hours routine, then the SS/YL transmits anywhere from 48 to 96 separate transmissions per 24-hour period. These figures are estimates, for no one has yet to do a comprehensive, sunrise to sunset monitoring survery covering a 1 to 3 month period. But if this estimate is possible, then all 999 idents could conceivably be used up within 15 to 30 days.

As I've said, many number buffs assume the SS/YL transmissions are part of a cloak-and-dagger operation. But why? There isn't a shred of concrete evidence to prove this contention. Is it possible that our basic assumption is incorrect? If so, then the SS/YL transmissions may not have anything to do with a government/agency run intelligence operation at all.

Let us pursue this idea in a somewhat roundabout fashion.

Everything can be given a numerical equivalent or reference within a prescribed category. Often such references are immediately recognized without any explanatory text. Here are examples of this . . .

301 555 1581
475 911 7782
800 301 4668

A cryptic message? No, they are area codes and telephone numbers. Notice how easily they can be converted into a 5-digit setup: 30155 51581 47591 17782 80030 14668. All you need to know is the breakdown sequence (3-3-4) to "decode." The point here is that your name and precise location can be reduced to just 10 digits.

Any shortwave monitor knows what SINPO means, but ask non-radio friends. They won't know that SINPO refers to QSA, QRM, QRN, QSB, QRK values. Ask them what the Q codes stand for, and again, they will have no correct answer. When I show SINPO-54344, you know exactly what information I am covering because SINPO is part of a category you are familiar with—shortwave monitoring. Therefore, what can appear as a coded message to one person can be understood and interpreted by someone else. But this does not mean that just because the message appears encoded that it is part of cloak-and-dagger operations.

If I were a dealer in precious metals, I could convey to you exactly what I have in stock, purely by numerics: 10787 93180 19509 00125 19697 42405 . . . The breakdown is simple: 107.87 is the atomic weight of silver—93,180 ounces on hand. The others are platinum and gold, plus their quantities in stock.

All of us have countless numerical references by which we can be identified, yielding all sorts of information; social security number, driver's license, credit card, bank account, and many more. In effect, there is nothing that cannot be converted into a numerical equivalent, and when "decoded", provide very specific information.

Following this line of reasoning, can the SS/YL merely be passing along data, for an item by item reference, for such and such category? If so, then the s/on ident is a category reference, and the group counts represent the item by item information.

The odd alignment of group count usage (shown in Table C) does suggest something other than conventionally worded statements. Are they, in fact, itemized references?

Note that the accent is on the system employed. In this speculation, whether the transmission are of a cloak-and-dagger nature is not really the question. What is being examined is the possible working criteria and interrelationship of the s/on ident and the text itself. But the potentiality of a category/item transmission does alter the singular "spy" possibility to now encompass a much broader field.

Why send the message for 12 consecutive weeks? Some suggest that there are no new instructions, so the current message was simply repeated. This has validity, but on the other hand, the message immediately stands out in subsequent monitoring. A better method would be to change each succeeding message: "We have nothing new for you," "Continue with the original instructions," or even "Mary had a little lamb . . ." denoting no new orders. A continual message change would add to the belief (among number buffs) that the new instructions were being sent when actually none were. Instead, the same message is sent again and again. Why? If we assume that the SS/YL clan are not fools, then the question is not merely why, but instead, what type of data may or does not change over a 3-month period?

We can rule out weather reports, drug prices, foreign exchange rates, final scores in sports, stock market transactions, and a bevy of other items that fluctuate from day to day. We can also exclude items that have a fixed value and never change.

The survey shows that, in addition to regular DTF repeats, the s/on ident versus groups did change, or that the ident was used for only one message. This indicates that the system itself is based on something that may not change over a period of time, but can change over the same time span period.

As an illustrative example, take your credit card. Over a 3-month period, you may use it frequently. Yet during another 3-month stretch, you might not use it at all. Hence your usage figures may not, yet can change.

Obviously, one cannot come up with a definitive answer here. The important aspect is that there is a viable alternative to the "worded message" concept, and this possibility cannot be ignored or dismissed without further examination.

As for the actual on-the-air SS/YL transmissions, they exhibit peculiarities. Poor modulation, transmitter noises, broadcasts made on frequencies already occupied with other traffic. The SS/YL therefore jams herself. This is another indication that transmissions are made in the blind, following the rigidly established DTF pattern. There are numerous on the air slipups, such as tape rewinding, starting one ident preamble and then switching over to another, abrupt mid-count cutoff with no restart, and a variety of other glitches that all add up to something. That something is the SS/YL transmissions are not a matter of life or death, or even that they are very important: no time frame relevance. These on-the-air glitches do suggest that the people handling the actual transmissions are bored by a very tedious and repetitive job.

By utilizing a rigid DTF pattern, a multitude of frequencies, plus an easily monitored AM mode, it seems obvious that the SS/YL transmissions are designed to be monitored by anyone having access to a SW receiver. This aspect is said to be proof that the SS/YL transmissions are to agents in the field: simple, straightforward, and easily copied with unsophisticated radio equipment. But this method is as secretive as a Fourth of July fireworks display. Also ignored is the fact that today's technology has given birth to small, portable equipment that can monitor any type of transmission mode and esoteric transmission medium.

A genuine cloak-and-dagger operation is going to use random time starts (random, that is, to all but those involved). There would be no lengthy and predictable s/on preamble—this to prevent associating transmissions into specific number types; also random would be frequency selection. In other words, do everything necessary to minimize detection of the transmission rather than to make them stand out as they now all do.

Other questions come to mind. Are *all* of the SS/YL transmissions one-way? Or do those daily frequency and signal strength differences indicate a delayed reply from a different and distant location?

Why are the majority of SS/YL transmissions made during nighttime hours? An activity check shows the bulk are made when

Table A

3-Digits s/on Ident Codes (in numerical order) Along With Associated Group Counts (shown in parentheses)
Same group counts denote repeated transmission on a different DTF.

010 (65)
021 (40)
030 (45)
031 (80)
040 (65)
044 (20)
048 (50)
050 (50) (50)
079 (155)
099 (165)
110 (65)
112 (140) (65) (50)
114 (105) (105) (30)
115 (60)
119 (65)
125 (25) (25)
129 (55)
133 (35)
143 (148)
146 (45)
150 (50)
162 (60) (110)
166 (60)
172 (35) (35)
173 (70)
184 (45) (45)
199 (85)
227 (40)
233 (40) (80)
234 (60)
251 (160) (160)
261 (40)
280 (159) (218) (65) (65)
289 (60) (60)
290 (75)
292 (128) (101) (150) (107)
296 (61)
300 (60)
301 (30)
309 (75) (75)
311 (140)
328 (55)
330 (60)
332 (80)
333 (40)
350 (60)
355 (90) (90)
368 (40)
369 (95)
373 (100) (100)
377 (65)
380 (100)
385 (70)
398 (60)
400 (40)
401 (45) (75)
410 (99) (60) (67)
413 (50) (50) (40)
420 (20)
421 (45)
423 (40)
430 (65)
435 (40)
436 (40) (70)
438 (40)
443 (100) (100) (40) (40)
447 (47)
449 (30)
464 (45)
472 (25)
482 (115)
486 (42)
490 (95)
493 (100)
500 (60)
501 (55) (40)
503 (55)
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513 (40) (40)
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527 (70) (70)
534 (105)
537 (148)
538 (30)
548 (40)
550 (30)
551 (100)
552 (125) (125)
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557 (180)
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625 (150)
626 (35)
637 (60)
638 (170)
639 (120) (55)
645 (99)
646 (45)
647 (180)
649 (90)
650 (50)
660 (60) (150) (120)
668 (40) (75)
669 (25) (140)
681 (50) (65)
683 (110) (80)
685 (90) (35) (105)
691 (100)
693 (80)
696 (45) (75)
698 (45)
714 (75)
724 (30)
728 (30)
730 (65)
739 (75) (75)
742 (95)
744 (130)
746 (80)
764 (50)
768 (80)
770 (75)
774 (45)
776 (65)
782 (100)
784 (135)
790 (45)
803 (150) (150)
805 (120)
810 (60)
821 (25)
826 (130)
829 (70) (70)
833 (40) (60)
835 (35)
836 (40)
839 (55) (55)
846 (35)
850 (170)
853 (55) (55)
856 (120)
858 (135)
860 (136)
863 (110)
864 (35)
876 (65)
880 (45)
886 (50) (50)
889 (25)
890 (20)
893 (130)
894 (35)
895 (148)
896 (70)
897 (35)
911 (30)
914 (90)
923 (148) (158)
926 (84) (66) (105) (121)
931 (95)
932 (25)
935 (40)
936 (55) (90)
941 (125)
943 (50)
944 (120) (120)
945 (170)
975 (150)
987 (70)
988 (80)
994 (50)
995 (40)
997 (25)

the entire western hemisphere is in total darkness. Some say this allows agents to be at home, or in their secret radio room, rather than being at a "cover" job. But look at this slightly differently. All businesses have completed their normal day's routine and are now closed. Businesses such as banks, stock markets, major corporations . . . what could that suggest?

The SS/YL transmissions themselves reflect current technology. The vocalized messages are pre-recorded. Monitoring powerful high level comms reveals subtle ticks between each vocalized numeric. These are a signature for electronic insertion. In other words, the run tape we hear is put together, via individual vocalized insertions, from a master source. That is why every vocalized number is the same from a time length duration and pronunciation standpoint. Likewise, each 5-digit group occupies the same time length to complete, including pauses in between.

It must be noted that the SS/YL now uses two female voices. The newer, somewhat deeper tone voice may actually be a slightly slowed down version of the original voice.

So the message delivery is slick and professional. This is not solely the domain of the government/military. The telephone company uses the electronic insertion medium for certain pre-recorded applications.

Technical sophistication goes hand in hand with a seemingly slipshod, "I could care less" SS/YL operation. Is this a haphazard attempt to disguise a wolf in sheep's clothing?

The ultimate reality is that the SS/YL has been going strong for about 20 years. This translates into a very definite financial commitment. Considerable time and energy are also involved, all denoting a dedication to a specific task (no matter how slipshod it may appear). Then too there is the iron-clad security that prevents disclosures by those that are in the know. For these reasons, the SS/YL must have a genuine and very real purpose.

As I stated in the beginning of this article, we have only the alleged word via FCC sources that the SS/YL transmissions come from Cuba. Note that the reference is to Cuba, and not, "of Cuban Origin." This subtlety of wording opens Pandora's box.

Cuba has foreign embassies on its soil, as well as a large Soviet military/intelligence presence and a U.S. Naval base at Guanta-

Table B

Group Counts By 9 Unit Divisions
Data breakdown - 9 unit division followed by group count, and in parentheses, the number of times the group count was encountered; this excludes the 2nd repeat transmissions

00-09	•	NONE			
10-19	•	15 (01x)			
20-29	•	20 (03x)	•	25 (11x)	
30-39	•	30 (12x)	•	35 (12x)	
40-49	•	40 (25x)	•	42 (01x)	
	•	45 (15x)	•	47 (01x)	
50-59	•	50 (18x)	•	55 (15x)	
60-69	•	60 (20x)	•	61 (01x)	
	•	65 (16x)	•	66 (01x)	
	•	67 (01x)			
70-79	•	70 (09x)	•	75 (10x)	
80-89	•	80 (09x)	•	81 (01x)	
	•	85 (02x)			
90-99	•	90 (06x)	•	95 (05x)	
	•	99 (02x)			
100-109	•	100 (09x)	•	101 (01x)	
	•	105 (05x)	•	107 (01x)	
110-119	•	110 (03x)	•	115 (01x)	
120-129	•	120 (06x)	•	121 (01x)	
	•	125 (03x)	•	128 (01x)	
130-139	•	130 (03x)	•	135 (02x)	
	•	136 (01x)			
140-149	•	140 (03x)	•	148 (04x)	
150-159	•	150 (06x)	•	155 (01x)	
	•	158 (01x)	•	159 (01x)	
160-169	•	160 (02x)	•	165 (01x)	
170-179	•	170 (03x)			
180-189	•	180 (02x)			
190-199	•	NONE			
200-209	•	NONE			
210-219	•	218 (01x)			

Table C

Group Counts Arranged By Number Of Times Utilized

40 (25x)	105 (05x)	15 (01x)
60 (20x)	95 (05x)	42 (01x)
50 (18x)	148 (04x)	47 (01x)
65 (16x)	170 (03x)	61 (01x)
45 (15x)	140 (03x)	66 (01x)
55 (15x)	130 (03x)	67 (01x)
30 (12x)	125 (03x)	81 (01x)
35 (12x)	110 (03x)	101 (01x)
25 (11x)	20 (03x)	107 (01x)
75 (10x)	180 (02x)	115 (01x)
100 (09x)	160 (02x)	121 (01x)
80 (09x)	135 (02x)	128 (01x)
70 (09x)	99 (02x)	136 (01x)
150 (06x)	85 (02x)	155 (01x)
120 (06x)		158 (01x)
90 (06x)		159 (01x)
		165 (01x)
		218 (01x)

namo Bay, just to name a few. So the "they're from Cuba" one liner is a cunningly structured statement which, under scrutiny, isn't saying anything specific at all. Now do you better understand why no confirming data has ever been supplied to back up this one line statement?

If the SS/YL are cloak-and-dagger or of otherwise direct importance to our national security, we would certainly never hear them in such a blatant obvious manner as we now do. If of foreign origin, it likewise holds true that their diplo/intel arrangements would be as illusive and shadowy as the world of diplomatic intrigue itself.

But our SS/YL is anything but a discrete lady. She is a clandestine transmission, keeping to a regular daily schedule with a message format and mode that stands out like a lightning bolt in an evening thunderstorm.

Odd and mysterious radio transmissions attract our curiosity, and the SS/YL and her fellow number types have done everything possible to draw attention to themselves. If anything, they are a farce, a joke, a gigantic put on that should be ignored or laughed out of existence.

Yes we could kiss them off as a hoax, that is except for a nagging reality: The all-encompassing envelope of iron clad security that smothers any information disclosure. This alone says that the number transmissions are important enough to warrant the truth about them to be suppressed. In reality, they are anything but a joke—something we've yet to determine masquerades in a jester's costume.

This though, doesn't necessarily mean a direct cloak-and-dagger involvement. Diplomatic comms are security covered, even if these comms simply ask permission to order a gross of toilet paper. Banking transactions are covert, especially on a nation-to-nation level. Big business operations are secret, not only to prevent access by the competition, but many are involved with aspects of a nation's well-being (oil, food, arms, raw material production and procurement, to name a few). These behind-the scene transactions, if disclosed, could have a detrimental affect on a nation's stability or the face it wishes to present to the world. Governments would strive, in one form or another, to protect these types of operations.

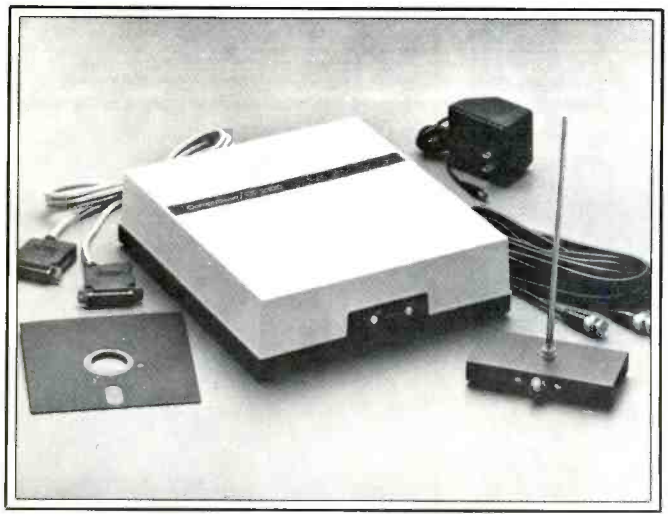
This report was not designed to present you with a set of definitive conclusions. As of this writing, there are no pat answers. Instead we have examined various aspects, posing some of the viable possibilities while trying to interweave one speculation with another. This can be called analysis by trial and error. It is not unlike trying to put a jigsaw puzzle together in the dark.

I have postulated more questions than possible answers, but this is exactly what was intended. The number mystery is not going to be solved if we simply sit back and wait for the answers to fall in our laps. By presenting alternative possibilities, it is hoped that you will follow through on whatever aspect most intrigues you.

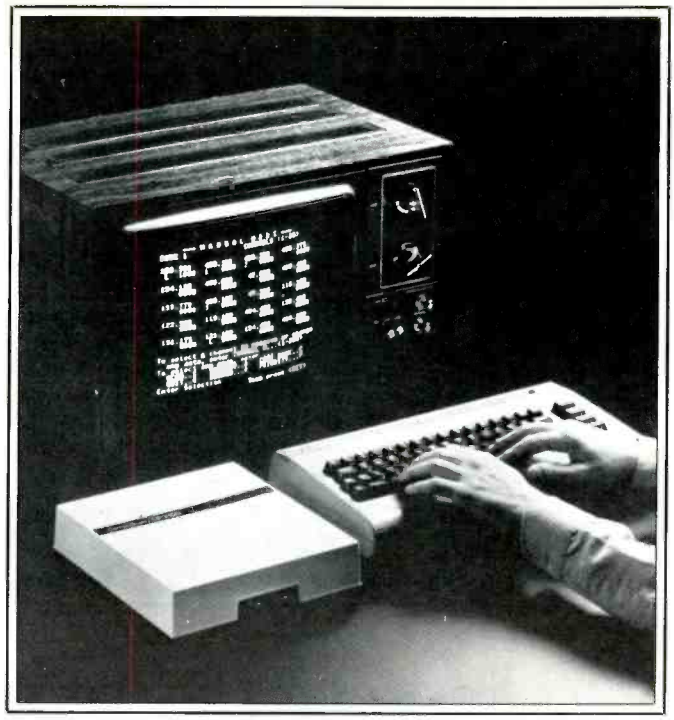
All of the basic pieces of the puzzle are available. The problem is that we must correctly assess the clues in order to bring each piece into proper focus.

Unless the government, agency thereof, or the operators themselves, publicly disclose operational parameters of the SS/YL, it is up to people like you to dig out the answers. I hope that this article has provided an incentive for you to do just that. PC

Product Spotlight:



The Bearcat CP 2100 comes with custom software, custom interface cable, AC adaptor, plus a special telescoping whip antenna with 20′ coaxial cable and mating BNC connectors.



The Electra Bearcat CP 2100 computer-controlled scanner radio.

Computer-Controlled Scanner Available For Apple, Atari, Commodore, IBM, and Osborne Computers

Electra Company announced the Bearcat® CP 2100, the first scanner radio designed as a peripheral for today's popular personal computers. It is available in versions compatible with the IBM Personal Computer, Atari 800, Apple II and IIe, Osborne, and Commodore 64 personal computers.

Combining the power of a personal computer with the microprocessor and R.F. technology of Bearcat scanners, the CP 2100 can monitor police and fire calls, federal, emergency, industrial, railroad, and amateur radio transmissions, Coast Guard rescues, and aircraft communications.

In addition, the Bearcat CP 2100 is the first scanner that can display detailed information about a service being monitored. Each of its 200 channels can be programmed to display the source and location of a transmission, 10-codes, phone numbers, and more. Whenever a broadcast is monitored, the information programmed into the channel will automatically appear on the screen. For scanner enthusiasts, the Bearcat CP 2100 can eliminate alot of record-keeping. In the newsroom, it can help news crews be dispatched to the scene of a story with less confusion.

This new computer-controlled scanner also offers several other major scanning breakthroughs. Its 200-channel capacity is three times that of the most sophisticated keyboard programmable scanners. Channels are grouped into banks of 20. The Bearcat CP 2100 is also the first scanner to feature multiple priority levels. Users can select up to three different priority frequencies so most important calls will be heard first. During a priority transmission, the video monitor will flash to alert the listener. "Search/Store/Count" lets users search frequency ranges of their choice for active channels. The scanner will automatically find all active frequencies and store them in separate memory without the need for the operator to be present. The count register shows how many transmissions were noted on each active frequency. In addition, every channel includes four auxiliary settings which can be programmed to activate tape recorders, alarms, and other optional equipment whenever a call is received on the programmed channel.

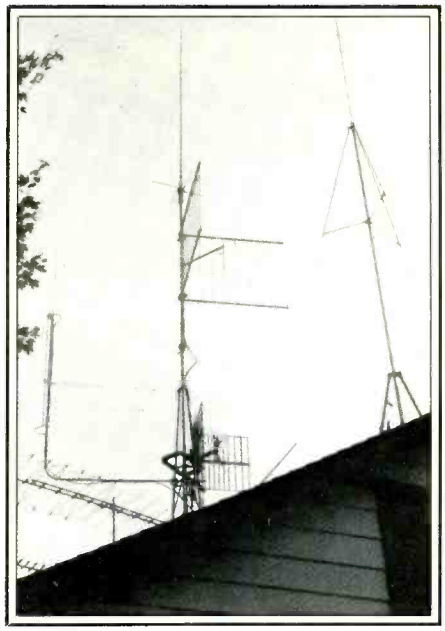
Other features include patented "selective scan delay," "automatic lockout," "automatic and manual search," and patented "track tuning." The scanner's wide frequency coverage includes 10-meter, 6-meter, 2-meter, and 70-centimeter Amateur, VHF Low and High, VHF Aircraft, UHF and UHF-"T," and Military Land Mobile bands.

The Bearcat CP-2100's basic package includes the radio, AC adaptor, plus a special telescoping whip antenna with 20′ coaxial cable and mating BNC connectors. Custom 5-¼″ program diskette, custom interface cable, and manual are packaged separately for compatibility with different models of computers. Software can be user-modified to suit individual needs.

The suggested retail price of the Bearcat CP 2100, including both hardware and software packages, is $499.95. For additional information, write: Electra Company, 300 East County Line Road, Cumberland, Indiana 46229. PC

This information extracted from manufacturer's literature.

Chuck Robertson's antenna farm includes a drooping ground plane antenna, a tri-band scanner antenna that has wide-band frequency coverage, UHF and VHF corner reflectors, and a UHF pre-amp and VHF narrow band pre-amp.



International Monitoring On Your Scanner!

South Of The Border: The Skip Rolls On!

BY CHUCK ROBERTSON, #IL-141 AND DAVE BEAUVAIS, KB1F

In the July *POP'COMM* we introduced you to some of the exciting long-distance communications from Central and South America that are yours for the picking in the 30-50 MHz band. In many parts of the United States, this skip is heard on an almost daily basis, and you need nothing more elaborate than a programmable scanner and a ground plane antenna to become part of the monitoring action. The secret is knowing where to look for these sometimes mysterious but always fascinating transmissions.

We have a great deal of new information, and also some hot new Central and South American frequency loggings that our readers will want to explore. For this reason, we'll hold off on our promised examination of the domestic military skip scene and the colorful Caribbean radio services, to turn our attention once again south of the border—this month not simply to Central America, but to Mexico and South America as well.

Central America

In late February and early March, English-speaking Spanish military personnel were heard testing what appeared to be a previously unknown multi-channel radio system at the low end of the 30 MHz band. At least one reference to it as the "Tegucigalpa Net" was noted (Tegucigalpa being the capital of Honduras, where major U.S. military operations are continuing). A few U.S. military personnel were heard, and the Spanish soldiers in the operation occasionally switched to straight Spanish. For the most part, however, transmissions were in English.

Identifiers were standard phonetic letters followed by a two-digit number. The number 34 was common: Alfa 34, Bravo 34, Kilo 34, India 34, Oscar 34, Papa 34, Victor 34. Also heard : Victor 35; Oscar 44; Oscar 55; Charlie 64, Juliet 64, Kilo 64, Uniform 64; Papa 24, India 24, Oscar 24, Kilo 24; Alfa 72; Gulf 75, Victor 75; India 74.

The "Tegucigalpa Net"

30.00: "Air Field 6" "Do a 180° around the camp."
30.135: Active (radio checks)
30.190: Main channel. 30.335 is an alternate main channel. These two are used in a simplex or semi-duplex configuration.
30.200: Soldiers on this frequency would communicate with those on 30.190, although they appeared to have difficulty. Did they realize they were 10 kHz off frequency?!
30.250, 30.260: English-speaking Spanish military personnel. Lots of references to airlifts and long coded lists have been noted. These two channels were used semi-duplex and simplex.
30.285: Active (radio checks only)
30.300: Active (radio checks only)
30.335: Alternate main channel (paired with 30.190)
30.350: Active two-way communications between 30.335 and 30.350 were noted on several occasions. Again, the parties appeared to have difficulty communicating. Perhaps some of these radios have been crystaled up to the wrong channels—or else the inexperienced operators are trying to use them cross-channel!

During one period of split-channel simplex communications between 30.335 and 30.350, Juliet 64 was trying to raise Charlie 95, when who but the awesome Long Rifle —the range controller at Camp Pendleton Marine Base in California—came blustering in and informed Juliet 64 that he was on the "Marine Corps Base Safety Net, California"!!! We can only imagine what he would have said if the intruding skip had come from the Russians, as happened in 1977/78!
30.15, 30.19, 30.40, 30.50, 30.90, 30.95, 31.90, 32.00: Miscellaneous Spanish/English military coms, occasionally very active. Unclear how many of these are part of the core network. Typical transmissions on 30.95: "Post 6 to Guard Shack." "Guard Shack to Post 6." "We need a BDA for the MPLD and the attached infantry." (Hope he got one!)
32.01: Scrambling of an analog or time-domain variety, sounds to be Spanish language. A tone burst begins and ends each

transmission. A marine operation attempting to use the same frequency makes reference to this traffic coming "from Honduras." His identifier, "Uncle Marti"—trying to contact craft on "International [Channel?] 22. Location of "Uncle Marti" must be very close to Honduras. Obviously it's tempting to draw a parallel between "Uncle Marti" and the Farabundo Marti National Liberation Front (FMLN) of El Salvador. Perhaps the identifier was chosen for its obvious humor—or perhaps this marine operation is something less than friendly to the American military interests with which it shares the channel!

32.05: "We're opening the gates to the motor pool." One particular Sunday, Spanish SSB coms were heard all day long on this channel. U.S. and Spanish joint coms in clear voice have also been heard.

30.05, 32.10, 32.24, 32.585 (jumped channels to 30.335 and then to 32.75), 32.60, 32.69, 32.75: Joint U.S./Spanish military traffic noted on all these channels. 30.335 and 32.75 are sometimes keyed simultaneously with the same traffic. Probably a control station operating several transmitters to different receive sites for systems.

One particularly interesting exchange on 32.585 and 32.600 (split-channel simplex) involved a Honduran convoy near Yojoa. One of the "5 ton trucks" had mechanical problems and had fallen behind. The Honduran wanted the truck to get out of there fast. They also mentioned something about a package on the back of the truck—possibly weapons that the Salvadoran guerrillas would love to have! Yojoa is near the mountainous border between Honduras and El Salvador—pretty much no-man's-land, or any-man's-land. Guerrillas use this forsaken area to retreat from the Salvadoran army after raids. Lately there has been an increased push by the Hondurans to remove guerrilla bases and roadways in this area. In any event, the truck caught up with the convoy, which had stopped to wait for it.

Uniform 36: "The vehicle that was staying back, it's already with the convoy at the present time, over."

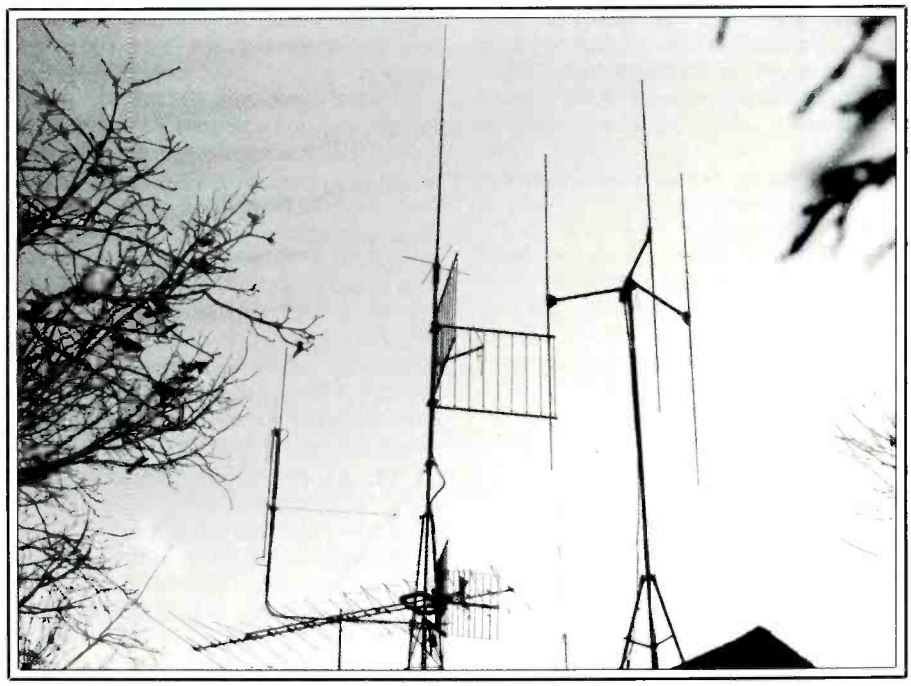
Uniform 58: 36, this is 58, I'm waiting. The whole company's together, so I'm going to continue the march.

Sounds like there may have been a convoy *and* a company of foot soldiers.

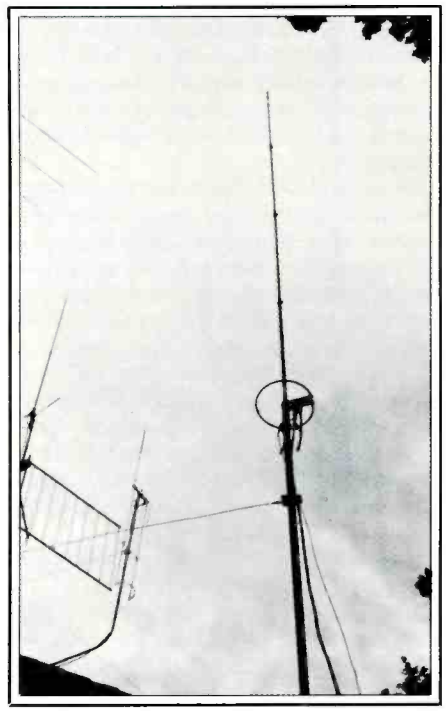
Whatever the purpose of the "Tegucigalpa Net," it certainly promises to keep things interesting at the low end of Low Band! The temptation is great to speculate on the relationship between the radio net and "an extensive network of Honduran military bases, some austere, but most of which are being improved and expaned with American funds (*The New York Times* Feb. 24, 1984). These remote bases are bound to have logistical inter-communications needs which would be met very well by such a sprawling radio network.

But Honduras is not the only spot of the

This photo features Chuck Robertson's Antenna Specialists Super Scanner CB antenna, Model MS 119. It's cut to 40 MHz, which means it's exactly 2/3 its original dimensions. Around 40 MHz, it's great; but the uncut antenna is best for the 30 MHz area.



There is plenty of military activity taking place throughout Central America and you should be able to hear much of it on your scanner.



The Cushcraft Ringo CRS-3, tuned to 33 MHz, atop Chuck Robertson's house.

current Latin American skip season. Military or paramilitary operations in the troubled former Dutch protectorate of Surinam (see last month's installment) continue to be heard in North America.

30.05: Dutch dialect, identifier "One, One" (this channel also used by "Tegucigalpa Net," probably coincidental)

30.265, 30.515: Dutch dialect, possibly business operations in Surinam or Netherlands Antilles.

32.05, 32.125: These are business channels, Surinam.

32.10: Surinamese (Dutch dialect) police or paramilitary. Identifier "White." "We've got some street lights out." "Report of a man with a gun."

32.175, 32.20, 32.25, 32.30, 34.55, 36.025: Business channels, Surinam. 32.20 uses identifier "Mike." Appears to be a factory operation of some sort.

32.20: (unrelated to above). A base station in Guatemala, which identifies "Guate" for short.

32.25: Definitely Surinamese/Dutch dialect. Use unknown.

32.30: Coms similar to 32.20.

Many types of dispatch, both land-bases and maritime mobile, have been heard from throughout Central America this skip season. Operations are in simplex (except where repeater operation is noted). Some examples:

31.44, 31.48: Maritime mobile. Gulf Marine Corps. ships and barges cruise the Central and South American waters and often give their location and destination data on these frequencies. Here's what "Captain Slim" of the Gulf Soul had to say one afternoon: "Present position North 14° Longitude 83° 09 . . . speed 7.2 knots . . . wind from the east 5 to 8 knots . . . sea from the east 1 to 3 knots . . . miles traveled 1009 . . . miles to go 121 . . . ETA for 0600 in the morning . . . I'm going to Nicaragua in the morning. Got my machine gun with me, ha ha!" The Gulf Soul was coming from Mexico, and the captain was also Mexican (or at least Spanish) and spoke good English. Destination was thought to be Laguna de Perias, Nicaragua.

Other Gulf Fleet vessels have been heard discussing the security precautions beng taken in Nicaraguan ports. Sand bags are in place along the waterways, with armed personnel behind the bags. Ships were also heard commenting on the possibility of hitting mines, as so many other vessels (including at least one Soviet tanker) have done in the past few months. The personnel seem to be resigned to the danger, choosing to laugh about the very real possibilities for catastrophe. (See May 1984 *POP'COMM* for more information on Gulf Marine's vessels.)

31.96, 32.78, 42.275, 42.975: Business channels, El Salvador.

32.46, 35.15: Business channels, Managua, Nicaragua.

34.06: Business channel, Tegucigalpa, Honduras.

37.35: Business channel, Republic of Panama.

39.34: Business channel, Santa Barbra, Honduras.

49.60: Republic of Panama (government channel).

And another old mystery—voice reading from a script in which the phrase "Would you record—now?" is repeated over and over, with the blank filled by a different one-syllable word each time the phrase is repeated—is still with us.

32.60 ("Alpha channel), 32.75 ("Bravo" channel): "Would you record—now?" Recently a high-pitched tone has been noted between statements. Operators seemed to be having some difficulty with the radios. Morse code also heard on this channel.

DVP (Digital Voice Processing—a virtually uncrackable mode of scrambling) was also used on these two channels during the exercises, believed to be AWACS intercept training runs. "Headmaster" asked to go "covered," and a minute later DVP was heard. There were some very long periods of this static-like scrambling. If one were to come across that it was simply a repeater with an open squelch. Not merely scrambling, but a very effective form of camouflage to boot!

30.05, 30.35: More DVP was heard. Long Rifle (Camp Pendleton, California) was also heard on 30.35, but this did not seem to be related to the scrambling. 30.05 also carries clear-voice U.S. and English-speaking Spanish military personnel (whose transmissions occasionally interfere with Camp Pendleton ops, as noted above).

31.30, 31.40, 31.45, 31.55, 31.70: Other miscellaneous U.S. tactical operations were noted this spring. Joint U.S. and English-speaking Spanish military communications were heard on 31.40. All of these 31 MHz frequencies were part of the same exercises. Spanish language military communications were heard at roughly the same time on 33.45, but it's unknown if they were related.

And finally we look at three new *Hot Catches* from the Honduran/Nicaraguan border region! A group of closely-related repeaters deserve your attention—especially if you speak Spanish. Something very interesting is happening here.

33.475 (repeater output), 39.475 (repeater input): Tactical repeater, possibly Honduran. Also repeats U.S. police departments on 39.480 MHz. When skip signals to the repeater are weak, tremendous distortion is noted. But if the skip signals are sufficiently strong, they will be repeated loud and clear. As for the owners of the machine, they occasionally put in an appearance—reciting long and mysterious lists of numbers!

33.675 (repeater output), 39.675 (repeater input): Repeats U.S. police departments from 39.68 MHz—but that's only the beginning of the story! The repeater seems to be used by a "logging company" in Honduras. Timber is big business in Central America. But visiting medical personnel from Central America auditioned a tape recording of these repeater operations, and concluded that there is something "fishy" about the operation—"timber" may in fact be a code word for arms or other contraband. The "lumber" operations mention place names in southern Honduras and northern Costa Rica. Many communications are being repeated from mobiles and handhelds. One conversation involved obtaining "5,000 crystals" from Guatemala! (They must have one hell of a forestry crew with hand-helds working those woods—or did they really mean something else?!!!)

33.875 (repeater output), 39.875 (repeater input): Static heard, but no skip—input appears to be channel-guarded (CTCSS or comparable system). Repeater is purportedly used by hospitals/doctors for communications to and from remote sites. "Wounded" are mentioned—but what is happening is not clear. May well be Nicaraguan contra operations, or even the Nicaraguan military engaged in guerrilla warfare with the contras. Spanish-speakers are desperately needed to monitor this close-knit family of repeaters and report on what's being heard!

38.00, 40.01, 40.25, 41.10, 42.35, 43.20, 43.44, 44.04: Other Spanish coms, location unknown. Fairly high up in the band—likely to be either sporadic E or tropospheric skip.

Mexico

The United States of Mexico, or Estados Unidos Mexicanos, comprises 29 states, two territories, and one federal district, Mexico City.

The various Mexican Police forces sometimes turn up in the spring and summer avalanche of sporadic E on Low Band. Police operations are split into two major forces: the Judicial Police of the Federal District and Territories; and the Federal Judicial Police, who are responsible for the 29 states. Additionally, most states and some municipalities have their own police department. Most channels are located in the VHF High Band area, but there is a limited use of Low Band frequencies—especially for repeater outputs.

Try your hand at these Mexican operations when the band is open to south Texas and the Gulf region:

31.85 (repeater output), 32.20 (repeater input): State and Federal Judicial Police.

40.39: Assigned to Secretary of Agriculture—three-tone signaling tone on channel.

40.82: Mexicali Fire Department.

31.85 and 32.20: Prime indicators of band openings from Mexico. There are many utility bases located around the country using these frequencies.

The main user of Low Band, however, seems to be the country's petroleum monopoly, Petroles Mexicanos (PEMEX). Production is geared toward supplying domestic fuel needs, although the OPEC cartel's antics have resulted in new interest in the exploration and development of the vast oil fields in Mexico and the Gulf of Mexico, off Tampico, where reserves are estimated to exceed 10 billion barrels.

30.25, 33.55, 33.76, 34.86, 38.30, 38.50, 38.60, 38.86, 39.66, 39.88, 40.25, 40.36, 40.40, 40.45, 40.56,

44.275, 44.30, 44.325, 44.55: PEMEX and Petroleum-related operations.

One curious footnote: over the last 3 years, we've noted what appear to be RF spurs (or spurious emissions) generated by the oil rig operations on 33.55 and 33.76. Both frequencies are used by the same operation, which is located in the state of Zacatecas. These spurs are weaker than the actual channels, but when the skip is coming in hot and heavy, it's impossible to tell the difference by judging the signal strength alone. The giveaway is that no mobiles are ever heard on the spurs. Just the bases.

Two Mexican Utility Frequencies and Their "Spurs"

Actual Channel	Spurious Channels
33.55	30.45
	31.70
	32.31
	32.93
	34.78
33.76	31.29
	31.90
	32.53
	33.14
	34.38

Notice that the spurs mostly fall within .61 or .62 MHz of the actual frequencies (or a multiple thereof). The fact that these spurious emissions have been heard for several years gives an indication of how sparsely populated Low Band must be in Mexico. Otherwise, some other spectrum user would have brought this garbage to the attention of the operators.

Then again, maybe you don't complain about the oil company in Mexico!

South America

With a few major exceptions (notably paging and mobile radiotelephone operations in Argentina), Low Band skip from deep within the South American continent is not as common or as easy to hear as skip from Central America and the Caribbean.

There are two major factors at work accounting for this. The first is economic: VHF radio systems (especially business radio users) are not very widespread in developing countries such as Peru, Uruguay, Ecuador, and Bolivia. Argentina and (to a lesser extent) Brazil, with high degrees of industrial development, are much more widely represented in spectrum use, and are therefore much more common on this band.

Radio propagation is the other big factor limiting Low Band access to South America. The continent is not accessible by sporadic E—except in the very rare case of triple or quadruple hops, which require that the reflecting clouds be very precisely and optimally aligned! And with the presently declining reflectivity of the F^2 layer, even this normal means of long-distance propagation is marginal at best during the trough of the sunspot cycle (which we now occupy).

The case would seem hopeless—but it isn't! From around the U.S. and year after year, no matter where we stand in the sunspot cycle, monitoring reports have poured in claiming that Argentinian radio paging services are being heard *daily* on frequencies as high as 40 MHz—even when the rest of the band is completely dead! What the deuce is going on here?

What's going on is a series of spooky phenomena known as *tropospheric ducting* and *tropospheric aurora*. (The mechanics of this propagation were discussed more fully last month.) Briefly, the extreme outer fringe of the ionosphere in equatorial regions is being electronically thickened and reflectorized by constant direct solar bombardment.

New satellite studies have shown that there is in fact a tropical aurora corresponding to the polar aurora; and it is assumed that these zones of auroral disturbance (which extend about 15 degrees north and south of the geomagnetic equator) are acting as curtain reflectors for strong VHF signals, just as the northern and southern polar curtains do. The "fluttery" quality of signals originating under these "zones of disturbance," especially at times when the normal F^2 layer is not working, tends to confirm the auroral hypothesis.

It's also been suggested that the much-heard Argentinian paging services (there certainly are a lot of them!) benefit from two conditions: their excellent transmitter siting and high power, and the geographical location of Argentina beneath the southernmost zone of tropical auroral activity. Both of these fortunate accidents tend to account for the fact that the paging services are getting through to North America when nothing else can be heard!

Much of Brazil lies under the northern zone of auroral disturbance, and although there seem to be less transmitters in operation there than in Argentina, it's not at all uncommon to hear Portuguese-language communications on Low Band. Unless there is evidence of other Europeans on the band at the time, these Portuguese-speaking transmissions can be assumed to be Brazilian in origin.

These phenomena are very exciting ones to monitor, precisely because the means of propagation are not completely explained, and systematic scientific studies are continuing. To make the most of tropospheric DX from South America, you'll need a fairly good antenna—preferably a groundplane or directional array which is peaked in the frequency range of 30 to 35 MHz. The stick whip on the back of your scanner may work fine for strong sporadic E skip—but it's just not going to cut the mustard for most tropo signals!

What follows is a selected (by no means an exhaustive!) list of South American DX loggings on Low Band. Some of these signals, especially the repeater outputs in the Colombia-Venezuela region, are heard best during the seasonal spring and autumn peaks of F^2 propagation. But many of them—notably the Argentinian radio pagers—are year-round staples of the tropo mode. The next time you're bored to death by a hopelessly dead band, simply pop a load of these Argentinian paging frequencies into

your scanner's memory bank, and see what happens!

South American Low Band DX List

29.980 (AM), 30.08, 30.24, 30.66: Argentina radio paging
30.00, 31.02, 31.58: Portuguese, Brazil
31.09: "Planta," Spanish
31.35, 31.86: Argentina radio paging ("the most persistent pager"—heard daily, and as far north as Canada!)
31.56: Antonio, Venezuela
31.94, 31.96: "San Tome," thought to be Venezuelan oil operations
32.30: Brazilian military
32.61, 32.68, 32.76, 32.82, 32.86, 32.96: Argentina radio paging
32.02, 33.02, 33.10, 33.16, 33.45, 33.54, 34.06, 34.86: Portuguese, Brazil
33.84, 34.06, 34.30: Argentina radio paging
34.41: Spanish, Argentina
34.66: San Tome, Venezuelan oil operations, simplex
34.75 to 35.00: (in 50 kHz steps) South American mobile radiotelephone services, probably Argentina.
35.08, 35.18, 35.28, 35.32, 35.60, 36.02, 36.06: Argentina radio paging
36.87: repeater output, Portuguese, Brazil (input 33.87)
36.90: repeater output, Venezuela (repeats U.S. fire departments on 33.90 input!)
36.97: repeater output, Portuguese, Brazil (input 33.97)
37.42, 37.62, 38.30, 38.36: Argentina radio paging)
37.60, 38.26, 39.02, 39.50: Portuguese, presumed to be Brazil
39.18: Venezuela National Parks
39.625 to 39.750: (in 25 kHz steps) South American mobile radiotelephone services, thought to be in Colombia/Venezuela region
39.64: Argentina radio paging
39.86: "Control," Portuguese, Brazil
40.08: Spanish, South America (location unknown)
40.13: Portuguese, Brazil
40.38: repeater output, Portuguese, Brazil
40.44: Spanish, South America (location unknown)
40.46 (repeater output), 44.94 (repeater input): San Tome, Venezuela. Repeats U.S. state police departments from 44.94.
40.58 repeater output: Portuguese, Brazil
40.64 repeater output: Portuguese, Brazil
40.65 (repeater output), 44.20 (repeater input): San Tome, Venezuela. Repeats U.S. motor carrier traffic from input. Some repeated skip positively identified: KWT708 (Lima, NY), KGF684 (Baltimore, MD), KJT755 (Hanover, MA), KNBP847 (Industry, PA), WOR639 (Ellinwood, KS), KAL958 (Hill City, KS).
40.72: Portuguese, presumed to be Brazil
40.90: repeater output, Portuguese, Brazil
40.92: repeater output, Rio De Janiero, Brazil
41.14 (repeater output—input not known): "La Paqua." Texas and northern Mexican business communications are repeated. The machine is believed to be in Venezuela.
41.20 (repeater output), 35.96 (repeater input): Thought to be Venezuelan oil operations. The New York business KCW513, Winters Railroad Service, North Collins, was heard IDing several times over the repeater. The only frequency licensed to KCW513 is 35.96 MHz. KUX696, Jimmie's Fuel Service, Inc., Thomaston, CT was also repeated from 35.96
41.22 repeater output: Portuguese, Brazil
41.35 (repeater output), 35.22(?) (repeater input): Venezuelan police operations. Phone-in paging from the U.S. on 35.22 is also repeated.
41.42 repeater output: "Planta Emario"
41.62 (repeater output), 39.46 (repeater input): San Tome, Venezuela. Repeats U.S. police departments from input
41.66: Spanish, South America (location unknown)
41.70: Spanish, South America (location unknown)
41.90 (repeater output), 39.70 (repeater input): San Tome, Venezuela. Repeats U.S. police departments from input.
42.00 repeater output: South America
42.08: Portuguese, presumed to be Brazil
42.30 repeater output: South America
42.54: Spanish, South America (location unknown)
42.825, 42.875 repeater outputs: South America, sometimes accessed simultaneously, sometimes separately. "Cuentas" ("account"), names and numbers noted. Business-related.
43.74: Argentina radio paging
44.50, 44.71, 44.76, 45.21, 45.28, 46.10: Spanish radiotelephone, location unknown.

South American Non-Voice Signaling and Data Frequencies: These signals, admittedly not very interesting to listen to, feature either "3-tone" telemetry (a somewhat obsolete system once used extensively in the U.S. for "traffic light" control) or ASCII. DF bearings and occasional Spanish voice coms over the data point to South America as place of origin. They are used for remote sensing and metering of oil or water pipelines, flow rate, etc. Frequencies commonly noted: 33.02, 35.02, 35.55, 35.575, 35.60, 35.625, 35.65, 35.675, 35.70, 35.725, 35.75, 37.575, 37.725, 39.02, 39.66.

We'll leave you this month with an observation about scanning the low end of Low Band. "Not all scanners are created equal!"

It would be interesting to see a report comparing Low Band performance among the leading scanners.

If you find you simply can't afford that dream vacation in Rio this year, just lie in the shade with your sombrero, your iced lemonade and your trusty scanner! It's the next best thing to being there! PC

(The authors wish to extend their sincere thanks to colleagues Mike Britt and Rickey Stein for their ongoing help in logging and identifying many of these prize "catches.")

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The Amazing Flight Of The Blue Eagle

Was It A Pirate Station? A Secret U.S. Government Station? After It Happened, There Were Few Who Were Willing To Explain!

BY HARRY CAUL, KIL9XL

It began in the early summer of 1964. Music appeared—and voices too—on the airwaves. "This is the Voice of The Blue Eagle relaying the Blue Eagle Network," announced the station just before it broadcast its own theme song entitled "The Blue Eagle Blues" played in the familiar 60's style beat made popular by groups such as the Beatles.

Listeners wondered about this new signal. Commercial broadcasters not only wondered but also became concerned because the station was causing interference to their signals. What or who was the mysterious Blue Eagle, the station without a callsign, and where was it located?

Although the station was heard over a wide area, it seemed to be centered in the area of Baltimore, Maryland. It was absolutely spooky and it wasn't going to quit. Was this voice of an unseen enemy or a foreign power plotting against the nation? Were these the broadcasts from UFO people from outer space?

What might a concerned citizen do when haunted by a spooky radio voice that announces no callsign, no location, and offers no suitable explanation for its existence? Many listeners just sat back and took it all in, but at least one DXer in Baltimore wrote to the Federal Communications Commission to ask, "Who is the Blue Eagle and what's going on here?" Surely the FCC would know, they are the people who authorize the stations we hear on the airwaves and police the frequencies to make certain everything's going as planned.

Back came the answer on official FCC stationery: "The station which you intercepted was unlicensed. Engineers from field offices of our Field Engineering Bureau located the station and while not actually observing the station in operation, contacted the suspected operator and warned him of the possible results and penalties of such unlicensed operation."

It was a straightforward enough answer and seemingly explained away the mystery station, although it was a bit odd that the FCC might send a warning to a person whom the agency had "not actually" observed operating the station. Previous announcements from the FCC relative to catching pirates were always fortified with reports of FCC field engineers walking in on such stations while they were in the midst of their broadcast schedule.

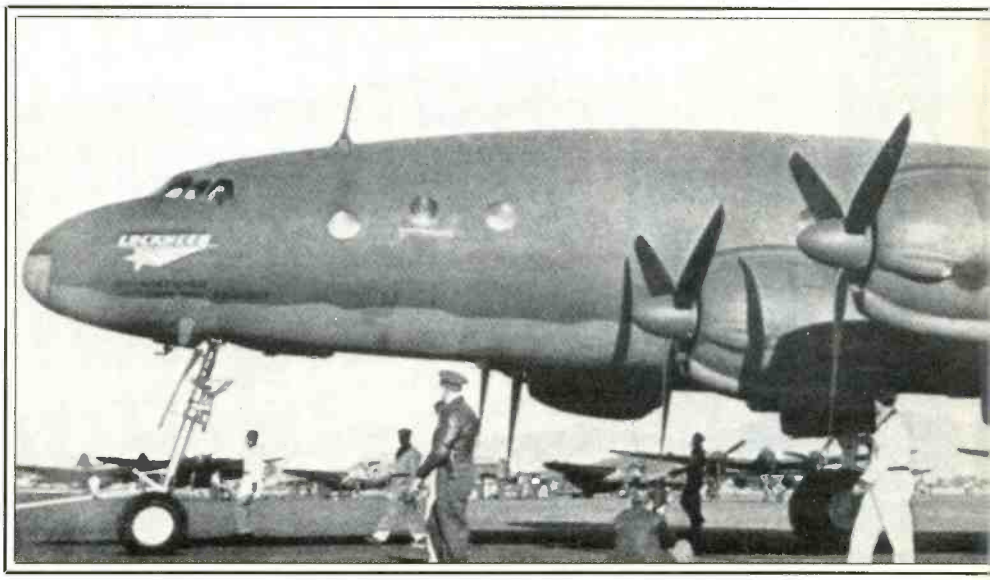
No matter, the FCC did seem to be aware of the station and they said that they had handled it in their own way. Probably just some guy with an unlicensed transmitter expressing himself over the air. It wasn't an unheard-of situation and, anyway, it was apparently all in the past now that the FCC had buried the problem.

Only the problem just wouldn't stay buried. True to its spooky image, the Blue Eagle arose from its designated grave. A few days after the FCC wrote its explanatory letter, the Blue Eagle was heard again—same frequencies, same programming, same theme song, same interference! While the FCC letter did seem a bit odd, in view of subsequent developments it was all the more curious!

Piecing The Story Together

It was not until much later that anyone was able to gather together a sufficient number of pieces of the story to even attempt to come to grips with the overall situation. The complete story, even to this day, has never been fully and completely explained and no official account has ever been released. The closest thing to an official explanation came in a second FCC letter, written two months later in response to another inquiry about the Blue Eagle: "Regarding *The Voice of The Blue Eagle;* what has been observed

This Constellation is the type of aircraft that housed the infamous Voice of the Blue Eagle.



(heard by you) was the U.S. Government intermittent testing of broadcasting operations and related facilities for world-wide use. Because it is a government operation, it is not licensed by the Commission and the identification *The Voice of The Blue Eagle* is used in lieu of a callsign."

Inasmuch as both FCC letters were signed by the same member of the FCC staff, it certainly raised many questions with radio fans. In many ways it recalled the situation that had come about only four years earlier with Radio Swan, the CIA backed anti-Castro broadcaster located on Swan Island, (then) a U.S. possession in the Caribbean. The 50 kW broadcaster was operating on 1160 kHz and creating massive interference to the operations of KSL in Salt Lake City and WJJD in Chicago. When asked about the existence and operations of Radio Swan, the FCC replied that it had no information in its files on such a broadcaster.

The Blue Eagle situation became even more confusing when the DXer who wrote the original letter called the local FCC office in Baltimore to report that the station was still on the air. The DXer later stated, "Though I was engaged in conversation for about ten minutes I didn't find out much. He told me that the person who wrote me at the time was not aware that the Blue Eagle was authorized." How was it that a field engineer had better information on a station such as this than a staff executive in Washington? There were *some* answers and they were located somewhere between the place where eagles turn blue and tape turns red. In fact, there was a rational explanation.

To be sure, the story began in Washington. The idea originated somewhere deep within the cloistered walls of the Pentagon. The concept was to take a large aircraft and outfit it with generators and also broadcasting equipment for the standard AM band, shortwave frequencies, and even TV channels. The result would be a truly mobile radio-TV station that could become an instant propaganda and information tool anywhere in the world. The exact mission would depend upon what missions might be available. Whatever the need, the station could be sent there without delay. A somewhat similar plan had been used successfully by the Voice of America when it equipped a Coast Guard cutter, the *Courier*, with elaborate broadcast gear and anchored it at the island of Rhodes in the Agean Sea near Greece and Turkey.

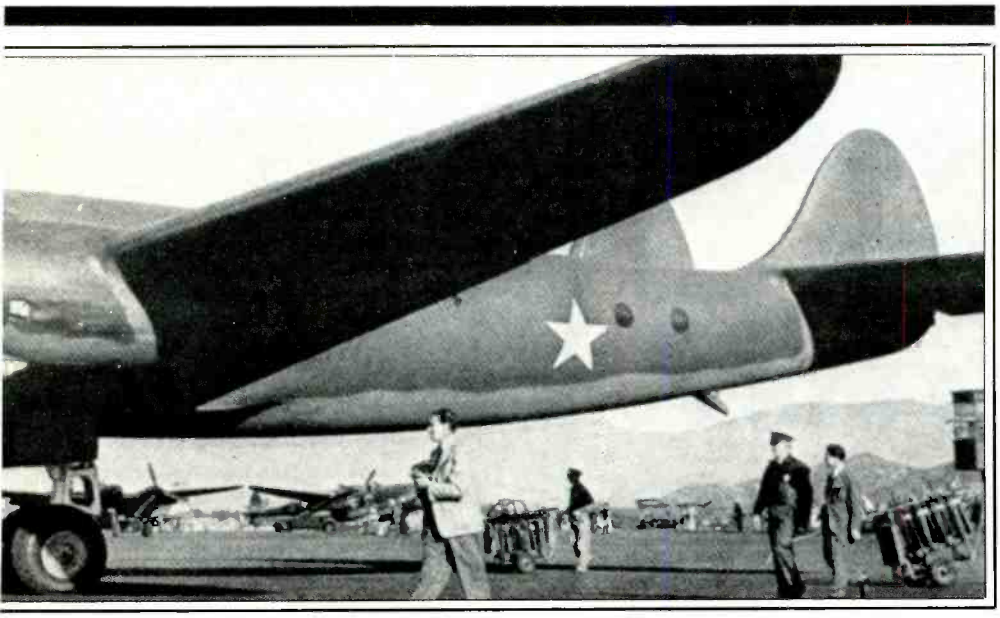
The scheme was farmed out to the U.S. Navy, which rounded up an old Lockheed Constellation for the job. The Constellation, better known as a "Connie," was a four engine semi-antique aircraft with three tails. Connies had been designed in the early 1940's as TWA luxury liners, and were able to carry 64 passengers. During WWII the Connies became known as the C-69. By the 1960's the Navy had dubbed it the C-121. Its four 2,000-hp engines could lift it to 35,000 feet. Being relatively slow (as opposed to jet aircraft), the Connie was well suited to be the platform for a flying broadcast station. The Navy set about converting the aircraft into a flying broadcast station, equipping it with two broadcast transmitters, two shortwave rigs, and a UHF television transmitter, along with the antennas for these units. It was quite a load they stuffed into the old Connie, as tests would prove.

Though the Navy and the others in the Dept. of Defense (and other agencies which participated in the Blue Eagle project) had no apparent desire to hoodwink the FCC, the possibility that they might be doing so anyway most likely didn't cause them to lose any sleep. The FCC "has charge" of broadcast frequencies and the licensing of stations hereabouts which operate thereupon, but the agency doesn't actually license or authorize stations operated by other agencies of the federal government including the military. The agency does acknowledge that there are certain communications frequencies and band segments set aside for federal use; when FCC licenses are issued they are generally not for operations in those "reserved" bands. As a courtesy, or perhaps just in theory, other federal agencies let the FCC know if they have the need to use frequencies normally regulated by the FCC. The trouble is, bureaucrats are sometimes either jealous or others of a feather, or (even worse) callously indifferent to them, as they tend to guard their independence.

Once the Navy got its prize project put together, it had come up against the reality of giving it an on-the-air identification. A regular AM or TV broadcaster would have a callsign, but since this one wasn't going to be licensed, it would have a name—the same as Radio Swan or The Voice of America. Some unknown and unheralded person came up with the name Blue Eagle, presumably because there's an eagle of that color in the Navy's emblem.

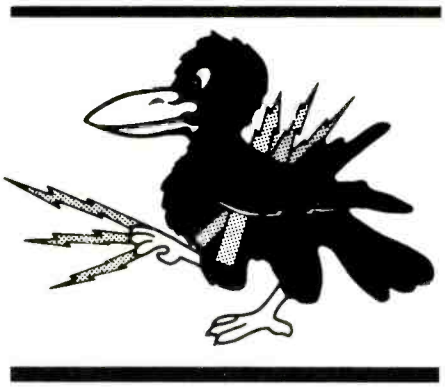
Here is where the fun began. Testing was required and, since the station would be transmitting on the wing, that was where and how the tests were to be conducted. Up went the Blue Eagle. Up and down the East Coast it flew, transmitting all the while. In retrospect, it seems that the programs might have been assembled before the plane took to the sky but, from the way things went, it seems doubtful that there was anything done except some improvisation. Crewmen apparently took turns playing at being DJ's. They had jazz, country music, rock, pop songs, even BBC relays, plus the programming of two nearby commercial radio stations, WLDB and WMID in Atlantic City, New Jersey. Signals from the latter apparently were picked up directly off the air and retransmitted. After all, the station was really only performing technical tests on the transmitting equipment and antenna systems and seeing what its signal coverage would be from different altitudes; there was no intention of providing propaganda or entertainment to any specific audience. Blue Eagle was merely filling out its signal with random modulation.

Blue Eagle was first reported by listeners on 19100 kHz. The signals were at fair strength in the National Capital area, though they tended to fade from time to time and the so-called programs had even tended to vanish right in the middle of a musical selection. It is not known if this was because of the aircraft's flight characteristics or because the testing process of the equipment caused the transmitter to be turned on and off intermittantly without regard to the programming. These signals were puzzling but caused no trouble. The trouble began when the Blue Eagle began its programming in a new spot in the radio spectrum. This time it was on 532 kHz, just a shade below the low frequency end of the broadcast band. Not only did it have a potent signal on 532 kHz, but it also produced a rich and bountiful harvest of harmonics on other frequencies. That turned the Blue Eagle into an outlaw because it was causing interference to other stations, primarily those in Baltimore. The role of Baltimore in the Blue Eagle test flights was only coincidental; the Washington-based Connie simply happened to do a lot of its flying around the Baltimore area.



It was after these instances that the FCC was queried and, having been told little about the project, could explain little. The exact meaning of that account telling how the FCC located the station, contacted the suspected operator and warned him of the possible results and penalties is known only to the staffer who wrote the letter. It was easy to imagine the difficulties the agency might have had in observing the station in actual operation, and even more interesting to visualize the reception the FCC might have at the Dept. of Defense when they "contacted the suspected operator and warned him of the possible results and penalties of such unlicensed operation."

As the summer and the tests wore on, Blue Eagle appeared on additional frequencies, including 9530 and 13680 kHz. It then vanished for a while, but in April of 1965 it turned up again. This time it was flying over the Dominican Republic during the thwarted revolt mounted by the followers of deposed President Juan Bosch (including a few Communists). American Marines were sent in against the pro-Bosch forces. Communications on the ground were in a sad state at the time and the airborne station could fill many needs. From there the plane headed west, for it was soon being picked up by DXers in California and Washington State.



Despite the measured success the Blue Eagle had in Santo Domingo, the project was not wholly accepted. The Connie, it turned out, was badly overloaded. Such a plane could reach 35,000 feet but had a normal service ceiling of about 24,000 feet with a normal load. Filled wall-to-wall with electronics gear and the personnel to operate the equipment, it was badly overloaded and it had to hold to a much lower altitude. With a mighty grunt the Blue Eagle was able to top 10,000 feet, but that was not sufficient to gain a really commanding range for the equipment aboard, especially the UHF television transmitter. The Blue Eagle was beginning to turn into a white elephant. According to one report, the Voice of America was quietly asked if it had use for a fully equipped broadcasting aircraft. They said, "Thanks, but no thanks."

The Blue Eagle next turned up on a Pacific Island, reported variously as Wake or Okinawa. There it sat in an unused portion of the field. One rumor that drifted back to the States was that the Blue Eagle was used to carry a small band of nurses to Southeast Asia for a weekend. What started out as a lark turned to near tragedy when the ancient plane lost an engine just after takeoff. It did manage to limp home, however, and settled down to another snooze. At that point, those who knew officially or unofficially of the Blue Eagle considered the project permanently dead and hoped that the aircraft would eventually rot away and/or be forgotten as it became gently overgrown with tropical foliage by the encroaching jungles. But true to its old habit of rising from the grave, the galloping ghost was to appear again!

Early in 1966 came an announcement out of official circles in Saigon that revealed the presence in Vietnam of an aircraft outfitted with, among other things, no less than *two* UHF television transmitters. The plane, a Navy Constellation, was to circle above Saigon, said the announcement, and would transmit programs simultaneously in Vietnamese and in English.

As you might have expected, there was a slight hitch. No one among the Vietnamese population owned a TV set and the American troops had failed to bring any TV sets with them. Plans were afoot to quickly rectify this situation. It was reported that 1000 TV sets were ordered by the U.S. aid mission for distribution to the Vietnamese. Also, the American military command planned to bring in 500 TV sets.

Once operational, and with the TV sets in place, the Blue Eagle was eventually joined by a second TV plane, jocularly called Son of Blue Eagle by its crew as the aircraft finally realized a mission for which it was intended.

The controversy, of course, had not ended. DXers talked about the mysterious Blue Eagle for several years afterwards. As late as 1969 there were those who were still searching out the story-behind-the-story and were expressing some doubts as to whether the Blue Eagle of 532 kHz and shortwave fame was in any way at all connected with the Blue Eagle of Santo Domingo and Vietnam. One DXer, in the April-May 1969 issue of *Radio-TV Experimenter* magazine flatly dubbed the entire episode as "probably radio's greatest hoax of 1965," and expressed the opinion that the 532 kHz Blue Eagle was most likely a garden variety pirate broadcaster whose use of the ID "Blue Eagle" was only coincidental to the Navy's use of it a few weeks later.

My own research indicates that these were, indeed, one and the same station—the result of someone's brainstorm that was complicated by an ironic lack of communication between branches of our bureaucracy. In any event, it was (at the very least) radio's greatest talking bird of 1965 or any other year! PC

Electronic warfare supports all elements of the Soviet military, such as these airborne forces (shown here in training).

The Ilyushin Il-76 serves as an Aeroflot transport (as shown here), but it also has a new military role centered around electronic warfare.

Soviet Electronic Warfare

A Look At Some Of Ivan's EW Capabilities

BY TOM KNEITEL, K2AES, EDITOR

The ability to probe and jam the other guy's communications, navigational, and operational signals is as important to today's military as just about anything else in the arsenal of weapons. In fact, since missiles appear to be primarily used as deterrent or threat weapons, the electronic warfare weapons are (thankfully) used more often and serve more of a practical purpose in day-to-day military operations. So we hone our ability to listen in on, disrupt, decipher, duplicate, locate, and generally keep tabs on "the other side" as well as we can by taking fullest advantage of our technologies. Of course, "the other side" isn't sitting back and watching all of this in total awe, they are also endeavoring to do the same in regard to us.

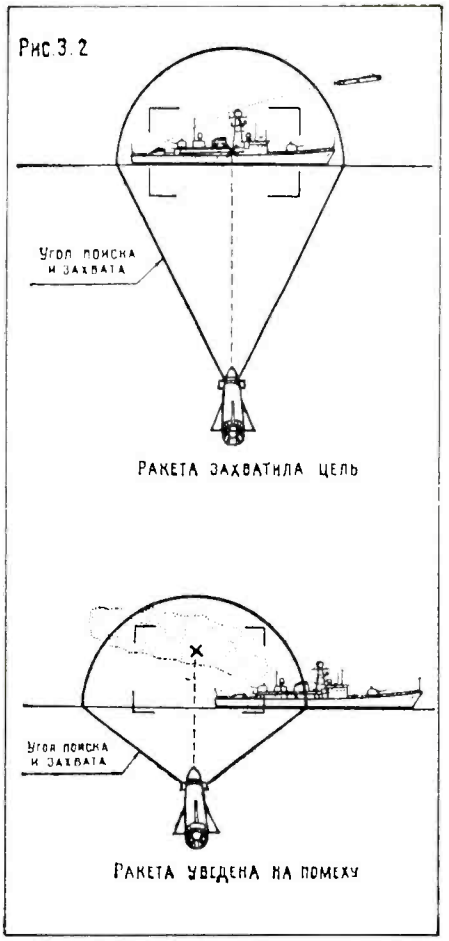
The Soviets have all manner of interesting electronic warfare (EW) tools, including electronics intelligence (ELINT) equipment mounted in surveillance aircraft, plus ground, air, and ship mounted radars which probe us as well as perform various services for their own missiles. Here's a look at some of these Soviet EW tools.

The Badger is the Tupolev Tu-16 family of aircraft; this includes five similar but different EW and ELINT plane types. The Tu-16 is a 115 ft. aircraft that has two turboprop engines and a range of almost 3,600 miles. The "D," "F," and "K" type Badgers are primarily used for ELINT operations, while the "H" and "J" types are essentially EW aircraft (the "H" type specializing in dropping *chaff*—anti-radar foil strips—and the "J" type being heavily equipped with jamming transmitters). These two types are often deployed to accompany Tu-16's equipped with missiles. The Tu-16's were designed in the 1950's and were originally the Soviets' primary medium-range bomber. However, this role was changed when the Tu-22's came into existence and the Tu-16's were given EW and recon roles. There are now more than 200 Tu-16's deployed for recon and EW. The equipment on the Tu-16 Badgers includes the following radar types: Bee Hind, Puff Ball, and Short Horn.

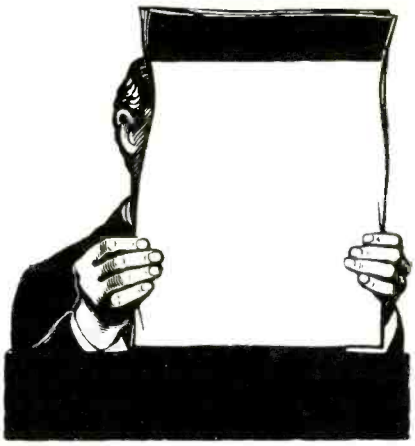
The Beagle, or Ilyushin IL-18, is a 58 ft. twin (turboprop) engine aircraft which is roughly similar to the British Canberra. This was originally a bomber but hasn't been given those duties in many years. Even as an EW aircraft, few remain in active service—although it was the first EW aircraft placed into such use by the Soviets.

The Bear, also known as the Tupolev Tu-142, is a 160 ft. aircraft having 4 turboprop engines. These have been flying since the mid-60's and are classed into "C" and "D" types. Both are used for ELINT and naval reconnaissance purposes, but the "D" type is also capable of providing missile control. When these aircraft were first produced (in the mid-50's) they were bombers; after they were replaced by newer types they were relegated to their present tasks. Operating from bases in Cuba and the USSR, Bears are often used to keep tabs on NATO and U.S. Navy vessels in the Atlantic and the North Sea. These aircraft have a range of 7,800 miles.

The Brewer, or Yakovlev Yak-28-E, is a twin-jet 70 ft. aircraft which has been prepared for reconnaissance purposes from the Yak-28 tactical bomber. There are probably about 125 in service.



Soviet technical manual demonstrates the differences of missile guidance radar system locking on to target properly (top) and locking on to chaff intended to drive it off target.



The Coot, or Ilyusin Il-18-A, is an ELINT aircraft 118 ft. in length and powered by 4 turboprops. It has a range of 4,000 miles. The Coot was designed around the Il-18 transport but has been equipped with a considerable amount of electronics equipment including infrared or optical sensors, possibly also satellite communications equipment. These aircraft, of which there are perhaps 20, seem to shadow NATO vessels in the Atlantic.

The Crate, a/k/a Ilyushin Il-14, is used to monitor NATO communications and appears to be deployed in East Germany and Poland. There are about 240 of these aircraft and it is believed that they have jamming equipment aboard. This is a prop-driven aircraft which can fly as high as 22,000 feet. It is essentially a modified transport aircraft of 30-year-old design.

The Antonov An-12 Cub comes in two versions, B and C. The B version is designed for jamming and electronics intelligence while the C type is primarily used for jamming. There are only about six of these units thought to be operational, and the C version has been seen with markings similar to Aeroflot airliners, also with Egyptian markings as well as standard Soviet Air Force markings. The Cub B and C aircraft are variations on the Cub A, a transport having 4 turboprops. It can fly at 35,000 feet and has a 3,500 mile range.

The Mil Mi-4 Hound C is another jamming unit that has been in use for more than 30 years. It is a helicopter that has a vague resemblance to the American Sikorsky S-55 type. Some 170 of these are thought to be

Soviet Military Radars

NATO Codename	*Frequency*	*Based*	*Purpose*	*Remarks*
Back Net	2 to 4 GHz	G	GCI	Search
Ball End		N	Fire Control	
Band Stand		N		Search (Nanchuka Class vessels)
Barlock	2.6 to 3.1 GHz	G	GCI	Search
Bass Tilt		N	Fire Control	Matka & Nanchuka III vessels
Bee Hind	10 to 20 GHz	A	Tail warning	On Tu-22, Mya-4, Il-18, Il-28 aircraft
Big Bar	2 to 4 GHz	G	GCI	Search
Big Bulge	8 to 20 GHz	A		On Tu-95 aircraft
Big Mesh	2 to 4 GHz	G	GCI	Search
Big Net	850 MHz to 3 GHz	N	Air Surveillance	Kashin/Kresta I class vessels
Big Nose	8 to 20 GHz	A		Tu-28 aircraft
Boat Sail	1 to 3 GHz	N	Surveillance	Canvas Bag & Whiskey class subs
Cake	2 GHz	G	GCI	Altitude determining
Cylinder Head		N	Anti-aircraft	Gun directing
Cross Bird	225 to 390 MHz	N	Air Search	
Dog House	100 MHz	G	Anti-ballistic missile	
Drum Tilt	8 to 10 GHz	N	Anti-aircraft	Stenka, Osa, Shershen class vessels
Egg Bowl		N	Missile guidance	Krivak class vessels
Egg Cup	2 to 3 GHz	N	Splash spotting	
Fan Song A	2.9 to 3 GHz	G	SAM command	
Fan Song E	4.9 to 5.1 GHz	G/N	SAM warning	For SA-N2 missile
Fan Tail		A	Tail warning	
Fire Can	2.7 to 2.9 GHz	G	Anti-aircraft	
Fire Wheel	2.7 to 2.9 GHz	G	Anti-aircraft	
Flap Wheel	8 to 20 GHz	G	Anti-aircraft	
Flat Face	810 to 950 MHz	G	Acquisition	
Flat Jack		A	Air surveillance	Tu-126 aircraft
Flat Spin	2 to 4 GHz	N	Air surveillance	
Gage	3 GHz	G	Acquisition	For SA-1 SAM missile
Gecko	4 to 8 GHz	G	Surveillance	For SA-8 SAM missile
Gun Dish	20 GHz	G	Anti-aircraft	On ZSU-23 vehicles
Hair Net	2 to 4 GHz	N	Surveillance	Tallin, Kirov, Kotlin class vessels
Half Bow	8 to 10 GHz	N	Torpedo guidance	On surface vessels
Hawk Screech	8 to 10 GHz	N	Fire control	
Headlight	4 to 8 GHz	N	Missile guidance	For SA-N3 missiles
Head Net	2 to 4 GHz	N	Air surveillance	On Kresta, Leningrad & Moscow class
Hen Egg	2 to 3 GHz	G	Early warning	
Hen House	150 MHz	G	Early warning	
Hen Nest	800 MHz	G	Early warning	
Hen Roost	500 MHz	G	Early warning	
High Fix	8 to 10 GHz	A	Ranging	
High Lune	2 GHz	N	Altitude determination	
High Sieve		N	Surface search	
Jay Bird	12.8 to 13.2 GHz	A		On MIG-25
Jay Bird B		A		On MIG-23

used by the Soviet Air Force, with additional units deployed with the Polish Air Force. The jamming capabilities appear to be designed to be effective against ground communications within 50 MHz to 4 GHz.

The Mainstay, or Ilyushin Il-76, is intended to be a replacement for the Tupolev Tu-126 Moss. The function and outward appearance of the radome on this AWACS aircraft is somewhat similar to the American E-4B AWACS aircraft and operates in the SHF range. The primary radar in this aircraft operates in the region of 2350 MHz. The aircraft is powered by 4 turbofans.

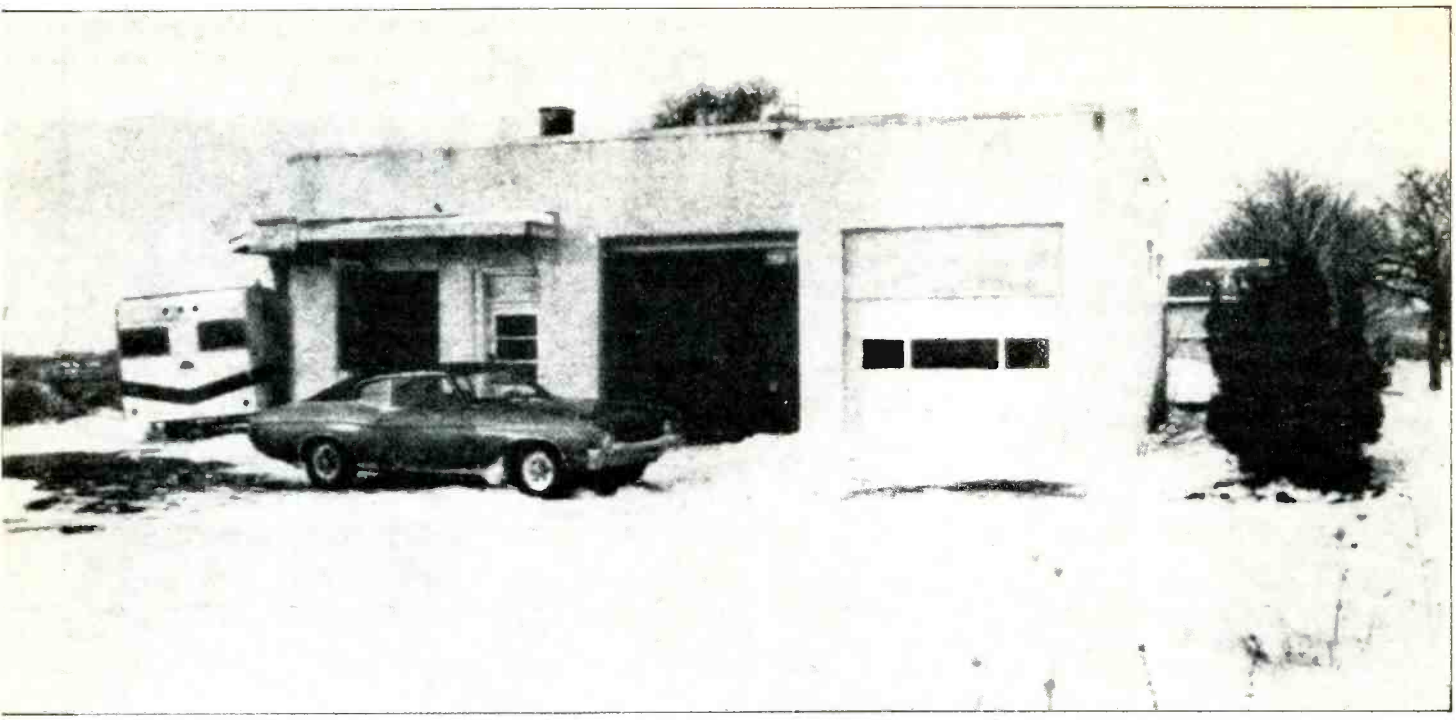
The Tupolev Tu-126 Moss is a somewhat ineffective AWACS aircraft which has been in use since the early 1970's. A large (more than 180 ft. in length) 4-turboprop aircraft with a 35 ft. radome mounted atop the fuselage, the Moss appears to be deployed on a limited or back-up basis and only 12 are thought to exist. These have some jamming capabilities. The Moss can operate at 22,000 feet and is apparently intended to detect low-flying intruders in concert with Soviet ground stations.

Military Radars

Soviet military radars, all nicknamed or codenamed by American and NATO forces, exist for a wide variety of purposes and operate over many frequencies. These are deployed by ground, air, and naval forces and are indicated in the chart by the letters G, A, and N.

These are some of the tools used for electronic warfare by the Soviet forces, a sampling of the "other side's" technologies. PC

NATO Codename	*Frequency*	*Based*	*Purpose*	*Remarks*
Knife Rest A	70 to 73 MHz	G	Early warning	
Knife Rest B	83 to 93 MHz	G	Early warning	
Knife Rest C	83 to 93 MHz	G	Early warning	
Long Bow	8 to 10 GHz	N	Target designation	
Long Track	8 to 10 MHz	G	Surveillance	For SA-4 SAM
Look Two	8 to 10 GHz	A	Navigation	On bombers
Muff Cobb	8 to 10 MHz	N	Fire control	
Mushroom	8 to 10 GHz	A		On helicopters
Neptune		N	Navigation	
Owl Screech	8 to 10 GHz	N	Fire Control	
Pat Hand	6 to 8 GHz	G	Surveillance	For SA-4 SAM
Peel	8 to 10 GHz	N	Missile guidance	
Plinth Net		N	Search	
Pop	6 to 20 GHz	N	Fire control	For SA-N4 SAM
Post Lamp	8 to 10 GHz	N	Target designation	
Pot Drum	8 to 10 GHz	N	Surface search	
Pot Head	8 to 10 GHz	N	Surface search	
Puff Ball	8 to 10 GHz	A	Search	On Tu-18 aircraft
Scan Fix	2 to 3 GHz	A		On MIG-17 and MIG-19
Scan Odd	8 to 10 GHz	A		On MIG-19
Scan Three	8 to 10 GHz	A		On Yak-28
Scoop Pair	2 to 3 GHz	N		For SS-N3 missile
Score Board		G	IFF interrogator	
Sea Gull	UHF	N	Air surveillance	
Short Horn	14 to 15 GHz	A	Navigation	On bombers
Side Globe		N	Electronic warfare	Used with Top Sail
Sirena		A	Warning	
Skin Head	8 to 10 GHz	N	Target detection	
Skip Spin	8 to 10 GHz	A		On Su-11 and Yak-28
Slim Net	2 to 3 GHz	N	Surveillance	
Snoop Group		N	Sub surveillance	
Spin Scan	8 to 10 GHz	A		On MIG-21 & Su-9 aircraft
Spoon Rest	225 to 390 MHz	N	Air search	On Sverdlov class vessels
Square Tie	8 to 10 GHz	N	Search	For SS-N2A-11 missiles
Squint Eye	UHF	G	Acquisition	For SA-3 SAM missiles
Straight Flush	5 to 10 GHz	G	Guidance	For SA-6 SAM missiles
Stop Light		N	Intelligence	Canvas Bag & Whiskey Class subs
Strut Curve	2 to 4 GHz	N	Air & surface search	
Strut Pair	2 to 4 GHz	N	Air & surface search	
Sun Visor	6 to 10 GHz	N	Fire control	Sverdlov, Kotlin, Tallin class vessels
Token	2 to 4 GHz	G	GCI	Early warning
Top Bow		N	Target acquisition	
Top Pair	850 MHz to 3 GHz	N	Air surveillance	Kiev class vessels
Top Sail	850 MHz to 3 GHz	N	Air surveillance	Leningrad & Moscow class vessels
Top Steer	1.55 to 5.2 GHz	N		Kiev class vessels (3-D radar)
Top Trough	2 to 4 GHz	N	Fire control	
Wasp Head	6 to 8 GHz	N	Fire control	
Whiff	2 to 3 GHz	G	Anti-aircraft	
Woodpecker	4 to 18 MHz	G	Early warning	Over-the-horizon radar
Yo Yo	3 GHz	G	Control	For SA-1 SAM missile



This is the abandoned service station near Bethel, Pennsylvania that is now a shortwave station.

WMLK – America's Newest Shortwave

Voice Of "Assemblies Of Yahweh"

BY GERRY L. DEXTER

Take Interstate 78 through Bethel, Pennsylvania on your way to New York City 130 miles distant. A couple of miles east of Bethel you'll spot a large sign that reads "International Headquarters of the Assemblies of Yahweh."

Continue east for another mile or two and you'll pass a small building that used to be a gas station.

For two decades it sat idle, empty, deteriorating. No more. Cars are parked out in front now, but they're not getting a tankful of regular and an oil check. For this is the site of WMLK, soon to be the newest addition to the ever-growing line-up of shortwave radio stations in the United States.

WMLK is the brainchild of Directing Elder Jacob O. Meyer of the Assemblies of Yahweh. The station will be used to spread the message of this congregation worldwide.

The shortwave station isn't the first radio effort the congregation has undertaken. Since 1966 they have produced the "Sacred Name Broadcast," a radio program aired on a dozen U.S. medium wave outlets as well as on three stations in the Caribbean and five in the Philippines.

A television program of the same name is carried by TV stations in Pennsylvania and Michigan.

Meyer founded the Assemblies of Yahweh after receiving schooling in the Bible, traveling around, visiting other churches, and eventually deciding that none of the teachings he heard interpreted the Bible as he believed it should be done.

The Assemblies of Yahweh believe that the sacred name "Yahweh" (Jehovah) is the key to unlocking original Biblical truths and that salvation is to be had only by using this and other sacred names.

Much of the congregation's work involved re-translating the original Biblical texts to reinstate usage of original Biblical names, printing and distributing this version which they refer to as the "Sacred Scriptures."

In addition, the Assemblies operate the Obadiah School of the Bible which provides ministerial training. Another school, the Dalet School, provides elementary and secondary education through the 10th grade.

Locally there are only about 100 members of the congregation but, through the broadcast efforts, a mailing list has been developed that runs to several thousand.

Meyer describes the Assemblies as "more fundamental than the fundamentalists" and says the congregation's beliefs could be compared to those of Herbert Armstrong's Worldwide Church of God, although there are differences.

Like any religious group, the Assemblies of Yahweh sought other ways of spreading their beliefs. Meyer discovered the possibilities of shortwave and since 1982 he and other members of the congregation have been working towards the goal of having their own shortwave station. Most of the prepatory work has been done without the aid of lawyers and only some outside engineering help.

A construction permit was received from the Federal Communications Commission last fall. The old gas station was purchased along with three and a half acres of land at the same site.

A used, 50 kilowatt RCA ampliphase-type broadcast band transmitter was purchased via an equipment brokerage firm.

Work began immediately on refurbishing the old building, getting the transmitter housed inside, and then the long task of converting the transmitter for use on the shortwave bands started. According to project foreman Gary A. McAvin, this is the first instance he's aware of in which this type of transmitter has been converted to a shortwave capability. McAvin says he expects to hit 224 kilowatts at peaks once the unit is in full operation.

A log periodic dipole antenna array on the site consists of two 120 foot towers with a 45 foot tower sitting at the apex of the triangle. McAvin expects to hit Europe in two hops with this array which he says uses a somewhat radical design due to the terrain in the area. As he puts it, "it's sort of like playing billiards, banking for our target area." The antenna takes up an area about 300 feet wide and 200 feet in length.

The use of reconditioned equipment, buildings already in existence, and a lot of volunteer help on the part of congregation members will mean a a price tag of $250,000 or less to put WMLK on the air. That's far below the usual cost of setting up a shortwave station, normally something in the area of a million dollars.

Major targets will be Europe and the Middle East, but McAvin hopes the signal will also be received in all other areas of the world as well. Based upon their calculations, he believes that will be the case providing "our signal is strong enough and the sun shines just right."

McAvin is assisted in the engineering work by Tadd Beub. Both are congregation members. Consulting engineering advice comes from Fred Wise of WINB shortwave in Red Lion, Pennsylvania.

The transmitter is capable of operating on any frequency between 5 and 20 Mega-Hertz. Once regular operations start, an eight hour broadcast day is expected to be in place by the end of the summer, with an accompanying electrical bill of $1,500 to $2,000 per month!

Programming will consist of live religious services, interviews with religious leaders, and probably live broadcasts of classes from the Obadiah School of the Bible.

The station expects to install a small studio at the transmitter site but the major amount of programming will come from the Assemblies' headquarters, a converted motel complex. Studios already exist for producing the Sacred Name radio and TV programs.

Programming is expected to be microwaved from the main studios to the transmitter site, a distance of a few miles.

The programming can also draw on some fifteen years worth of tapes, broadcast lectures, and sermons on file in the congregations 12,000 volume reference library.

The station will operate with a minimum of staff. Bueb and McAvin will probably remain and serve as the basic operational team. Other workers will be drawn from the congregation, people already involved in producing the radio and TV programs, teaching, Bible translations and publication of the *Sacred Name Broadcaster* magazine.

WMLK, incidentally, is an abbreviation (without the "W") for the Hebrew word "melek" or "messenger."

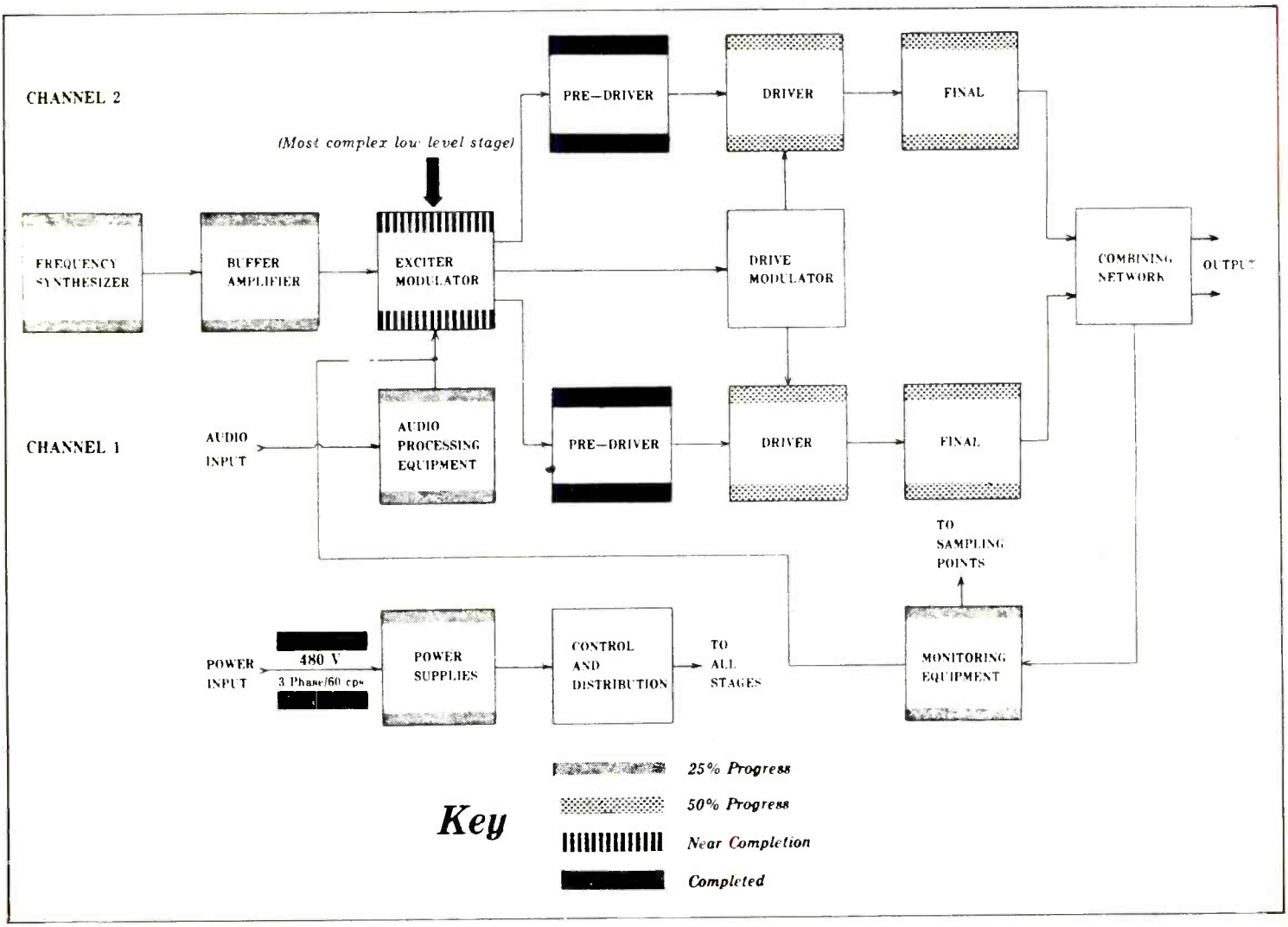
Once testing begins, reception reports on WMLK's signals will be very welcomed and will be verified. Reports should go to Gary A. McAvin, WMLK, Post Office Box C, Bethel, PA 19507. At press time we can suggest checking 15110 kHz (1700-1900 GMT) and 15260 kHz (2200-0000 GMT).

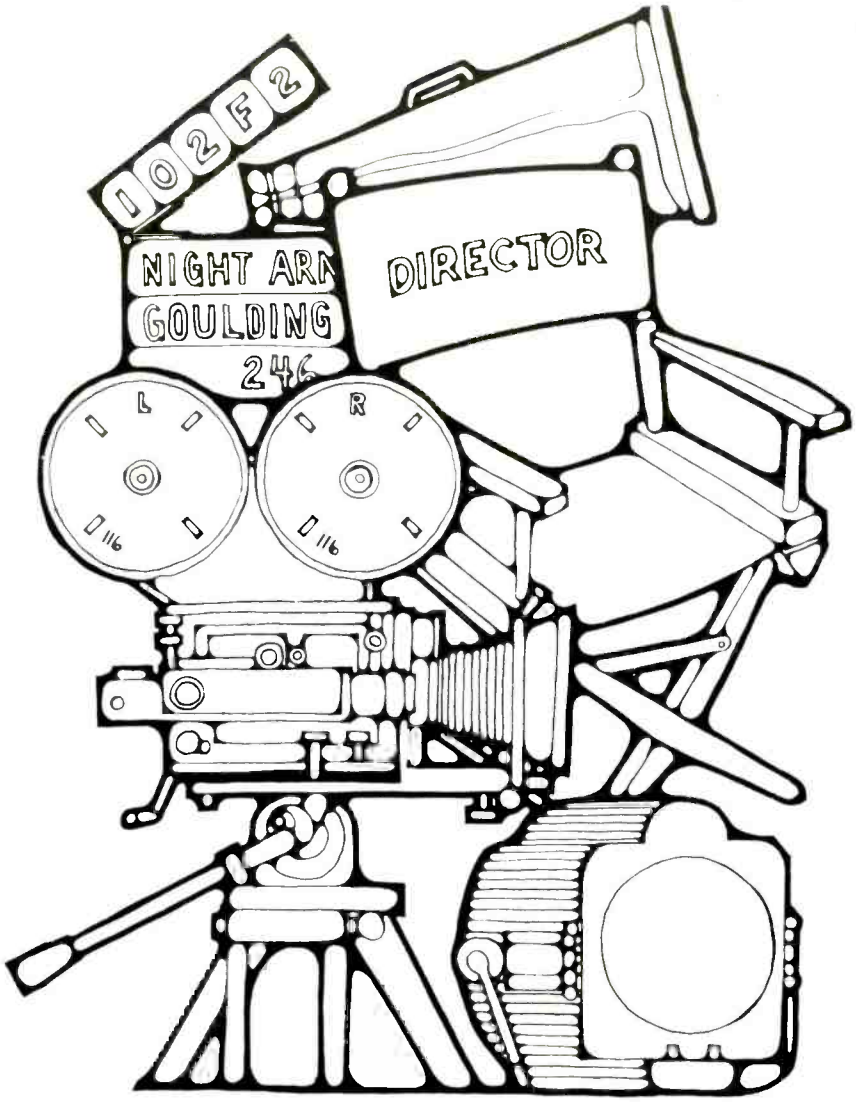
PC

The transmitter being set up in its new home.

Technicians Tadd Bueb (left) and Gary McAvin testing one of the capacitors for the new transmitter.

A block diagram of the converted medium wave transmitter WMLK uses.





Scanning Tinseltown

Behind The Scenes Monitoring In Hollywood

BY HUGH STEGMAN, NV6H

It's yet another balmy day in Los Angeles, the sort that usually happens when it's twenty-below back east. As workers in one downtown office tower daydream of warm beaches, the walls start to shake.

All eyes go up. An earthquake? Not quite. Just outside, a very menacing, black, military chopper roars up at tenth-floor level. As waves form in the water coolers, two smaller police helicopters scream past in hot pursuit. The big chopper circles around and around the building, but cannot lose its pursuers.

One employee is on the phone. A few miles away, a scanner goes on. Hmmm; nothing on police channels. "But something *has* to be happening,' is the reply from downtown. "It looks like Nam over here!"

Finally comes the answer on a frequency used for movie making. "Okay, that's a good shot," says the radio voice. "Next setup, please."

A few days later, local media report what monitor listeners already know. It's only a movie; in this case one called *Blue Thunder*. Monitoring the Motion Picture Radio Service has paid off again.

Scanner listeners often overlook the ten channels licensed to movie and TV production companies. When a film crew comes to town, the listeners either miss all the action or spend hours "reinventing the wheel"—in this case rediscovering frequencies that are well-documented industry standards.

The misconception probably started because this is valuable VHF spectrum space, and therefore is shared with other users. Few think of listening on channels known to be used by the local lemon growers' association or delivery trucks from a newspaper.

Furthermore, radios have come into wide use only recently in the movie industry. Bullhorns were traditional director's badges of authority, used to ineffectively holler at people out of earshot. Sound men (no women in those days!) guarded their knowledge of electronics jealously, and tended to mistrust anything invented after World War II. Hot shots fresh out of technical school soon learned that such profanities as "solid state" were simply not uttered around serious movie work.

Economics ended this sorry situation. As wildly escalating production costs threatened to sink the industry, anything that saved time had to be adopted. Radios and other electronic devices did this well.

Today the average movie set is a high-tech paradise. Low-budget films that cannot afford to feed the crew still rent a dozen walkie-talkies, usually the ubiquitous Motorola MT-500 with two or four channels. Most of the actors' dialogue is recorded through ultra-sophisticated, wireless microphones. Cameras, stunt vehicles, and special effects are sometimes controlled by radio. Back at the studio, security guards and support facilities operate base and mobile stations. One hears everything from buses on the Universal Studios Tour to their favorite director explaining a scene. The entertainment business has come into the eighties.

Frequencies

Most hand-held radios used by movie and TV crews are crystalled for these frequencies (MHz): 173.225, 173.275, 173.325, and 173.375. Their FCC licenses are good for mobile use anywhere in the U.S. A few of the larger Motorola portables are also in use. Some of the major studios have base stations for contacting crews on locations.

These channels are shared with newspaper people in the old Relay Press Radio Service, the use of which is declining. Interference sometimes forces a film crew to switch channels.

The remaining six frequencies licensed in the Motion Picture Radio Service are shared with some large Special Industrial users. Interference is more likely on these catch-all channels, and so most use is for base and mobile stations back at the studios. A few productions do use them on location, however. They are (in MHz): 152.870, 152.900, 152.930, 152.960, 152.990, and 153.020.

Note that a growing number of TV shows are switching to videotape instead of film production. This often involves the hiring of local companies specializing in such work. These relative newcomers are more likely to be using UHF business frequencies. Also, TV news reporters use their own 161 and 450 MHz channels.

Location Shooting

A movie or TV crew is hard to miss, as its 150 people and 40 vehicles move in with military precision. Such exciting scenes once only happened near Los Angeles or New York, but this is no longer the case.

In this age of highly portable film equipment, America's rural areas and smaller cities are the new back lots. In fact, many feature filmmakers pride themselves on working far from the dreaded Los Angeles studios and union bureaucrats. Directors pontificate about "authenticity," but privately admit that economics motivate their refugee-like conduct. Meanwhile, the competition between states for these "runaway" production dollars has reached grotesque proportions. It would make a good movie script in itself.

Back in Los Angeles, things remain very busy. Some major films buck the trend and do everything there, while others finish up on L.A. locations. TV series are out in the streets daily, except during a brief "hiatus" in the spring reruns season. New markets, such as rock video, open up constantly.

One source of bizarre listening is the low-budget, non-union movie industry. Scripts about teenage lust are hastily shot by barely solvent partnerships which disappear as soon as the lawsuits start. Many union members illegally moonlight on these lower-paying jobs. Self-appointed union enforcers pursue them from one L.A. location to the next, trying to close them down. The result is an atmosphere of total paranoia, occasional fisticuffs, and some great monitoring.

Most people are very excited when they get to watch a crew on location for the first time. They expect glamorous scenes with stars everywhere. When what they see looks like work, boredom sets in.

This is when listening on the scanner, at a discreet distance, can help make sense of what otherwise looks like organized chaos. One gets a real sense of the split-second decision making and military-like logistics that separate successful shows from high-budget disasters. This reality can be more interesting then anything on *The Fall Guy*.

Do not expect to hear any "Hollywood" gossip. In a high-pressure atmosphere of fourteen-hour days and six-day weeks, the main feelings are hunger and fatigue. The two most common questions heard on the air are "When do we eat?" and "When can we shoot this?"

Of course, stars at play are another matter. More than one good tidbit has come over a car phone or ship-to-shore frequency. Common sense and FCC Section 605 prevent further discussion.

Actually, the person heard most on Motion Picture Radio Service channels is usually the assistant director, who is listed as the "first A.D." in the credits. AD's do no directing beyond the herding around of extras, but they are the real bosses on the set when the director is off tending to business. They work on logistics and scheduling, and try to keep work moving at a fast pace. Thus they are always looking for people, or trying to keep the crew out of overtime. Good ones combine General Patton with Knute Rockne. On the radio, they somehow maintain a calm manner while surrounded by people in a total panic.

During actual filming, the AD is the one giving the famous "action" and "cut" cues over the radio. This helps prevent confusion and has improved safety.

If a lot of lights are being used, one will hear the "gaffer" talking to his electricians on the radio. This answers a common question heard during the end credits, namely "What's a gaffer?" He is the head of the lighting crew and carries out the instructions of the cameraman. He is often on a separate radio channel, along with the "key grip" or head stagehand. "Grips" do the fine-tuning of a lighting setup, putting up all manner of odd-looking stands and light cutters. They also build things and push the camera dolly. All of these people will be heard exchanging a lot of highly technical information, of interest mostly to photo buffs and aspiring cinematographers.

These days, many outdoor scenes involve special effects. Highly trained professionals often use radios while setting up fires, explosions, car crashes, and the like. These people, along with stunt men, may also have their own channel.

Finally, there are the truck drivers. Many are Teamsters, and they make some of the highest salaries in the movie business. They use radios to coordinate company movements, and sometimes also talk to studio base stations if near enough.

Since none of these people are trained radio users, all conversations are informal. Callsigns and procedures are unheard of. Even "roger" is often considered a silly affectation. "Ten-four" had a brief vogue after the CB movies, but it is dying out.

Studio Communications

As the movie industry becomes more spread out, small studio complexes are now starting up in most major cities. This is especially true in Florida (where Universal has built a major theme park) and in Texas. Most of these can be expected to use Motion Picture Radio Service frequencies, plus regular business channels.

The happy hunting ground remains in Los Angeles, however, and notably in the beautiful, downtown Burbank of *Laugh-In* fame. This much-maligned suburb, with its fast food joints and boarded-up "urban renewal sites" is just over the hill from Hollywood. Strung out for miles along the Los Angeles "River," a cement channel with about two inches of water, is one of the world's greatest studio complexes.

Starting at the northern end, listeners can hear *Hill St. Blues* and *St. Elsewhere* being made at the CBS Studio Center (ironically enough). Up on its hilltop fiefdom is Universal City Studios, where the tour and TV productions on the "lower lot" use all ten channels constantly. Next is the huge Burbank Studios complex, shared by Warner Brothers and Columbia Pictures. *The Dukes of Hazzard* routinely trash cars on the back lot, and one can sometimes munch a Crispirito at the nearby Taco Bell while listening to *Alice* on Stage One.

Next is NBC, where Johnny Carson tapes. They rarely use Motion Picture frequencies, but neighboring Walt Disney Productions does. There is usually a feature film in production there.

On the other side of the hill, Paramount Pictures and Metro-Goldwyn-Mayer both operate powerful base stations, which are also clearly audible in Burbank. This leaves only 20th-Century Fox, out in West Los Angeles, which is often visited by President Reagan and visiting heads of state.

Except for The Burbank Studios and Universal, these busy facilities do not offer tours or any other way for the public to see inside. The radio offers the best way of finding out what makes them tick.

What seems to make them tick most often is parking. Most communications are between security guards, as some Datsun is towed from a bigwig's personal space. These guards all carry walkie-talkies and have base stations at each gate and in the security office. All use Motion Picture frequencies. Outwitting studio guards used to be considered sport in L.A., but radios have made this a lot harder.

These frequencies are also used as a catch-all for craft shops, maintenance, deliveries, some paging, and even fire traffic. Studios maintain small fire departments, which can prevent disaster while city units are still en route. This happened recently at Paramount, where some priceless *Star Trek* sets were saved by studio personnel.

Other Radio Devices

Some monitor listeners have reported hearing the wireless microphones worn under costumes by the actors. These represent great catches, since they use very low power and just about every VHF and UHF frequency imaginable.

Everyone has chuckled at the old movies, with actors leaning over the mikes hidden in flower pots or telephones. Movie sound did not progress very far beyond this until these "radio mikes" were adopted. Not having to work the sound boom into an otherwise perfect shot has saved incalculable time and money.

Early units were just crude versions of those worn by the football referees, and worked about as poorly. Their tiny FM transmitters could not send a realistic dynamic range without over-deviating. Clothes rubbed on the lavalier mikes, unless actors were undressed in front of everybody and wrapped

in yards of sticky tape. Receivers were prone to overloading in areas like the often-used Griffith Park. A nearby LAPD base station, appropriately enough above the "HOLLYWOOD" sign, lived up to its billing by getting onto many a sound track.

Thus all dialogue had to be "looped" (re-recorded later) until such companies as Vega and Swintek developed better equipment. An amplitude "compandor" system restores full dynamics. Reception is frequently "diversity," with two antennas and front ends. A "voter" circuit continually picks the best signal. The mike itself is a quality electret condenser unit, mounted in a fancy harness with Velcro fasteners.

Frequencies are licensed by the FCC (a simple process) each time the equipment is rented. Unused TV channels and land-mobile frequencies are popular, but anything is possible. Good hunting! PC

Motion Picture Radio Frequencies

The major studios are listed first, in alphabetical order. Other companies are shown on their primary frequencies, and are in Los Angeles unless otherwise noted.

All companies
production walkie-talkies (nationwide)

173.225
173.275
173.325
173.375

The Burbank Studios
(Warner, Columbia/Colgems, old Columbia Ranch)
All 152/153 and 173 MHz, but notably:

152.870	KC 7450	Security and maintenance
152.960	"	Security
153.020	"	Craft services
173.225	"	*Alice* production intercom
173.325	"	*The Dukes of Hazzard*
158.460	KED 708	Paging

MGM/United Artists

152.990	KA 3916	Security/parking control/transportation
152.990	KMH 466	Film lab shipping
All 173 MHz		Production
471.8375	KNS 312	Lorimar Productions (TV on MGM lot)

Paramount Pictures

173.275	KJG 259	Security "blue" channel/paging
152.930	KRC 893	Messengers/off-lot operations
154.570	KO 9907	Operations

Twentieth-Century Fox Film Corp.
All 152/153 and 173 MHz, but notably:

152.930	KME 515	Security/transportation
153.020	"	Security
173.325	KJE 515	Production/transportation
173.375		Crafts/maintenance
30.96	KNFD 530	Not much use

Universal City Studios
All 152/153 and 173 MHz, but notably:

152.900	KWL 760	Studio tour/Universal Amphitheatre
152.930	KMK 699	Studio and tour security
152.990	"	Security/parking control
173.225	KL 2198	Lower lot parking control
173.325	"	Embassy and Tandem Productions (TV)
173.375	KD 5008	Embassy and Tandem Productions
154.540	KQZ 539	Universal City Plaza security
154.540	KNBM 34?	Sheraton-Universal Hotel
151.895	KNAN 960	Security in other buildings
154.340	WYD 662	LA County FD substation ("valley" dispatch)
154.280	"	LA County FD substation (mutual aid)

Walt Disney Productions

173.225	KNAC 887	Security/maintenance

Other Companies

ABC Sports	All 173 MHz	
American Film Institute	154.540	KR 6031
Arizona Cine Equipment (Tucson)	173.375	KFB 669
BERC (Broadcast Eqpt. Rental Co.)	471.9625	KNS 671, 672
Best Audio	472.1625	KB 2025, KM 8842
Camera Service Center (New York)	152.990	KA 57352
CBS Studio Center/MTM Productions	173.225	
Cetec/Vega	154.540	KV 2415
Cinemobile Systems	173.275	KA 4714
Cinemobile Systems (New York)	173.275	KLZ 936
Cine-Pro	173.225	KV 6861
Crown Films (Washington)	152.930	KX 8141
Dexter Film Service	173.225	KMF 614
F&B/CECO	507.2875	KZH 410
Feature Sound Service	All 173 MHz	KF 6985
FERCO (San Francisco)	173.375	KA 4752
Filmways Audio Service	154.540	KA 2834
Franklin Clay Films (Costa Mesa, CA)	173.225	KOF 587
General Camera Co. (New York)	152.960	KA 61690
Glen Glenn Sound	All 173 MHz	KQ 7235
Lighting Services Co. (Denver)	173.375	KA 68596
McGillivray/Freeman Prods. (Laguna Beach, CA)	173.275	KU 6201
Modern Film Effects	508.4125	WIE 270
Motion Picture Marine	156.425	
Motion Picture Transportation & Courier	472.7375	KYB 460
NBC-TV *Riptide* Productions	173.225	
	173.375	
Panavision	472.1625	KVV 307, KNS 601
	816.3875	KA 81301
	817.3875	"
	818.3875	"
	819.3875	"
	820.3875	"
PSI (Production Systems, Inc.)	173.225	KV 6862
Professional Audio Service (Pleasant Hill, CA)	173.275	KA 53540
Redd Foxx	462.075	KXT 409
Richard Einfield Productions	173.225	
	173.375	
Skyline Productions	173.225	
Sound-Tronics	All 173 MHz	KTA 235
Spelling-Goldberg Productions	467.800	KE 6016
	467.825	"
Studio Messenger Service	508.7625	KNQ 585
Syzygy Film Co. (New York)	152.900	KA 62763
USC Cinema Department	151.655	KA 53790
Victor Duncan (Chicago/Dallas/Detroit)	173.225	KV 6701
Video Tape Enterprises	471.9625	KB 2036
Warner Communications (New York)	151.625	KNCF 829
	154.570	KNFA 981

ON THE LINE

NEW AND EXCITING TELEPHONE TECHNOLOGY

BY GORDON WEST, WB6NOA

Everyone is selling telephone devices this year. Manufacturers of telephone equipment have gone all out to offer you the very latest in cordless as well as conventional corded telephone systems. You can buy your equipment from specialty phone outlets, or even pick up a telephone or two at the local drug store or supermarket.

Not everyone who sells telephone devices is completely familiar with what the apparatus will and won't do, however. Take for instance the alternate long-distance systems—Sprint™ and MCI™. Both services can save you some hard-earned dollars providing you have the right phone equipment.

Both services are accessed with "Touch Tone"™ tones generated by your telephone equipment. This you already know. But you probably didn't realize that not all telephones that have a key pad on the front generate these "Touch Tone"™ tones for the alternate long-distance service.

"I have found that many people think that any instrument with a key pad will generate 'Touch Tones'™. Most don't! I'm sure some clerks misrepresent touch-pulse instruments as 'Touch Tone'™ in good faith, but they just don't know the difference," comments Woody, W6BCX, an expert in Southern California on telecommunication devices. Woody is absolutely correct.

Most key pad equipment sold today converts your key entries into pulses that are then fed into the telephone line to do the dialing. You can actually hear the pulses after you make the proper key-stroke entry. Rapidly dial a number and then listen for the clicks, indicating that the number is being accessed via pulses.

Besides taking longer to ring up a distant number, the pulses are not compatible with the new alternate long-distance service. It takes those distinctive dual tones to bring up those new, low-cost, long-distance services, and most telephone equipment generate only pulses.

Looking into this problem further, Woody and I both discovered that most catalogs completely skirt the issue of the pulse or true tone issue, and the buyer has no idea as to whether or not his prospective telephone gear actually generates tones or the less modern pulses.

"If there is a statement that it works with ALDS (Alternate Long Distance Systems), then we are pretty well assured that the device actually puts out true tones, not pulses, and will work fine with MCI and Sprint," adds Woody. I agree, but we find few catalogs that indicate these new telephones are compatible with ALDS.

"This is a big problem when people go out and buy inexpensive cordless or corded telephones," comments Myra Urbanski, sales associate with the AT&T Phone Center store in Brea, California.

"Hey buddy, which way to the stadium?"

"They hook up their new, inexpensive telephone equipment and find that it takes a long time to access phone numbers because of its pulse, and the pulse won't work with those alternate long distance services," adds Urbanski. She is absolutely correct, again. However, in looking over the brochures from AT&T, they too are not clear in every phone description as to whether or not their equipment is tone or pulse dial out.

"You will find that most of the inexpensive cordless telephones sold today are only pulse, and are not compatible with those special rate, long-distance systems," adds Urbanski. This includes their own AT&T less expensive, cordless phone.

"We pride ourselves in knowing exactly which piece of equipment is true touch tone™ and which is pulse. All of our personnel know what our equipment will do—the consumer only needs to ask."

Lesson 1: If you want a fast-dialing phone that is compatible with those long-distance, super-saver services, make darn sure that it really has tone dialing, rather than pulse dialing.

Our congratulations go to the AT&T Phone Center we called, plus additional congratulations to the catalog *The Sharper Image®*, 680 Davis Street, San Francisco, CA 94111. In their catalog they clearly note on each and every product whether or not it is pulse or tone. They use symbols to illustrate the capabilities of each phone apparatus to include other features such as memory, last number redial, hold and mute, adjustable ringer loudness, as well as tone or pulse dialing.

Where both tone and pulse dialing are listed, there is usually a selector switch that the user flips to select which one he wants. While few areas of the country have only pulse service, there are still some systems that require the older pulse dialing.

Olympics And Telephones

A note from Tom Kneitel, my editor and chief boss, "Only Gordo would fully appreciate this." His note was attached to a new series of AT&T Olympic commemorative telephones and sculpture series. All I can say is they are *quite* bizarre. Mind you, I'm a strong supporter of the Olympics and will be putting in my ten uninterrupted days of free community service to the Olympics by manning a marine radio system, but surely I wouldn't be caught with one of these wild-looking sculptured phones on my desk! Simply *too* much!

However, if you are into funky sculptures, you can spend anywhere from $99 to $150 and receive your very own swimmer, gymnast, runner, discus thrower, torch carrier, or even the most expensive yachtsman and equestrian. To hear more about these exciting models, you can even call toll free 1-800-222-3111.

Thanks, Tom, but I'm sending the photos back for your reference. I appreciate the thought.

If it's going to sit on my desk, thanks but I'll take a Decoy Phone which looks like a duck and quacks like one when someone is ringing me up. The directions state I simply lift the head and I'm on the line. Yes, it also gives me true tones for dialing out through those inexpensive, long-distance services! If it looks like a duck, walks like a duck, and talks like a duck, it's a telephone!

I think I'll send Tom *The Sharper Image* catalog and see if he's a candidate for The Desk Director System 600—a $1,000 telephone desk pad that looks like the command console for the Space Shuttle. My catalog indicates that this phone system will "dramatically underscore my authority while efficiently clearing my desk of distracting clutter." This I may need. Now if I could only keep my eyes off of those 40 blinking, digital readouts!

Finally, for this month, dial this number toll free and receive your own telephone catalog of telephones for the future: 1-800-344-4444. PC

SCANNER SCENE

BY CHUCK GYSI, N2DUP

MONITORING THE 30 TO 900 MHz "ACTION" BANDS

You've probably heard the terms many times—PL or Channel Guard. But do you really know what they mean and why they are employed in two-way radio systems?

PL (for Private Line) and Channel Guard are trademarks used by Motorola Inc. and General Electric respectively, for a technique known generically as CTCSS—or continuous tone-coded squelch system. Very basically, CTCSS is a device that is added to two-way radios that superimposes a subaudible tone on the signal whenever the radio transmits. First, to better understand CTCSS, let's take a look at why it might be used.

As you listen to your scanner, unless you live in a very remote, rural area, you'll hear other transmitters on channels that you listen to on a regular basis. Perhaps there is another police department a hundred miles away from your town that shares the same frequency as your town's police department; perhaps the distance between the two users is much closer. However, the dispatchers and officers in your town don't want to hear the other agency operating on the same channel. That's where Private Line or Channel Guard (or Quiet Channel as RCA Corp. called it when they made radios) comes to play. The device, which usually sells from $29 to $150, is installed in the two-way radio. They are also sometimes known as encoders or encoder-decoders; it depends on how the circuit is employed.

With a CTCSS unit installed in the radio, a subaudible tone of between 67 Hz and 203.5 Hz is transmitted every time the transmitter is keyed. If you listen carefully to some radio transmitters, you might even hear the low "hum" of the tone when only a carrier is present.

On the receiver end of the radio, the CTCSS circuit decodes the subaudible tone and opens up the radio receiver's audio. Even though other users may be using the same channel, the receiver will remain silent until the CTCSS decoder hears the same subaudible tone it is set for. Generally there are 32 available subaudible tones that can be used, and users even have to take proper precaution so that they don't choose the same CTCSS tone that another user on the channel is already using. This is the way that "community repeaters" are used on the UHF business band channels.

Sometimes, as many as three dozen users may be using the same UHF business band repeater in metropolitan areas. So that each of the users don't go bonkers listening to each others' radio traffic, each user will use a different CTCSS tone on the repeater. Usually a light on the radio's control head will indicate whether someone else is using the repeater, so that two users don't step on top of each other trying to make calls. When the light on the radio goes out, the repeater is then clear to make a call. Some radios also have "message" lights on them. If the radio receives a transmission with the radio's CTCSS tone and no one is monitoring the radio, the light will indicate to the user that he or she has a call waiting when returning to the vehicle. However, a message option is usually good only in smaller systems. In a larger system with many radios all using the same CTCSS frequency, the message light would be lit almost all the time, which would be of no value to the individual user.

It also should be noted that in some systems, only an encoder will be used. The encoder transmits the subaudible tone, but the receiver will open up to any transmission it hears, whether or not CTCSS is employed. Many ham radio operators employ CTCSS in this manner to access repeaters not open to all other hams; thus, they still can hear anyone else that may try to operate on the same channel without CTCSS. In another instance, a police department may install only encoders in their patrol cars, but install both an encoder-decoder at the base station. There might be several reasons for doing this. One reason would be that the base station doesn't have to listen to any other users on the channel, however, patrol cars may hear another agency on the same frequency call their base station and the car can advise the dispatcher to turn off the CTCSS option to receive the call.

This photograph shows the neat and tidy listening post from which David Simonis of Plover, Wisconsin, likes to monitor railroad, aircraft, and public safety communications.

Shuttle Calls

If you live anywhere near the Goddard Space Flight Center in Greenbelt, Maryland, you can tune in and hear live space shuttle communications anytime the crew is in space. The Goddard Amateur Radio Club at the National Aeronautics and Space Administration's facility in suburban Washington, DC, retransmits the audio on 147.450 MHz. If you're not within range of the VHF transmissions, fire up your shortwave receiver and try: 3860, 7185, 14295, 21390, and 28650 kHz. As many as three of the HF frequencies will be in use at any given time to relay the shuttle audio and 3860 is the club's primary frequency.

New Directory

A very useful scanner directory is the *Upstate South Carolina Scanner Frequency Directory* published by Larry Williams of Radio Research. Not only has he included all the radio frequencies and radio codes used in Greenville, Pickens, Oconee, Anderson, Abbeyville, Greenwood, Laurens, Union, Spartanburg, and Cherokee counties (along with northeast Georgia and Northwest North Carolina), he has also included general information of interest covering antennas, out-of-band programming for various scanners, where to search for specific frequencies, what skip channels to monitor, highway patrol and state police frequencies

for across the United States, race car communications, business band channels, and ham radio channels. The 64-page booklet sells for $6.95 and is available through: Radio Research, 10 Elf Lane, Greenville, South Carolina 29611.

Mailbag

David Simonis of Plover, Wisconsin, sends along a photograph of his listening post with a few of his favorite frequencies:

161.250 Green Bay & Western Railroad/ Channel 1-Road
161.070 Green Bay & Western Railroad/ Channel 2-Yard
160.680 Green Bay & Western Railroad/ Channel 3-Road
161.370 Soo Line Railroad/Channel 1-Road
161.520 Soo Line Railroad/Channel 2-Yard
161.085 Soo Line Railroad/Channel 3
160.770 Milwaukee Road/Channel 1-Road
160.890 Chicago and Northwestern Railroad/ Channel 1-Road

As seen in the photograph of his shack, David uses a Bearcat 150, a Realistic DX-150A, and a Realistic Patrolman CB-60. He says he's most interested in railroad and aircraft communications, but also listens to local police, fire, and ambulance channels. He's getting reception over a 40-mile radius with just the telescoping antennas on the scanner.

L. Jean Baker writes in to say he has been an active aircraft band monitor for the past several years and is interested in hearing from others with a similar interest. In fact, he's even interested in starting a club for aero band enthusiasts, if enough people are interested. I think it would be a fine idea for such a unique club. If you are interested in monitoring the 108-136 MHz band, you can drop him a line at L. Jean Baker, Registered Monitor KIN9DD, 213 West Troy Avenue, Apt. C. Indianapolis, Indiana 46225.

And that reminds me: Scanner Scene is always looking for your input. Send any photographs you have of radio installations, transmitting sites, dispatch consoles, or even your own monitoring post, whether it is base or mobile. I'm also looking for frequency lists and radio codes and unit numbers, not to mention any listening tips you'd like to share with our readers. You can write to me at Chuck Gysi, N2DUP, Scanner Scene, Popular Communications, 76 North Broadway, Hicksville, NewYork 11801. PC

PIRATES DEN

FOCUS ON FREE RADIO BROADCASTING

BY DARREN LENO, WDØEWJ

Pirate Radio Central (PRC) began operation in January, 1981, as a group of unlicensed radio stations broadcasting for peace throughout the world, and to provide listeners with a chance to express their views over the broadcast medium. Thousands of listeners in the New York City area have heard the PRC "flagship" station, KPRC, on 1616 kHz AM and 91.5 MHz FM. Earlier this year, an SW outlet was added on 6275 kHz, providing nationwide coverage for this interesting pirate.

PRC programming consists of an open format show. Broadcasts usually last from 3 to 4 hours but, due to their clandestine nature, are sporadic. Telephone call-ins from their listeners make up a valuable part of the program material. Contemporary rock and roll music is heard between political editorials, comments, letters, and phone calls.

KPRC is one of the easier pirate stations to hear, and it is consistently reported to this column.

Richard Gleitz of Pennsylvania reports KPRC on 1616 kHz, from 0515 to 0645 GMT, with rock music, a lengthy discussion of AT&T, and "phone phreaks."

Erik Wheeler of Vermont and Frank Decker of New York both wrote to tell us that KPRC has a new address for listener correspondence: KPRC, PO Box 542, Exeter, NH 03833. This replaces PO Box 747.

DXers will find KPRC very willing to verify correct reception reports with a sharp looking QSL card. Don't forget to include at least three First Class stamps with your letter.

Here's an interesting item: George Zeller of Ohio heard KPRC discuss their latest public service project—the KPRC dating service! Men and women from the NYC area are encouraged to send in personal profiles of themselves, and KPRC will match them up.

FCC Bust

Many DXers were disappointed to learn that Radio Free Insanity (RFI), PO Box 982, Battle Creek, MI 49016, was closed by the FCC in early April of this year.

According to Scott McClellan, RFI was only ten minutes into a program when Chicago FCC field engineer, George Sklom, raided the station at an undisclosed location. Mr. Sklom was responsible for closing down the famous Jolly Roger Radio of Bloomington, Indiana in 1980. Hopefully, we'll have more information about RFI for you soon.

As for RFI loggings this month—Brenton Steck, Jr., of Indiana noted RFI on 7430 kHz with rock music and a good signal; and Steve D'Antonio heard them on 15065 kHz from 2030 to 2125 GMT, with a satirical remake of the popular movie, *Star Wars*.

Radio Delmare frequently relays other European pirate stations.

Anarchist Pirate Closed In London

Earlier this year, Mike Gillard, a South London Anarchist, received a large monetary fine for "using or installing" a transmitter for Our Radio, an open access community pirate station.

According to Black Flag, the court case goes back to a raid of Mr. Gillard's apartment in Deptford in March, 1983. There, police found a transmitter and other broadcasting equipment.

Gillard denied "using or installing" the equipment, explaining that the Our Radio team had left his apartment just as the police arrived. Although he had witnesses to prove this, and although police and Home Office detectives admitted that they had no direct evidence against him, Gillard was found guilty.

Our Radio has been off the air for nearly a year now, but plans have been made to put the station back on the air again soon.

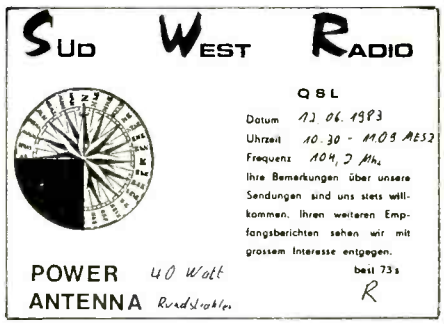
Rick Freeman of Florida says that Our Radio can be contacted through this address: BM Box Hurricane, London, England, WC1N 3XX.

Pirate Bandscan

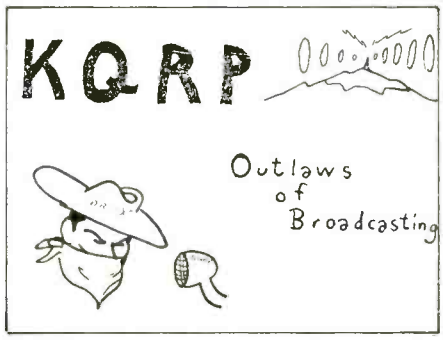
KFAT, the only Country Music pirate on the shortwave bands today, was heard on 7432 kHz from 0600 to 0624 GMT according to John Arthur of Hawaii.

KQRP was noted on a Saturday night on 7415 kHz, from 0245 to 0330 GMT. John Cook of Illinois reports that KQRP DJ "Doctor X" announced he was "Broadcasting from a lonely mountain top in North America." Reception reports to KQRP can be sent to PO Box 982, Battle Creek, Missouri 49016.

KQSB, noted on 15101 kHz after 2000



This West German pirate recently made a comeback to the airwaves.



KQRP has been heard regularly on the 41-meter band.

GMT by Kirk Baxter of Kansas, recently featured John Crazy as a guest DJ.

Joe Farley of Illinois heard KTGR on 7414 kHz after 0500 GMT. This station has also been heard on 7394 kHz. Rock music from the 70's was heard, and included songs from The Doors and CCR.

New Wave Radio Int'l continues to be heard. Grant Lochmiller heard NWRI on 7396 kHz from 0400 to 0900 GMT for five straight hours! DJ's included Ricky Rickshaw, Killer John, and Cynthia Richmond. Several other DXers heard this broadcast and described the attempted humor between songs as "tasteless."

The Crystal Ship was heard on 7414 kHz after 0400 GMT, endorsing Jesse Jackson for President. Kirk Baxter heard them mention a possible new frequency of 14800 kHz. Reception reports can be sent to The Crystal Ship, c/o PO Box 245, Moorhead, MN 56560. Include three First Class stamps with reports.

The Voice of Laryngitis was plagued with interference when Kirk Allen of Oklahoma managed to tune in is station on 6205 kHz after 0100 GMT. Kirk was able to ID the station, and even caught part of a comedy-skit of "Mr. Huxley's Neighborhood."

The Voice of To-morrow was heard by Michael Goetsch of Ohio on 1618 kHz after 0500 GMT. Michael heard a program about the Civil War, and says he heard no comments made that might be considered racist.

The VOT created quite a stir among listeners not too long ago when they aired programming that many looked upon as racist.

New Pirates

Radio Espiritu (Latin for "Spirit") was heard for the first time recently on 7426 kHz from 0000 GMT by Kirk Baxter. Kirk tuned in to a very strong signal with "Gregorian chant-like music." The station only identified itself at the end of the broadcast at 0100.

Tangerine Radio has been heard on 7425 kHz after 0430 by Rick Freeman, who heard rock music by such bands as the Allman Bros., ELO, and Lynard Skynard.

The Voice of Music was heard operating on LSB on 7435 kHz, 2345 to 0004 GMT. Artie Bigley of Texas says the station programmed punk music and claimed to be broadcasting from Washington.

WDBX was noted on 1620 kHz from 0600 to 0630 GMT by Richard Gleitz. Richard described the musical format as "a grab bag...all the way from the Tijuana Brass to Blondie." A WDBX announcer proclaimed, "We're back! Welcome to the return of WDBX Radio!" I have no background on this station and it seems that it is not a new pirate. If anyone knows the history of this station, please fill me in.

A pirate calling itself Radio North Coast Int'l is planning to appear around 7400 kHz with a "bizarre eclectic" program format. Watch for them weekend evenings. Reports can be sent to the Moorhead address above.

Recently, I had a chance to pay a visit to Kirk Baxter in Kansas and to do some DXing at his radio shack. Both of us were quite pleased when we discovered a very strong station calling itself "The Sons of Ireland" on 7410 kHz, from 0030 to 0118 GMT.

This station had an excellent signal and was playing Irish folk ballads. ID's were few, and no address was given out. Perhaps we'll have more on this station next month when reports from readers begin to arrive.

KMA Radio

After many trials and tribulations, KMA Radio is a reality.

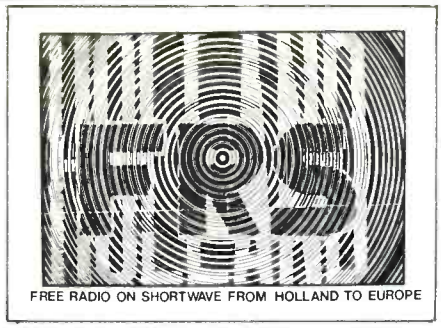
On March 22, at 2200 GMT, KMA went on the air at 7420 kHz. Since then, reception reports have been received from all over the country. Listeners should tune 7420 kHz for KMA Radio during weekend evenings.

KMA runs a Hammarlund HX500 transmitter into a 500-watt Gonset amplifier and an inverted "vee" antenna.

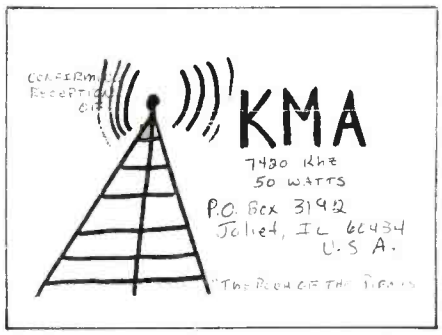
Euro-Pirates

From correspondent Podney Sixe in Cornwall, England, we received the following information:

Europe's latest offshore pirate broadcaster, Laser 730, has an address in the United States: MMI, 341 East Madison Ave., New York, NY 10017. Anchored off the Thames Estuary, Laser 730 is backed by millions of U.S. dollars and will rival the infamous Radio Caroline for advertising revenue once regular transmissions begin.



A promotional sticker from the popular Euro-pirate, FRS-Holland.



KMA sends hand-drawn QSL cards to listeners who send in correct reception reports.

Radio Rastafari, PO Box 162, 6680NA, Bemmel, Netherlands, made a welcome return to the airwaves earlier this year. The station was relayed by Radio Delmare.

Free Radio Service (FRS) Holland, PO Box 41, 7700AA Dedemsvaart, Holland, broadcasts every third Sunday of the month from 0900 to 1500 GMT via the facilities of Radio Delmare.

Radio CLCG (Clandestine Listeners Club of Germany), c/o Wilfred Meyer, PO Box 540 101, D-4100 Duisberg 11, FRG, is yet another station to be heard thanks to Radio Delmare. CLCG is looking for DJ's to present 60-minute programs in German, Dutch, and English.

Sudwest Radio of West Germany made a return to the airwaves with their new transmitter on 6235 kHz before 1100 GMT. Reception reports can be sent to Postfach 1471, D-6690, St. Wendel, FRG.

Music Radio Holland, 151 Bevmeesweg, NL 9661AE, Alteveer, Holland, broadcasts every second Sunday of the month on 7314 or 7364 kHz from 0800 to 1100 GMT.

In Conclusion...

Thank you to this month's contributors and to the Association of Clandestine radio Enthusiasts (PO Box 452, Moorhead, MN 56560).

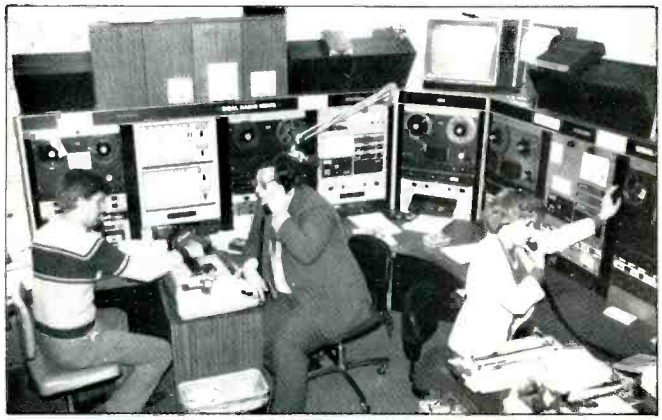
If you have any pirate-related material you would like to share with us (loggings, QSL's, etc.) please write me at The Pirates Den, c/o Popular Communications, 76 North Broadway, Hicksville, NY 11801.

Remember, most pirate activity occurs during weekend evenings. Keep a vigilant watch on the frequencies listed above, and report back to The Pirates Den what you've been hearing. Good luck! PC

BROADCAST TOPIX

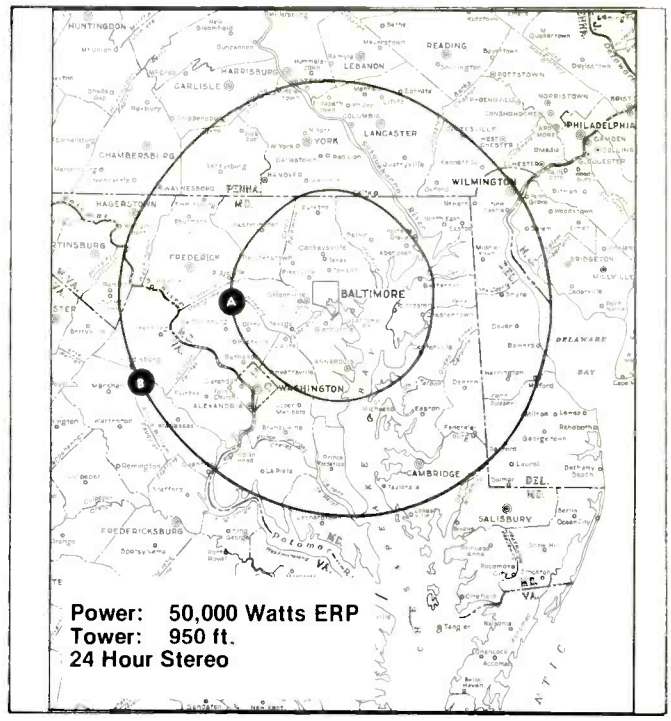
BY MARK J. MANUCY, W3GMG

DX, NEWS AND VIEWS OF AM AND FM BROADCASTING



News room at WBAL, Baltimore: Panel between Chuck Jackson (L) and News Director Jeff Beauchcamp (C) is audio switcher. This routes 40 audio sources to tape machines and master control. The microphone is used for weather bulletins. TV shows weather radar. The fourth "station" is out of view to the right. News broadcasting is done in a booth behind the photographer, who is standing on tables where the eight news machines are located. Gal in picture is Brenda Carl who does early AM news along with Jackson. (Photo by Mark Weaver)

WIYY is the FM station of WBAL AM/TV.



This column will give readers a view of the current happenings on the AM and FM Broadcast Bands. We'll keep you up to date on call letter changes, power increases, and other station changes. We will cover most of the changes released by the FCC. All of the changes will not be covered since there are too many to repeat here. The major changes are the ones we will list. Most of 3 kw FM station changes will only be shown as we have space since there are so many and each station covers such a small area. All call letter changes we can find will be passed along so the guide books you own can be updated. AM changes will be listed since even a low power station can be heard over long distances at certain times of the day and year.

The hottest new FM DXing will be the new low power translators which are starting to spring up in many areas of the country. Most of these translators are 10 watts of power and are used in the same manner the CATV franchises work. The translator owner/operator will set up a half dozen translators on unused FM channels in a city beyond the coverage area of the stations whose signal he will import and rebroadcast.

This is apt to be a mixed bag for the FM DXer! Although it will give him additional stations to log, trying to get a QSL card might be interesting. Many of these 10 watters will not be run by the stations being rebroadcast. If the Chief Engineer is not aware that his management is using translators (could be several) he is apt to wonder why he is getting a DX report on a frequency different from the one his station is licensed for! Don't laugh—it will happen, especially with contract type engineers that only visit a station a few hours a week.

If the FM DXer is not aware of these translators he will really have fun trying to figure out if his radio has gone wacko reading the wrong dial frequency or whether the whole world has turned around. His antenna is turned to the side of the station to which he is listening and when he turns toward the city of license, the signal fades out! Not only the wrong frequency, the wrong direction is true for four different stations in the same city. Can you see this poor chap—"I've heard of band openings, but this is ridiculous!"

Other big FM news is the release by the FCC of "FM drop-ins," Class A (3 kw or less) on Class C (high power) channels in certain areas. This will allow many new FM stations on the air. I'll print a listing in a few months when these stations start to come on the air.

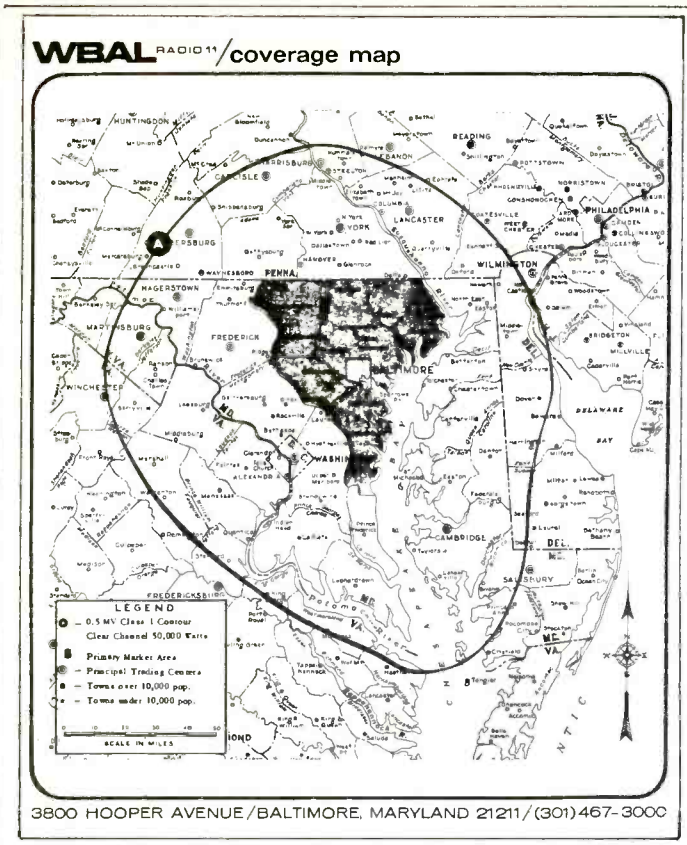
If you have an SCA ("background music") adapter on your FM radio, here's a new twist for you. For years the SCA channels have been 41 and 67 kHz. The 41 kHz is only used if the station is not broadcasting in stereo. Well, McMartin Industries has come up with a system that will squeeze five SCA channels where there is only one now. They said it works great, even better than the single channel SCA. It will certainly make SCA monitoring more exciting. The new channels are 57, 66.5, 76, 85.5, and 95 kHz. If a station continues using 67 kHz they may use the 85.5 and 95 kHz channels of this new system. The new five channel SCA was recently demonstrated on WAMU-FM in Washington. This new system uses single sideband AM. The present SCA systems use FM. McMartin says it is possible to transmit "stereo foreground music" (opposed to background music) with their new system.

The sources for SCA programming are spreading. There is a service in Baltimore that receives the SCA program via satellite, piggyback from a dish used for other programs. The receiving dish is located at one radio station and with telephone lines the programming is sent to another station to be broadcast on their SCA.

Speaking of satellites, programming via the satellite is becoming quite the thing to do. In fact, the ABC radio network cut the cord from AT&T in March. They have twenty digital channels with 15 kHz audio bandwidth in service with two 7.5 kHz "cue" channels and several data channels. I have heard several live concerts broadcast in digital stereo via ABC's satellite and they are clean, up front audio.

The basic difference to the DXer in the two types of satellite transmission is that analog audio does not require a special decoder receiver to hear the broadcast. Digital transmissions use that decoder to convert the digital information back to regular analog audio. The big plus to the broadcaster in using digital audio is that most types of noise and interference that plague the analog transmission do not affect the digital. A lightning crash I heard the other day on a digital program did not cause the loss of but part of a word. A similar noise on AM or SB would have been very disturbing.

If you listen to a digital it will sound like a buzz saw without the right type of receiver. With the right type of detector the recovered audio is the best long distance audio I've heard.



WBAL daytime coverage.

Call Letter Changes

City, State	Old Call	New Call
AM Stations		
Hanford, CA	KKYS	KLTK
Selinsgrove, PA	WQBW	WYGL
Missola, MT	KYSS	KLCY
Blackwell, OK	KLTR	KOKB
Charlottesville, VA	WXAM	WKAV
Herkimer, NY	WRMV	WMYL
Louisville, KY	WINN	WLLV
Ridgeland, MS	-	WYAI
Prescott Valley, AZ	-	KLKY
FM Stations		
St. Augustine, FL	WFOY-FM	WUVU
Sonora, CA	KROG	KVML-FM
Gainesville, TX	KDNG-FM	KDNT-FM
Oskaloosa, IA	KBOE-FM	KOSK
Pineville, KY	WTJM	WZKO
Atoka, OK	KEOR-FM	KHKC-FM
Iola, KS	KIOL	KIKS-FM
Phoenix, AZ	KNNN	KLZI
Tampa, FL	WOJC	WFLA-FM
MacClenny, FL	WBKF	WJXR
Augusta, GA	WYMX	WFMG
Ft. Wayne, IN	WLHI	WLAB
Stamford, TX	KOAY	KZOM
Houston, TX	KRLY	KLTR
Salt Lake City, UT	KLCY	KLCY-FM
Miami, FL	WWWL	WLVE
Eaton, OH	WJAI	WGTZ
Centralia, MO	-	KZOU
Flint, MI	-	KFUM-FM
Rock Harbor, FL	-	WKLG
Bay City, TX	-	KMKS
Peoria, IL	-	WOTF
St. Johns, AZ	-	KQZE
Rapid City, SD	-	KYPZ
Idaho Falls, ID	-	KFTZ
Lahaina Maui, HI	-	KPOA

Radio stations all over the country are "sprouting" these "inverted mushrooms" (satellite dishes) and the listener is hearing much better audio and a better variety of programs as a result. Many stations have three or more "dishes" for programs and news wire services. The broadcasters' needs for satellite programming are as varied as are the stations. All the networks send their programs via satellite now. The news services teletype is the same. CNN radio and many music services are via satellite.

Here are some examples: A major market 50 kw station has three dishes. One is for UPI wire services and audio. One for ABC and one for CNN. The CNN dish also picks up other programming, one using the vertical feed, the other the horizontal feed from the dish. The UPI feeds the station plus a local newspaper and UPI radio network audio to other radio stations in town. The ABC receiver feeds news to the newsroom, programming to the AM and the FM station.

A small town broadcaster has two dishes, one for ABC and the other for a music programming service which the station uses 24 hours a day. This keeps his staff to a minimum. And to think that this type of service has just begun. The day of programming via satellite is just dawning.

Maryland's only 50 kw full time station, WBAL in Baltimore, recently increased the signal which is radiated to the west of the city. This was done in mutual agreement with KAAY in Little Rock. These Class 1B stations are on 1090 kHz. WBAL beams north and east of Baltimore at night. For those trying to log WBAL at night the station has talk shows from 6:30 p.m. until 5:30 a.m. with news on the hour until midnight and then ABC news at 1:30, 2:30, 3:30, and 4:30 a.m. They are off the air the first Monday of each month and broadcast CNN headline news on the other Mondays from midnight to 5 a.m. CNN is also broadcast on Sunday morning. WBAL is heard regularly from southern Virginia northward through the reaches of Canada. The station's talk shows have regular callers from Bermuda and have had several reports from Europe recently. The transmitter site is west of Baltimore in Randallstown, Maryland. Three 500-hundred foot towers are used at night. The transmitter is an RCA Ampliphase and is one of America's hi-fi AM stations, transmitting top-notch audio. If you live west of Baltimore or in the deep south, listen for WBAL and send me a report. I don't give QSLs but it will be interesting to see how many BCB DXers can log WBAL. See my address at the end of the column.

Maryland now has a second 50 kw station. Although WANN is a daytimer on 1190 kHz, it should provide good DX at sunrise and sunset. To be honest, there is another 50 kw station residing in Maryland near Wheaton, but WTOP is licensed to Washington, DC. WTOP is well-known up and down the east coast as "Newsradio 15" (1500 kHz).

Last month I mentioned a digital radio I test drove! Let me follow up with a couple of additional thoughts on a summer "DX" radio. Many of these new digital radios will have a "scan" or "seek" function. At first thought this feature might seem exciting to the DXer. However, most of these circuits are not set up to be sensitive to the weaker stations. This will be helpful to log the city stations and knock them off in a hurry, but it is best to use the manual tuner to find the ones that really count! By the way, I bought the vehicle attached to the radio, and our first weekend away from Baltimore I caught two FM stations I hadn't been able to find before on an analog dial radio. My wife was doing the driving—she picked the car, I picked the radio. I guess it was a good thing the radio was in the "Wonder Wagon" she liked!

The FCC has determined that its proposal to allow the Coast Guard to use the broadcast remote pick-up frequencies of 161.70 and 161.75 MHz should *not* be adopted. Almost all parties commenting opposed the sharing arrangement, citing the difficulty in having the Coast Guard coordinate the use of the frequencies with broadcast stations.

The FCC has completed calculations for daytime-only stations on Canadian Clear Channels to operate extended hours before sunrise. Last fall the FCC allowed many stations to begin operating post-sunset with up to 500 watts of power. Most of the broadcasters were very disappointed because all but a few of the grants were very low power, below 100 watts. Now 180+ will be given early sign-on if they want it. How much power and how many stations will take advantage of the 6 a.m. sign-on is not known at this time. I'll keep you posted.

The FCC Mass Media Bureau has notified WVAB of Virginia Beach, Virginia of an apparent liability for forfeiture in the amount of $10,000 for willful and repeated overpower operation. This was one of the stations that had been given post-sunset authority for operation with a power of 4.5 watts. According to the Commission, the station (on a couple of occasions in December) was operating with a power of more that 4.5 watts. They exceeded the operating power by 175 to 231 watts, making the percentage of overpower from 3,889% to 5,133%. WVAB is a daytime station on 1550 kHz with 5,000 watts.

KHDN AM & FM of Hardin, Montana has been relieved of a fine of $1,000 for failure to file an Annual Employment report. It seems the station has been off the air for almost two years and they have had no employees since then! And KCRX of Roswell, New Mexico has been ordered to pay $1,000 for failure to reply to a pink ticket sent to them.

The FCC will pass out about $5 million to those broadcasters that have been subjected to interference from Cuban radio stations. The majority of the stations which will receive monies are in Florida. The broadcasters in the state are saying they will not get as much money as they should under the Commission proposal. The stations involved should begin receiving some funds in October from the U.S. Information Agency, which is the agency that will distribute the money. Some stations have been able to increase their power considerably. One regional channel operation went from 5,000 to 10,000 watts and the night power on another station increased from 10,000 to 25,000 watts. Other stations were able to change the directional patterns.

The next big AM news is that the FCC has approved a power increase for all local channel broadcasters. This will be a blanket grant to increase the nighttime power from 250 to 1000 watts. The final papers have to be signed with Mexico and this could be fact by the time you read this. The local channels are 1230, 1240, 1340, 1400, 1450, and 1490 kHz. These are also called Class IV stations. As to whether or not this power increase will help or hurt DXing is hard to say. Some of the local operations around Baltimore seem to keep the audio power at 1,000 watts at night now even though the output power is reduced to 250 watts. They really seem to "spread" out on the dial at night. Maybe it won't be so bad if the output power matches the audio power! If you live close to a Class IV station now I would suggest you try to log as many adjacent channel stations as you can before the power increase is granted. It will be more difficult to hear frequencies next to the local channels after the locals increase power.

That's it for this month, folks! Keep those cards and letters coming . . . my address is P.O. Box 5624, Baltimore, MD 21210-0624.

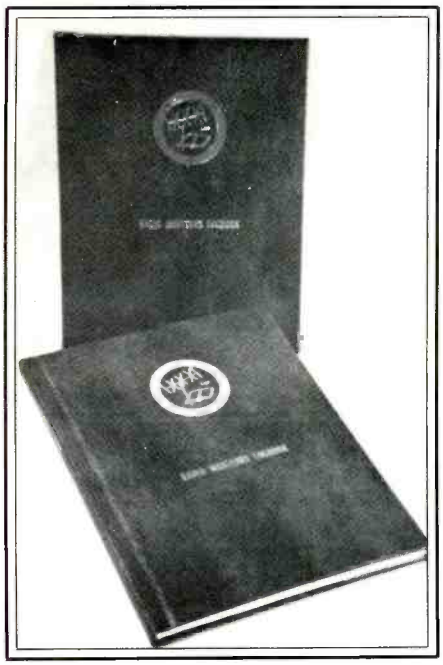
Station Updates

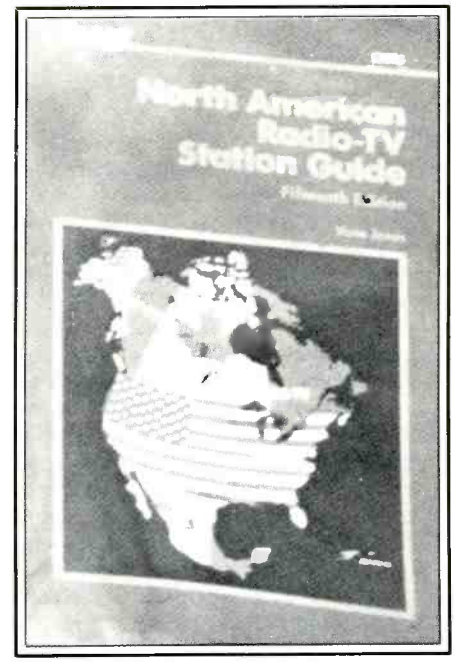
City, State	Call	KW	Antenna	Frequency
Cocoa Beach, FL	WCKS	100	1598'	101.1
Cocoa Beach, FL	WRKT	100	1598'	104.1
Nashville, TN	WZEZ	75	1053'	92.9
New Britain, CT	WRCH	10	1105'	100.5
Denver, CO	KY-GO	100	1302'	98.5
High Point, NC	WMAG	100	1500'	99.5
Salt Lake City, UT	KRSP	27.5	1100'	103.5
Kirksville, MO	KRXL	100	410'	94.5
Castle Rock, CO	KADX	.45	790'	92.1
Hershey, PA	WRKZ	48	500'	106.7
Dutch Harbor, AK	new	.5	-	1260
Jacksonville, FL	WAYR	2.5	DA-D	550
Sebring, FL	WJCM	5/1	DA-2	960
Clovis, CA	KXQR	2.5	DA-2	790

PC

PRODUCTS

REVIEW OF NEW AND INTERESTING PRODUCTS





Personalized Hardbound Logbook For Radio Monitors

Liss Radio Publishing is pleased to announce the Personalized Hardbound Logbook for Radio Monitors. A truly "professional" logbook, it is beautifully styled in simulated leather, with the owner's name stamped in gold on the cover. This is a logbook you'll be proud to display in your shack.

The logbook is designed to lay relatively flat on the radio table. The 8½" × 11" pages have an extra wide margin at the spine so that you do not have to write into the "fold." Each line is extra wide to accomodate those listeners with "bold" handwriting. Each page of log entries has a whole page of comment lines opposite it, so that the owner will have plenty of room for notes of interest.

Each logbook is handstitched and glued for maximum durability. This book is available in blue or brown simulated leather for a price of only $15.95 plus $1.50 shipping and handling. A version for amateur radio is also available. For more information, write to: Liss Radio Publishing, P.O. Box 937, Hammond, IN 46320.

LNA Boasts Low Noise For Cleaner Satellite TV Reception

Regency Electronics, Inc., now offers the first LNA (low-noise amplifier) in the company's growing consumer satellite systems product line. This new LNA boasts an extremely low noise figure (95° K) for a very good signal to signal-plus-noise ratio (in non-technical terms: clean, relatively noise-free reception, even under marginal signal conditions). The new Regency LNA-95 Low Noise Amplifier is available for $499 at participating Regency Satellite Systems dealers.

Commercially-available LNAs offer noise figures from about 80° K (outstanding) to about 120° K (marginal). With a noise figure of just 95° K, the Regency LNA-95 is among the better-performing units.

The LNA 95 offers 47 dB gain. In perspective, there is nothing extraordinary about this amount of gain in this price range; it is, however, remarkable to find this amount of gain in an LNA with so low a noise figure in this price range. A noisier amplifier with more gain produces less satisfactory reception than a quieter amplifier with marginally less gain.

By the time satellite signals reach the ground, they are extremely weak and difficult to receive—especially through the substantial amount of radio noise produced by natural planet-bound sources and man's noise-producing surface activities. Because of this, noise is the dominant factor in the design of amplifiers for satellite television reception; hence the name Low Noise Amplifier (or LNA) for the element that works between the satellite antenna dish and the satellite TV receiver. The lower an LNA's noise figure, the better.

Regency's previously-announced satellite receiver and antenna products and this new LNA, in combination, make Regency full-system source for consumer satellite TV equipment.

For information contact Regency Electronics, Inc., 7707 Records St., Indianapolis, IN 46226; (317) 545-4281, or circle number 113 on the reader service card.

New Broadcast Station Guide

The new 15th Edition of Vane Jones well-known *North American Radio-TV Station Guide* has just been published! Handy and informative, this computer generated 226-page book, printed on high quality paper and with a sturdy and colorful cover, lists more than 13,000 broadcasting stations in the U.S., Canada, Mexico, and the West Indies. Listings are as follows: TV stations by location and by channels, FM stations by location and by frequency, AM stations by location and by frequency. There is also a master listing of all stations according to call-signs. Supplementary information includes TV network affiliations, AM radio day/nite power output, schedule data, etc. There is identification of non-commercial and educational stations, as well as information on stations not yet on the air or soon to resume broadcasting. This book is a great help in identifying all stations. Whatever your interest is in monitoring, you will find the Jones *North American Radio-TV Station Guide* to be convenient, up-to-date, painstakingly accurate, and complete. Veteran listeners consider the Jones log to be the ultimate in broadcasting station reference material and have been enthusiastically waiting for this newest edition (the previous edition was published in 1981).

The *North American Radio-TV Station Guide* (15th Edition) is now available from CRB Research, P.O. Box 56, Commack, NY 11725. This book is $9.95, plus $1 for mailing to USA/Canada/APO/FPO. If you live in Canada, please submit payment by Postal Money Order made out in U.S. funds.

SATELLITE VIEW

INSIDE THE WORLD OF TVRO EARTH STATIONS

BY JEFFREY KEATING, WB4KDH

The Satellite Viewing Rights Act Of 1984

An event of major significance to home satellite enthusiasts has recently taken place. Two congressional acts insuring the right to view the satellites from our backyards were cleverly introduced to the public and satellite industry during a large satellite convention in Las Vegas, Nevada on March 19, 1984.

The setting is Caesars Palace. We are seated at a banquet table in the Circus Maxamus where many famous entertainers have performed. Behind the podium, a large video screen lights up a welcome to the 1984 SPACE Convention and International Exhibition. The room is filled to capacity and we hear that two other adjacent banquet halls are equally full. It's actually the evening of the second day of the conference. Although we're a bit tired from attending seminars, walking the huge antenna yard, and checking out the latest new products in the exhibit halls, our spirits are up. It's been a worthwhile conference so far and we have come to the banquet to hear the latest of what SPACE (the Society for Private and Commercial Earth Stations) has been up to. One of the themes of the conference is teleconferencing, but little do we know we are about to have a live demonstration.

Peter Dalton, current president of SPACE, takes the stage. After welcoming all of us, he presents an award to past president and show chairman Bob Bahar for his unending and tireless efforts and fantastic results as show chairman.

Bob accepts the award and announces that this is the largest attended SPACE convention to date, and that they have a surprise for us. He returns to his seat next to the podium and puts on a set of two-way headphones. He is obviously up to something.

Appearing on the large screen is SPACE General Councillor Rick Brown. Sitting with him live in Washington are Senator Barry Goldwater (R-AZ), Congressman Charlie Rose (R-NC), and Billy Tauzin (D-LA). Mr. Brown announces that they have taken the opportunity of this teleconference to announce to the public that earlier that day bills were submitted before the Congress and the House of Representatives to secure our viewing rights and the longevity of the satellite industry. Senator Barry Goldwater then begins:

"Today I introduced a bill into the Senate which will take care of the space program as far as home satellite earth stations are concerned. This bill (S 2437) makes it perfectly clear that the Communications Act of 1934 and the subsequent changes and additions in the law in no way prevent a man or family from having a space antenna on their property that will bring in satellite signals and, through proper receivers and so forth, show them on your screen. I have a very strong feeling about this. I happen to be a radio amateur and I think that the space above me belongs to me . . . I have recently joined your tribe and spend many a night when I am out in Arizona watching the satellites. I think everything you are doing is perfectly legal and don't see how any court could say that it's not."

Senator Barry Goldwater (R-AZ) introduced a bill (S 2437) to the Senate supporting satellite TV.

A similar bill (HR 5176) was brought before the House of Representatives by Congressman Al Gore, Jr. (R-TN).

Congressman Al Gore (R-TN) appeared on video tape to announce that he also introduced a similar bill (HR 5176) into the House of Representatives. Mr. Gore states:

"This is a simple, but important proposal designed to foster widespread availability of satellite television programming and to en-

Senate Bill S2437

Be it enacted by the Senate and House of Representatives by the United States of America in Congress assembled. That this Act may be cited as the "Satellite Viewing Rights Act of 1984."

SEC. 2. The Communications Act of 1934 is amended by adding at the end thereof the following new title:

"TITLE VII—SAELLITE VIEWING RIGHTS

"POLICY

"SEC. 701. The Congress hereby declares that it is the policy of the United States—

"(1) to foster the more widespread availability of television programming transmitted by satellite;

"(2) to encourage competition among manufacturers and distributors of equipment designed to facilitate the reception of satellite television programming; and

"(3) to clarify existing law which correctly interpreted secures the right of viewing satellite television programming by individuals for noncommercial use.

"RECEIVING EQUIPMENT

"SEC. 702. (a) Notwithstanding any other provision of law, any person may manufacture, import, distribute, sell, or lease equipment, for use in receiving satellite television programming, without obligation to any person who produces or transmits such programming, except as provided in subsection (b).

"(b) No person shall manufacture, import, distribute, sell, or lease, or advertise for sale or use, equipment intended for the unauthorized reception and decoding of encrypted satellite television programming.

"UNENCRYPTED SATELLITE TELEVISION PROGRAMMING

"SEC. 703. Notwithstanding any other provision of law, any person who receives satellite television programming which is not encrypted may receive such programming without obligation to the person transmitting such programming.

"DEFINITIONS

"SEC. 704. For purposes of this title—

"(1) the term 'private viewing' means the display or exhibition of programming at a place not open to the public or a place where generally the persons present are within a normal circle of a family or its social acquaintances;

"(2) the term 'satellite television programming' means programming transmitted via a domestic geostationary communications satellite intended for reception by cable television system subscribers (as defined in this Act); and

"(3) the term 'encrypt,' when used with respect to programming, means to render such programming unviewable or inaudible except to persons possessing equipment specifically enabling its intelligible receipt."

SEC. 3. Section 2(b) of the Communications Act of 1934 is amended by inserting after "of section 301" the following: "and title VII."

SEC. 4. This Act, and the amendments made by this Act shall take effect on the date of the enactment of this Act.

courage equipment. The bill requires that satellite programmers negotiate with organizations representing receivers of signals—in this case SPACE—for private agreements allowing signal reception and payment for these programs. As a last resort, the Federal Communications Commission would serve as an arbitrator to resolve disputes. The bill protects owners of copyrighted material from unauthorized reception, by requiring that payments be made through a mechanism outlined by the private parties or the FCC. Moreover, the bill sets down clear prohibitions against manufacture, sale, or use of the so-called illegal black box, used to bypass a system of fair compensation for the programmer."

A common point to both bills and probably the most significant is Sec. 703 which states, "Any person who receives satellite television programming which is not encrypted may receive such programming without obligation to the person transmitting such programming."

Congressman Gore's bill goes a step further than Senator Goldwater's in that it includes a provision concerning signals which are scrambled. Section 704 of HR 5176 states, "Any person who receives encrypted satellite television programming may receive such programming decoded for private viewing upon compliance with rates, terms, and conditions established by agreement or by the commission."

Congressman Tauzin, one of the co-sponsors of the bill in the House, explained that the bill is designed to protect the fights of the private viewer to continue receiving unscrambled signals. When signals do come to a house scrambled, it also provides a procedure where by you can unscramble that signal after paying just and fair compensation to the program providers.

Congressman Rose—also a co-sponsor—added "We will come out of this (legislative) process, I am confident, with a good piece of legislation that will make sure that the American public can continue to enjoy the benefits of this industry."

They all encouraged us to be in touch with our congressmen and let them know the importance of this legislation. The teleconference was sponsored in part by BizNet and carried on Westar 5 Tr. 13. PC

RTTY

THE EXCITING WORLD OF RADIOTELETYPE MONITORING

BY JOSEPH JESSON

Several of our readers have written to inquire on the implementation of a software routine to convert Baudot at 45, 50, 75, and 100 baud to displayable ASCII code.

Several months ago, with the description of a low-cost RTTY demodulator (December column), I promised to follow through the hardware design by testing the software routines. After all, the 2211 phase lock loop simply converts the RTTY audio tones into binary ones and zeros. The computer software (firmware if it is software frozen in a read only memory or ROM) senses the serial ones and zeros, converts the serial ones and zeros into a parallel data byte and finally changes the older Baudot code into machine usable ASCII code. The computer will display directly only ASCII code so a Baudot-to-ASCII software conversion is a must. Let's look at this entire process in detail and hopefully, one can create new computer programs once this is understood.

Wayne Munn writes "My purchase of a VIC-20 a year ago and now a Commodore 64 have brought many of my projects near success when coupled with a modified version of your XR-2211 circuit. I now have operational an RTTY system using the Commodore 64 that will read Baudot at 45, 50, 55, 75, and 100 baud. The demodulator uses the XR-2211 and 4049 for phase inversion and tuning LED driving. The signal is then processed by a simple program I wrote in BASIC, to be displayed on the screen and dumped out to the printer using the function keys. The system also works with the VIC-20, but only at 50 and 75 baud. I am also building a database for logging my RTTY lists."

A good step-by-step description of assembly language routines to display RTTY is in order. Why assembly language instead of a simpler to use BASIC language?

Assembly language allows one to get at the heart and soul of a microcomputer. After all, if one understands assembly language for a specific computer, control of the entire machine is possible. This is the ultimate in flexibility and speed—using advanced assembly language software routines. As a common hardware example we will use the Commodore VIC-20. The Commodore 64 is more powerful but very similar in design. The microcomputer example uses the 6502 chip as the central processing unit or CPU. To start out, a beginning programmer should purchase the Commodore *Programmers Reference Guide* in order to understand the particulars of the Commodore computer. The Commodore VIC-20 allows the programmer to use memory locations from 1000 Hex (4096 Decimal) to 1E00 Hex (7680 Decimal). The memory space is the area in which we will enter the RTTY program. Now, a cartridge known as VICMON (HESMON can also be used instead of VICMON) allows one to bail out from the standard VIC Basic into the domain of machine language. It can display the contents of the internal registers in the 6502 microprocessor, allows one to display portions of memory and modify them on the screen using the screen editor. A built-in assembler and disassembler changes easy-to-remember operator neumonics to an actual Hex (machine readable) code. Remember that the computer only understands binary code. Hex code is only binary code grouped into convenient groups of four bits (binary digits).

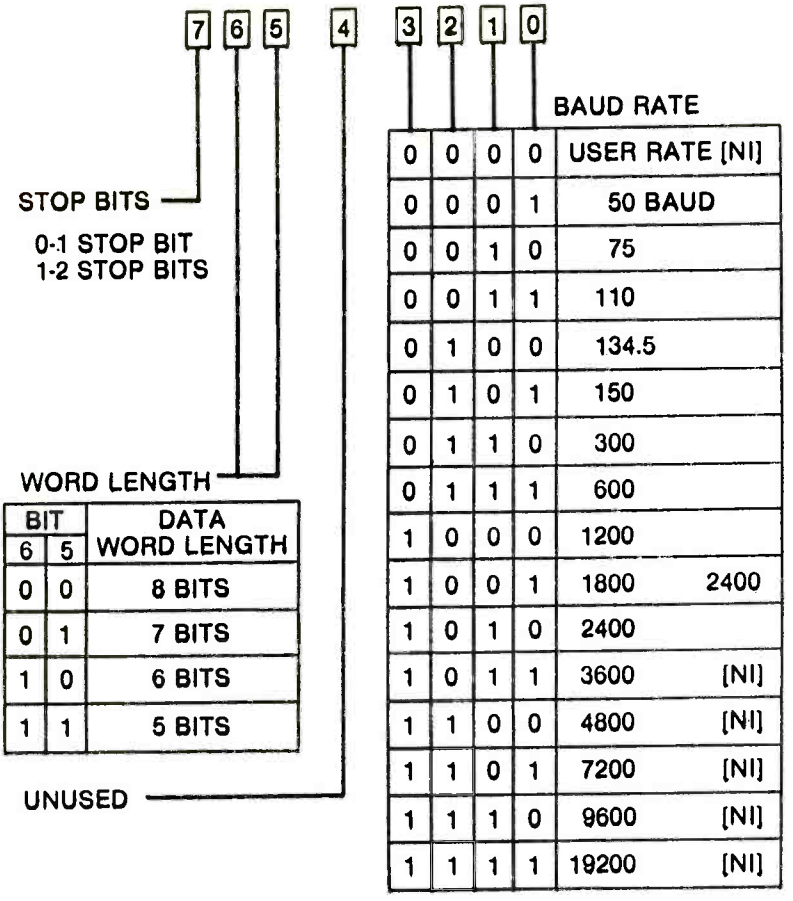
```
                START AT 1100 HEX (OR 4352 DECIMAL)
1100        ; OPEN LOGICAL FILE
                LDA #00         ; NO FILENAME REQUIRED
                LDX #00         ; NO NAME REQUIRED
                LDY #00         ; POINTER
                JSR $FFBD       ; SETNAM SUBROUTINE
            ; SET UP LOGICAL DEVICE FILE
                LDA #02         ; LOGICAL FILE NUMBER
                LDX #02         ; RS232 DEVICE
                LDY #FF         ; NO COMMAND
                JSR $FFBA       ; SET LOGICAL DEVICE
            ; SERIAL CONTROL REGISTER
                LDA #51         ; 50 BAUD - 5 BITS
                STA $0293       ; CONTROL REGISTER PROGRAM
            ; SERIAL COMMAND REGISTER
                LDA #00         ; NO PARITY - FULL DUPLEX
                STA $0294       ; PROGRAM NOW
            ; OPEN LOGICAL FILE
                JSR #FFCO       ; OPEN FILE SUBROUTINE
                LDX #02         ; INPUT DIRECT
                JSR $FFC6       ; CHECK ROUTINE
READL:          JSR $FFE4       ; SERIAL READ
                CMP #00         ; FOUND CHARACTER
                BEQ REDL        ; WAIT UNTIL FOUND
                TAY             ; BAUDOT IN A - NOW IN Y
                LDA $TABPT,Y    ; BAUDOT VALUE + TABLE OFFSET -->A
                STA $1E00,X     ; NOW DISPLAY ASCII
                INX             ; POINT TO NEXT CELL
                JMP READL       ; LOOP AND READ
```

Figure 1.

Using either VICMON or HESMON, we will enter our assembly language program to read Baudot code into our computer and display the corresponding ASCII equivalent. But first, we have to connect the demodulator or TV to the VIC-20 computer. The printed circuit edge connector on the VIC-20 represents the user port lines and allows serial TTL (0 to 50) logic to interface to the demodulator. PC edge pins B and C and tied together on the Commodore and connect to the data output line. Five volts can be tapped from pin 2 (if required by the demodulator). Keep the current draw at a minimum, preferably under 25 MA. A, N, and 1 connect together to form ground. Only three wires are required to connect the demodulator to the VIC computer. In fact, any computer may be connected to a demodulator with only three wires; the beauty of serial communications is that only a simple interface is required. A file is opened by the initial software commands (see Figure 1).

The program in Figure 1 is a brief outline of a simple program to read, convert, and display BAUDOT. A table based upon a linear list of BAUDOT characters starts at TABPT. For example, a BAUDOT code of 00 will correspond to TABPT, at let's say 1400 Hex. At the 1400 Hex address, the ASCII equivalent of BAUDOT 00 will be found. Location 1401 will *contain* the ASCII equivalent of BAUDOT 01 and so forth.

To make the program truly useful, a swap into a different table will be necessary to convert Baudot letters into Baudot figures. This



BIT 6	BIT 5	DATA WORD LENGTH
0	0	8 BITS
0	1	7 BITS
1	0	6 BITS
1	1	5 BITS

3	2	1	0	BAUD RATE	
0	0	0	0	USER RATE [NI]	
0	0	0	1	50 BAUD	
0	0	1	0	75	
0	0	1	1	110	
0	1	0	0	134.5	
0	1	0	1	150	
0	1	1	0	300	
0	1	1	1	600	
1	0	0	0	1200	
1	0	0	1	1800	2400
1	0	1	0	2400	
1	0	1	1	3600	[NI]
1	1	0	0	4800	[NI]
1	1	0	1	7200	[NI]
1	1	1	0	9600	[NI]
1	1	1	1	19200	[NI]

Figure 2.

can be accomplished by testing for the Baudot table on letters code and adding a table offset to the Y register. Figure 2 illustrates the different values required to change baud rates and word lengths. If, instead of 51 Hex, 52 Hex was stored at location 0293 Hex, 75 baud Baudot will be selected.

Two stop bits at 75 baud would require changing location 0293 Hex to E2 Hex. This is done by changing the serial control register (0293). The commands in assembly language are:

```
LDA #52
STA #0293
```

You should begin to get the picture now and by trial and error see the results of each change. By reading the VIC *Programmers Reference Guide*, various additions and bells-and-whistles can be created. A new world of flexibility is opened by assembly language programming.

Gene Bovee writes to ask about RFI problems common to Commodore computers. The only solution to this RFI problem seems to be to separate the antenna as far away as possible from the computer using a long stretch of quality coaxial cable. Various metal containers may help shield this noisy computer. The appeal of the Commodore computers is one of cost rather than shielding effectiveness.

If all of the good assembly routines look like gibberish to you, don't fret. RAK Electronics, P.O. Box 1585-PC, Orange Park, FL has an off-the-shelf RTTY program to use on your Commodore 64 or VIC-20. Baud rates are selectable from 45 baud to 100 baud and Morse code from 5 to 30 WPM. Package includes software on cassette, user port connector, and complete instructions for $19.95 plus $2.00 shipping and handling.

This is the SWL RTTY/MORSE RECEIVE ONLY version. RTTY II changes the Commodore 64 and VIC-20 into a complete split screen radioteletype unit. This package is specifically for radio hams. Features include four 255 character user definable messages which may be saved on cassette or disk, four present messages, Morse code callsign ID, RTTY ID, and auto unshift on space.

If the VIC 20 is used, an 8K memory expansion module is required. The price is the same for the RTTY II package but the specific type of computer used should be indicated when ordering. Write for a complete catalog of VIC and C-64 software.

Fred Schmidt is actively looking for surplus teletype and RTTY parts. Fred stocks many teletype parts including Kleinschmidt, Mite, and Wheatstone types. Write to Fred at Typetronics, Box 8873PC, Ft. Lauderdale, FL 33310 for his RTTY catalog or let him know what extra teletype parts you have. If you use a mechanical teletype, Typetronics has a complete inventory of these hard-to-find RTTY components. PC

RADAR REFLECTIONS

RADAR DETECTORS AND THEIR USE

BY JANICE LEE

Radar Trap? No, Just Safety For Road Crews

The accelerating duel of wits between speeding motorists and traffic cops has take a new twist on Michigan highways.

Highway workers, fearing for their safety, are using radar guns to deceive speeders into slowing down. The guns are placed in trucks used by highway workers. Speeding motorists who use radar detectors slow down, believing they're entering a speed trap, according to officials.

The fake radar traps are designed to keep speeds near highway construction sites at 45 mph, according to a Department of Transportation spokesman. The experiment began last spring.

Some work sites may soon resemble used car lots under another safety project. The plan calls for linking four old, "junker" station wagons and towing them to a work site to shield highway workers from errant drivers.

Already tried in Texas, the line of station wagons should be able to absorb impacts up to 60 miles per hour. The transportation department plans to experiment with one such steel curtain on a highway in the near future.

Retired Police Radar Guns Get New Job At Ballparks

For police purposes, they are relics of a day when palm trees were clocked doing 65 mph. But two of the Apopka, Florida police department's old radar units have found a use in retirement . . . checking the speed of pitched balls.

Police Chief Tom Collins has donated the radar units to the baseball teams at the Apopka junior and senior high schools to be used for recreational purposes only.

The baseball coach welcomes the contributions.

The police department stopped using the old equipment in late 1982 because it did not meet state guidelines written in response to court challenges over the use of speed radar equipment.

Despite the radar's reputation in the courts, the coach felt that it would be reliable enough to determine at what speed his players throw most accurately.

Michigan Court Of Appeals Sets Guidelines For Traffic Radar Use

Attorney Zolton Ferency was successful in dismissing his radar speeding ticket and at the same time also changed the Michigan state rules for using police radar.

In its decision, the Michigan Court of Appeals ruled that radar readings made from moving patrol cars will not be accepted as evidence of speeding unless specific guidelines are met "to avoid any violation of the due process rights" of accused speeders.

The guidelines are a hybrid of interim, voluntary guidelines issued by the state Office of Highway Safety Planning and those established in 1978 by the Wisconsin Supreme Court. The court said it would not overturn any speeding convictions where it was shown the police used the voluntary interim guidelines.

The court-set requirements include:

1. The officer operating the device has adequate training and experience in its operation.
2. That the radar device was in proper working condition and properly installed in the patrol vehicle at the time of the issuance of the citation.
3. That the device was used in an area where road conditions are such that there is a minimum possibility of distortion.
4. That the input speed of the patrol vehicle was verified. This also means that the speedometer of the patrol vehicle was independently calibrated.
5. That the speedmeter be retested at the end of the shift in the same manner that it was tested prior to the shift and that the speedmeter be serviced by the manufacturer or other professional as recommended.
6. That the radar operator be able to establish that the target vehicle was within the operational area of the beam at the time the reading was displayed.
7. That the particular unit has been certified for use by an agency with some demonstrable expertise in the area.

Joseph VanOsterhaut of the State Police Traffic Services Division said the guidelines "appear excellent. It's something we have been striving for in Michigan for a long time."

In this particular case, the court overturned the speeding conviction (65 mph in a 55 mph zone) because the patrol car speedometer had not been calibrated independently and the evidence indicated Mr. Ferency's vehicle could not have been within the radar's beam.

The court also ruled a defendant in a civil infraction case does not have an absolute right to refuse to testify, based on Fifth Amendment rights. The right to refuse to testify only applied to questions which will tend to accuse the defendant of a crime. The court said a blanket assertion of privilege in a civil action would deprive the questioning party of a fair opportunity to cross-examination.

The case (People v. Ferency, docket 73004) was decided by Judges John Gillis, John Shepherd, and J. Kelly.

Police Traffic Radar Approved By The International Association Of Chiefs Of Police

On January 31, 1984, the IACP approved the following radars:

Manufacturer	Model	Band	Type
Broderick	BEE-36(K)	K	IV-Moving
Enforcement	BEE-36(X)	X	II-Moving
Electronics (BEE)			
CMI	Speedgun		
	Magnum	X	II-Moving
Decatur	MVR-715	X	II-Moving
Electronics	MVR-724	K	IV-Moving
	RA-GUN(K)	K	III-Stationary
	RA-GUN(X)	X	I-Stationary
Kustom	Falcon	K	III-Stationary
Quality	HR-8	K	III-Stationary
Electronics	HR-12	K	IV-Moving
	KR-10SP	K	IV-Moving
	KR-11	K	IV-Moving
	Road Runner	K	III-Moving
	Trooper	K	IV-Moving
MPH Industries	K-15(K)	K	III-Stationary
	K-15(X)	X	I-Stationary
	K-35(K)	K	III-Stationary
	K-35(X)	X	I-Stationary
	K-55(K)	K	IV-Moving
	K-55(X)	X	II-Moving
	S-80(K)	K	IV-Moving
	S-80(X)	X	II-Moving
	S-80MC(K)	K	IV-Moving
	S-80MC(X)	X	II-Moving

In their notice of approval the IACP admits that all radars tested were submitted by the radar manufacturers (no units obtained from the field) and to complicate matters, they also admit that the manufacturers were afforded an opportunity to make minor changes in their radar units before the final testing phase.

The big question now is where does that leave the motorist?

Some of the following comments appeared in an article in the *Cleveland Plain Dealer* written by Chris Jensen:

"It certainly has the propensity to open up more litigation," said Ernst John Watts, the dean of the National Judicial College at the University of Nevada.

In the long run, the approved-products list may serve a good purpose and could end questions and doubts about radar's accuracy, according to experts such as Watts. Meanwhile, Watts said, the approved-products list may complicate traffic cases for some judges.

Successful legal challenges may mean rough times for police departments, predicted Robert H. Reeder, the general counsel of Traffic Institute at Northwestern University and the executive director of the National Committee on Uniform Traffic Laws and Ordinances.

Reeder said police will be required to abide by the decision of local judges and if a judge decides a particular brand of radar is not acceptable because it fails to meet the IACP standards, he could begin dismissing cases.

"If he starts throwing out cases, they have a serious problem. It may put them out of the speeding business for a while until they can meet their local judge's requirements," said Reeder.

Another problem brought up by the list is what will happen to the older units, said Dr. Lee L. Nichols, head of the department of electrical engineering at Virginia Military Institute and a nationally known radar expert.

Nichols believes those units will not meet the standards and some are flawed enough that motorists could get tickets they do not deserve. "What they need to do is put some kind of a deadline on the old ones and . . . replace them over a period of time with new and adequate equipment," he said.

One area that we feel must be made clear is that the IACP Consumer Products List is not binding on manufacturers and has no legal standing. PC

Janice Lee is the Editor of Monday, A.M., *the newsletter of Electrolert, Inc.*

LISTENING POST

BY GERRY L. DEXTER

WHAT'S HAPPENING: INTERNATIONAL SHORTWAVE BROADCASTING BANDS

Our sign on news this month has a domestic focus. Until recent years the population of shortwave stations in the United States was sparse indeed, with only the Voice of America and three or four religious stations on the air.

Then came WRNO New Orleans and that has stirred up no end of activity.

By the time you read this The Assemblies of Yahweh station, WMLK at Bethel, Pennsylvania, may already be testing prior to their announced August start for regular programming. Programs will be in English, initially, and be beamed to Europe. Check from 1700 to 1900 on 15.110 and 2200 to 0000 on 15.260 or 15.295. Reception reports go to P.O. Drawer C, Bethel, Pennsylvania 19507.

Another U.S. shortwave station that plans to be on the air by this summer is KCBI in Dallas, Texas. The station will be affiliated with KCBI-FM owned by the Criswell Center for Bible Studies and the Criswell Bible Institute. Programs will be scheduled from 1800 to 2000 to Europe on 17.705 and 2200 to 0000 to Latin America. The address is Box 1809, Dallas, Texas 75221.

High Adventure Ministries of California, which operates The Voice of Hope/King of Hope in Lebanon, has plans for a 500 kilowatt station to be located somewhere in California. Completion of this one is still some distance off, with fund raising efforts having started only recently.

Another California operation is Radio USA, which intends to operate a 100 kilowatt station near Napa, with programs beamed to Central and South America.

KRSP, an AM station in Salt Lake City, has an application in for a shortwave station which would simulcast the medium wave programming. This one's format would be Top 40 and be beamed to Canada, Mexico, the Caribbean, and Central America using 100 kilowatts.

In Homewood, Louisiana, another religious group has a construction permit to build a 100 kilowatt station.

Harry Norman, a businessman in Opelika, Alabama is planning a 100 kilowatt commercial shortwave station.

We hear rumors of still other stations being planned or talked about. We'll let you know as things develop. One can certainly say that, at present at least, shortwave broadcasting from the USA has become a growth industry!

Welcome back! If you need Chad for your country totals there's good news to report. The 100 kilowatt transmitter of Radiodiffusion National Tchadienne has returned on their old frequency of 4.904.5. Check around 0500 GMT. The address for reception reports is B.P. 892, N'djamena, Chad.

Paul Spurlock in Saudi Arabia uses this RF-3100 for shortwave listening since he can't use his WA4FNY ham license in Saudi Arabia.

Radio Marti should be on the air by the time you read this, using 1180 kHz, medium wave (no shortwave). Watch for possible Cuban radio retaliation in response to this U.S. government anti-Castro operation which has seen more that its share of turmoil and controversy. The Cubans may come back using any of several techniques from high power medium wave stations to jamming to something on the shortwave bands or a combination of those.

Is there an active shortwave listener on the other side of town, or in a city just a half hour's drive away that you don't even know exists? There probably is! But all too often we never make contact with listeners living nearby because we simply don't know they're there. Now somebody's trying to do something about this problem. Universal Shortwave Radio is compiling a "DXers Directory" which seeks to list as many DXers and SWLs as possible in an attempt to make personal contacts easier. You can have your name, address, phone, main listening interests, and club affiliations listed at no charge. For more information send a self-addressed, stamped envelope to Fred Osterman, Universal Shortwave Radio, 1280 Aida Drive, Reynoldsburg, Ohio 43068.

Mailbag

Let's check the mail.

Lawrence Greenberg of Rockville Centre, New York checks in to say that his reply from Radio Zealand noted that four International Reply Coupons are required for an airmail reply, not three as indicated in the 1984 *World Radio TV Handbook*. Lawrence reports good reception of the station on both 15.485 and 17.705. Yes, it's that time of the year when Pacific reception gets to be quite good in the local evenings if you live in the midwest or eastern parts of the country.

Where to send reports to the Listening Post is a question we've had several times, most recently from Thomas N. Cerf of Highland Park, Illinois. *POP'COMM* headquarters at 76 North Broadway, Hicksville, New York 11801 is fine. They'll be forwarded to us.

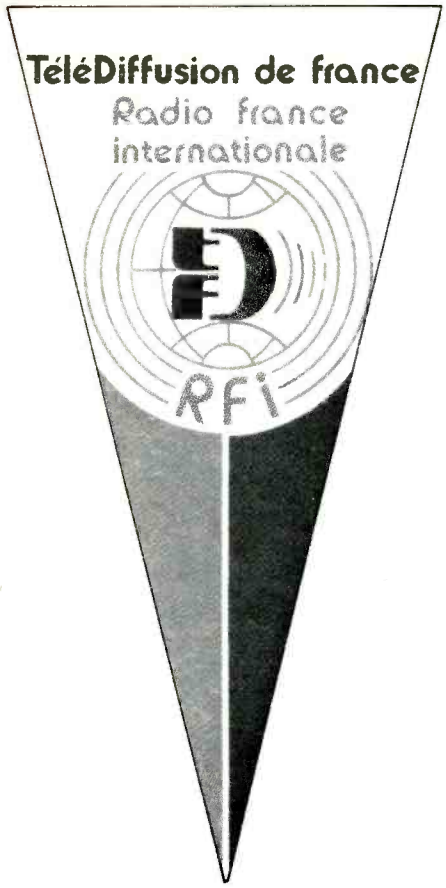
Cherie Martin and Charles Guest DX from this shack in Mountain View, California.

Paul Spurlock is working in Saudi Arabia right now, though his stay there is almost up. At any rate, Paul is a ham who isn't allowed to operate in Saudi Arabia so he's turned to shortwave listening and doing a lot of it—both at his residence and in the truck he drives. His shack photo is one of those we're featuring this month.

Mary K. Minard, a student at Bowling Green State University in Ohio uses a Yaesu FRG-7 and says she's often asked "What's that thing on your desk" by fellow dorm residents. Perhaps you can convert a few, Mary! Mary would like to see a feature on listening to the tropical bands and we'll make a note of that.

Donald R. Unruh of Ewa Beach, Hawaii asks about the Voice of the Revolutionary Party for Reunification which he notes on 4.120 at 1418 GMT. This is a clandestine station operated by the North Korean propaganda machine, even though it announces as coming from the South. We aren't sure about its current status, but the South had its own answer to the North Korean station in the form of "Echo of Hope" on 6.348.

Mike Tarsney at 2708 Channel Road 3, Alpena, Michigan is looking for a schematic for an Allen Bradford Model P-300. Write Mike if you can help.



Radio France International's red, white, and blue pennant.

Shortwave and medium wave broadcast listening have been favorites of Bill Oliver of Hewitt, New Jersey for some 15 years. Bill uses an FRG-7 along with several other scanners and receivers.

We seem to hear from at least one new wildly enthusiastic fan of Radio Earth International every month. This time it's Dennis Richards of New Haven, Connecticut who reminds us that Radio Earth's hour-long show is on nightly at 0400 on WRNO, 6.185. Letters and reports go to 1724 Sherman Avenue, Evanston, Illinois 60201. Broadcast time may have been moved up to 0300 by now.

N. Calvert of Enfield, England writes us about a phonetic alphabet mystery station he's logged and can't figure out. Well, if it's one of those so-called "spy" stations than neither can anyone else. But we suggest you read *POP'COMM's* Communications Confidential column for a steady stream of news about mystery stations. And be sure to keep us advised of any broadcast stations you hear on shortwave.

John J. Meacham of Aurora, Colorado uses a DX-300 and hopes to upgrade soon. John notes that mile-high Denver is an excellent listening spot.

David O. Chastain, a physician in Blytheville, Arkansas wants to know if there are any stations that offer English-Spanish lessons. Not that we've been able to discover David, but that kind of information seems to be scattered in bits and pieces, far and wide. Now that we've said no, someone will probably fill us in to the contrary.

Let's welcome another new listener to the SWL/DX ranks, David E. Licht of Jackson Heights, New York who received a Sony ICF 7600D as a 30th wedding anniversary gift. He says he's fascinated by what he's able to hear. We hope your interest lasts and grows David. We'll look for your reports.

And we'll look for a letter from you next month as well. Questions, comments, observations, news, loggings, good quality copies of QSLs, schedules, photos of you and your shack are always welcome. So, join the fun and check in regularly!

Listening Reports

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

Albania Radio Tirana heard at 0000 on 7.065. (Wheeler, VT)

Argentina RAE noted on 11.710 at 0335 with Latin vocals, parallel to 15.345. (MacKenzie, CA) 15.345 at 0200 with world news, emphasis on South America and Argentina. (Pastrick, PA)

Ascension Island BBC Atlantic Relay heard at 2100 with unidentified interference on 11.750. (Stovall, AL)

Australia Radio Australia on 11.720 at 0800 with world and local news. (Thompson, CA) At 1245. (Wheeler, VT) 11.790 at 1611 with radio variety show. Faded by 1630. (Cerf, IL) 1431 with pop music program. (Fravel, WV) 9.580 with features at 1423 and requests for reports from India on new 11.790 frequency. (Fravel, WV) 1225 with "Four Corners" program to Pacific and North America. (Pastrick, PA)

VLM4 at Brisbane on 4.920 with English news, jazz, show tunes, comedy. (Paszkiewicz, WI)

Austria Austrian Radio at 0335 in English on 5.925 with a story about the re-measuring of the traditional ale stein and associated laments of Austria's pub patrons. (Cerf, IL) Apparently it's been downsized. (Editor) 17.710 in English with talk about agriculture, restaurants, and hotels at 1833. (Paszkiewicz, WI) 17.700 at 1155 with sign off noting that English was daily at 1130. (Minard, OH) 9.770 at 0140 with news and music to North America. (Pastrick, PA) 5.945 at 0130. (Wheeler, VT)

Belgium BRT on 17.600 at 0230 with recipe for Belgian endive salad. (Minard, OH) 15.590 at 1749 in French with music program and time signal at 1800. (Fravel, WV)

Belize Radio Belize, 3.285 at 0500 with American 50's rock, listener requests from the mail. (Tarte, MI)

Benin ORTB Contonou with Zaire-style African pops at 0620 on 4.870. (Tarte, MI)

Brazil Radiodifusora do Maranhao, 4.755 with sambas, bossa novas at 0536. (Tarte, MI)

Radio Nacional Manaus, rock at 0158 and station identification on 4.845. (Tarte, MI)

Radiobras on 15.290 at 0230 with sambas and talk in English. (Minard, OH) At 0250. (Wheeler, VT)

Bulgaria Radio Sofia, 11.750 at 0400 with interval signal, sign on in English, newscast. (MacKenzie, CA) 9.700 at 0000. (Wheeler, VT)

Cameroon Radio Yaounde, 9.745 at 2100 and 4.850 at 0530 both times with news in English. (Stovall, AL)

Radio Garoua, 5.010 at 0550 in French. "Newsdesk" program in English at 0600 followed by "Cameroon Report" at 0605. (Stephens, AL)

Radio Douala, 4.795 at 0520 in vernacular, local music with man disc jockey. (MacKenzie, CA)

Canada CFRX, Toronto, 6.070 at 2053 with commercials, pop and country, ID for medium wave CFRB. Shortwave break-in ID at 2120. (Phipps, MO)

CHNX, Halifax at 1328 on 6.130 with program called "discovery" and ID at 1330. (Stephens, AL)

CBC Northern Quebec Service on 9.625 at 2100 with news in English. (Stovall, AL)

Central African Republic RTC Bangui on 5.035 at 2215, woman announcer and music. (Ort, NY)

Chile Radio Nacional, 15.150, after Radio Canada went off at 2200. Sporting event. (Tarte, MI) Seems to be alternating between 15.140, 15.150, and 15.160. (Editor)

China Radio Beijing, 11.600 at 1445. (Spurlock, Saudi Arabia) 11.630 in Spanish at 0300. 15.030 at 0345 in Chinese. (MacKenzie, CA) 4.850 at 1230 with drama in Chinese. (Tarte, MI) 15.520 at 0000 with news and other programs in English to North America. (Stovall, AL)

Clandestine La Voz del CID, 5.106 at 0412 in Spanish with anti-Castro programs. (Fravel, NY) Radio Ignacio Agramonte service. (Editor)

Colombia Radio Super, Medellin, 0802 with a variety of songs in Spanish, identification for "Radio Super." (Thompson, CA)

Radio Guatapuri, Valedupar, 4.815 at 0036 with frequency, identification, pop music, hi-tech effects, abrupt sign off at 0041. (Tarte, MI)

Costa Rica Radio Reloj, San Jose, 6.006 and 4.832 at 0740 in Spanish with music and identification announcements. (Thompson, CA) 4.832 at 0625 with Latin American music, ID, and chatter in Spanish. (Minard, OH) At 0533 with man and woman reading news, then music. (MacKenzie, CA)

Radio Columbia, San Jose, 4.825 at 0515 with rather grandiose announcements in Spanish, echo effects interspersed with short Latin American music pieces. (Minard, OH) At 0037 with news. (Fravel, WV)

Czechoslovakia Radio Prague, news in English and ID at 0305 on 9.540. (Ort, NY) At 0100 with news. (Minard, OH) 7.345 at 0100 with a variety of items about Czechoslovakia in English. (Fravel, WV) English at 0100. (Wheeler, VT)

Cuba Radio Havana with "Cuban Culture" program on 11.760 at 0417. (McDonough, PA)

Dominican Republic Radio Clarin, 11.700 at 0330 with Latin music and rock vocals. (MacKenzie, CA)

East Germany Radio Berlin International on 9.560 at 0330. (Wheeler, VT)

Ecuador HCJB at 0230 to 0300 with "DX Party Line" on 9.745. At 0150 in English, same frequency with world news. (Pastrick, PA)

Radio Iris, Esmeraldes, at 0326 with bossa nova, Latin pops, and commercials. Also at 0916 with guitar-based folk music. (Tarte, MI)

La Voz del Napo, Tena, tentatively heard on 3.280 at 0920 with flute and accordian music. (Tarte, MI)

Radio Zaracay, Santo Domingo, 3.395 with Andean music, commercials, chimes, and identification at 0447. (Tarte, MI)

Radio Jesus del Gran Poder, Quito, heard on 5.050 with ID as "Radio Jesus" at 1104, news features on the U.S. and Honduras. (Tarte, MI)

CRE, Guayaquil on 4.656 with Latin American news at 1107. (Tarte, MI)

Radio Nacional Espejo, Quito, 4.680 at 0203 in Spanish with music. (Fravel, WV) Leisurely-paced pop and ID at 0542. (Tarte, MI)

Radio Baha'i at Otavalo, 4.990 at 0440 with Latin pop music and frequent IDs. (Tarte, MI)

Egypt Radio Cairo at 0340 on 9.475 in English. Into Arabic at 0400. (Ridlon, TX)

Equatorial Guinea Radio Nacional, Bata, 4.926, tentatively heard with soul music to sign off at 2140. (Tarte, MI)

France Radio France International, 17.795 at 1605 with world news followed by "Paris Calling Africa." (Oliver, NY) 15.300 at 1900 in English. (Spurlock, Saudi Arabia) 7.125 at 0045 in English with news, then into French. (Fravel, WV)

Gabon Africa No. One, 4.810 in French with pop/rock at 0525. (MacKenzie, CA)

Great Britain BBC on 11.740 at 0343 sign on in Arabic. QRM from WYFR. 9.915 at 0430 sign on in French following an English segment. (MacKenzie, CA) 6.120 and 6.175 at 2300. (Wheeler, VT)

Greece The Voice of Greece, 9.865 from 0135 with news in English to North America. (Pastrick, PA) 11.645 at 0305 in Greek with man announcer, Greek music. (MacKenzie, CA)

Voice of America Kavala relay station on 11.925 at 0500 with identification in English, then continued into news. (MacKenzie, CA)

Guam KTWR on 9.510 at 1400 with religious program in English. (Stovall, AL)

Guatemala Adventist World Radio, TGMUB, 6.090 in Spanish with an English identification at 1146. (Williams, MO)

La Voz de Nahuala, Nahuala, 3.360 at 1215 with marimba conjunto music. (Tarte, MI)

Radio Tezulutlan, Coban, 4.835 at 1230 with amay and tambor processional music, marimba conjunto. (Tarte, MI)

Guinea Radioffusion National, Conakry with western

Deutsche Welle sent this 30th anniversary QSL card to Tom Stovall, Jr.

La Voz del CID, the anti-Castro clandestine, replies with an attractive card. Courtesy Tom Stovall, Jr.

The listening post of Ed Dye in Russellville, Arkansas.

rock at 0515 on 7.125, then commentary in French. (Tarte, MI)

Guyana GBC 5.950 at 0730 with religious program, identification as "GBS-2." (Stephens, AL)

Haiti 4VEH, 4.930 at 0300 with ID in French and sign off. (Minard, OH) 0004 to 0302 in French with religious and semi-religious music. English lesson. (Fravel, WV) 2318 with religious programs. Noted frequently in mornings and late afternoons with recorded English IDs on the hour. (Tarte, MI)

Honduras HRVC, La Voz Evangelica, 4.820 at 0933 with communal prayer. (Tarte, MI)

Radio Luz y Vida, 3.251 at 0404 in English, announcing that English was carried 0200 to 0300 weekdays, 0230-0300 on Sundays. (Tarte, MI)

Hungary Radio Budapest, 15.220 at 0400 to 0500 but wiped out for two minutes at 0505 by someone making noise and yelling. (Richey, CA)

India All India Radio, Delhi, 4.860 at 1640. (Spurlock, Saudi Arabia)

Iran VOIRI on 15.084 in Arabic at 0405. (MacKenzie, CA) At 1630 in Farsi, march music, man and woman talking. (Fravel, WV) The interference you may hear on this channel is said to be Iraqi jamming. (Editor)

Israel Israel Radio noted at 2000 on 11.655. (Wheeler, VT) On 9.815 at 0500 to 0515 in English with news. Into French at 0515. (MacKenzie, CA)

Italy RAI, Rome, on 9.575 at 0115. (Wheeler, VT) Presume this was English. (Editor)

Ivory Coast Radiodiffusion Television Ivoirienne, Abidjan on 4.940 at 2135 in French with pop music. (Fravel, WV) At 0740 with hi-life music, believed news at 0745. Frequent mentions of "Abidjan" and "Cote D'Ivoire." (Stephens, AL) At 2305 with African language country western. (Tarte, MI)

Japan NHK- Radio Japan on 17.755 at 2300 with news and economic reports to 2330. (Williams, MO) 17.825 at 0000. (Wheeler, VT)

NSB on 9.760 in Japanese at 0458 but covered by BBC World Service at 0500. (MacKenzie, CA)

Kenya Voice of Kenya on 4.934 at 2231 in English with scientific program. (Fravel, WV) Tentative on 4.915 at 0640 with Kenyan-style guitar music, presumed in Swahili. (Tarte, MI) Not Ghana? (Editor)

Kuwait Radio Kuwait, 9.475 at 1821 muezzin chanting, ethnic violin music. (Tarte, MI) Not listed for this frequency. Not Cairo? (Editor)

Liberia ELBC, 3.255 very weak in English at 2310. (Ort, NY)

Libya Radio Jamahiriya, 11.815 at 2311 to 2350 with news, features, "Green Book" readings. Off with no mention of address or requests for listener response. The "handbook" says they rarely QSL. (Minard, OH) They've been fairly good of late—use the Malta address. (Editor)

Luxembourg Radio Luxembourg, 15.350 at 1713 with music followed by a discussion program. (Fravel, WV)

Malta IBRA Radio at 2100 on 6.110 with program "Thirty Minutes with Peter." Via Cyclops transmitter. (Stephens, AL)

Mauritania Radio Mauritanie, Nouakchott on 4.845 at 2238 with music and Arabic announcements. (Fravel, WV) Arabic phone-in show at 0728, stark male vocals and guitar music. (Islamic delta blues?) (Tarte, MI)

Mexico Radio Mexico International noted with news in Spanish at 0200 on 11.775. (Stovall, AL)

Netherlands Radio Netherlands on 17.605 at 2049 to 2100, jazz and a promo for a cruise they are sponsoring. "Happy Station" program. (McDonough, PA) Media Network DX show at 1450. (Spurlock, Saudi Arabia) Lopik site, 9.895 in Dutch at 0440, parallel to Bonaire outlets on 6.165 and 9.590. (MacKenzie, CA) 17.605 at 2030 with African service in English. (Williams. MO) 6.165 at excellent level announcing a test transmission on 9.895 but frequency was barely audible. (Ort, NY)

Netherlands Antilles Trans World Radio to 0455 sign off on 9.535 in English. (McDonough, PA)

New Caledonia Noumea on 7.170 at 0920 with French and light, island-type music. (Ort, NY)

New Zealand Radio New Zealand at 0304 on 17.705 with English news, weather, time check, and music. Stronger than parallel 15.485. (Paszkiewicz, WI) 0239 to 0507. (Williams, MO) 11.960 at 0530 in English with "Pacific Newsletter." (MacKenzie, CA)

Nigeria Educational Service at Benin, 4.932 with commentary in English at 2117, into talking drum. (Tarte, MI) 0450 with revolutionary music, political speeches after the coup. (Stephens, AL)

FRCN Owerri, 4.755 at 0615 in presumed Yoruba with Latin pops. African electropop, American big bands. (Tarte, MI)

Voice of Nigeria, 15.120 at 1440 to 1500 in English to Australia/New Zealand with "Viewpoint" program. (Pastrick, PA)

FRCN Kaduna, 4.770 at 0515 in English with local news. (MacKenzie, CA)

Nicaragua La Voz de Nicaragua, 5.950 at 0410 with anti-U.S. propaganda and bulletins to U.S. citizens needing visas or travel information. (Cerf, IL) 0340 to 0400 with news, musical tones, editorials, "Nicaragua Today." Reception reports will likely bring a pennant, decal, stamps, pro-Sandinista literature. (Minard, OH) La Voz de Nicaragua has dropped 5.950 and now uses 6.100 instead. (Editor)

Radio Sandino, Managua, now using shortwave on 6.200, seems to be on 24 hours a day. Suffers occasional interference in the evenings but late night and early morning signals are very strong. Address: Paseo Tiscapa, contiguo al Restaurante "El Mirador," Managua. (Tattenbaum, NY, Editor)

North Korea Radio Pyongyang, 9.360 at 2132 with English choir and orchestra, revolutionary talk. Also at 1116 on 9.745 on anti-Japanese revolution and works of Kim Il Sung. (Paszkiewicz, WI) 9.977 at 1205 in English to North America with news and music. (Pastrick, PA) 11.985 in French at 0520. (MacKenzie, CA)

Norway Radio Norway International, 0330 on 6.020 in Norwegian with an English identification. (Oliver, NJ)

Oman Radio Oman on 9.735 and 11.890 from 0900 to 1100. (Spurlock, Saudi Arabia)

Pakistan Radio Pakistan on 17.660 with news at 1605 to sign off at 1615. (Spurlock, Saudi Arabia)

Papua New Guinea NBC Port Morseby, 4.890, good as late as 1230. (Williams, MO)

Peru Radio Atlantida, Iquitos, 4.790 at 1032 in Spanish with ballads, mentions of Peru and Costa Rica, time check and ID at 1045. (Paszkiewicz, WI) With non-Andean folk music just before sign off with anthem at 0500. Also British pop at 0339. (Tarte, MI)

Radio Los Andes, 5.030 at 0400 with good signal, clear ID mentioning "Los Andes." (Stephens, AL)

Philippines FEBC on 15.440 at 1435 with news in English directed to Asia. Shortwave Mailbag and Bible study programs. (Pastrick, PA) 15.450 at 2225 with interval signal, ID in English, into Malay. (MacKenzie, CA)

Qatar Radio Qatar, Doha, 9.805 at 1844 with Arab pop. In the clear. (Tarte, MI)

Saipan KYOI on 9.665 at 1625 with Top 40, "Super Rock KYOI" IDs, ads in Japanese, announcements in English. (Paszkiewicz, WI)

Saudi Arabia BSKSA on 15.060 at 0358 in Arabic, man in Arabic at 0400. (MacKenzie, CA) At 1624 in Arabic with two men talking. (Fravel, WV)

South Korea Radio Korea on 15.575 at 0558 with schedule information. (Spurlock, Saudi Arabia)

Senegal ORTS, Dakar, 4.890 at 0628 in vernacular, kora music, identification at 0635. Also in Arabic at 2200. (Tarte, MI) Tribal music and local languages. (Williams, MO) Time? (Editor) Upbeat African music and enthusiastic announcements, quite strong at 2350. (Stephens, AL) At 2330 in local languages and music. (Fravel, WV)

South Africa Radio RSA on 5.980 at 0405 with "Africa Review." (Thompson, CA) On 25.790 at 1430. 5.980 at 0449 to 0530 in English. (Fravel, WV)

SABC on 4.835 with good signals at 2200. (Stephens, AL) Also strong in local U.S. evenings. (Editor)

Southwest Africa/Namibia SWABC on 3.295 with music at 0305. Very few announcements but wide variety of music. (Ort, NY)

Spain Radio Exterior de Espana, 15.535 at 1853 to 1901 sign off in Spanish. (Fravel, WV)

Sri Lanka Sri Lanka Broadcasting Corporation heard on 9.720 at 1300 with English identification, music program. (Ort, NY)

Sweden Radio Sweden International at 0229 in English with news on 11.955, but overridden by the Voice of America. (Fravel, WV)

Switzerland Swiss Radio International—21.520 at 0700 to 0730. (Spurlock, Saudi Arabia) On 17.830 with English news, sports, "Swiss Shortwave Merry-go-Round" from 1530. (Paszkiewicz, WI) 6.165 at 2143 in English with "Sunday Supplement." (Fravel, WV) 9.725 at 0145. (Wheeler, VT) 21.570 at 1315 with DX show. (Stovall, AL)

Tahiti Radio Tahiti on 15.170, parallel to 11.825 which was better at around 0400. Beautiful island music,

talks in French and Tahitian. (Stephens, AL)

Turkey Voice of Turkey at 2215 on 11.810. (Wheeler, VT) On 11.870 in English listing frequencies of 9.670, 11.870, and 17.725. News and talk to 0323 fade. (Cerf, IL) 0344-0350 to North America on 11.870 announcing as to "Northeast America." Have been unable to hear them on this frequency at this time since. (Phipps, Mo) Maybe they meant East Coast of North America. (Editor)

United Arab Emirates UAE Radio Dubai on 9.500 at 0345. New frequency? (Cerf, IL) Apparently so. (Editor) 15.320 at 1645 with mailbag and talk about reception reports received. (Oliver, NJ) 11.730 at 0340 with "Press Review" at 0345. (Ort, NY)

Ukraine SSR Radio Kiev, English schedule: 0029 to 0100 to North America on 9.685, 11.790, 15.100, 15.240, 17.870. Also at 0229 to 0300 on 9.710, 11.790, 15.100, 15.240, 17.870. To Europe at 1900 to 1930 on 6.020, 6.175, 7.260, 9.580. (Tarsney, MI) Via USSR transmitters. (Editor)

United States AFRTS on 6.035 from 0400 to 0430 with UPI news and upcoming political debates. (Oliver, NY) 15.430 at 0030 with ABC News. (Stovall, AL)

Voice of America on 15.205 at 2000, 15.600 at the same hour, 9.650 at 0130. (Wheeler, VT) Language? (Editor) 11.730 at 0340 in English, on new 9.455 at 0310 with news and "Concert Hall." (MacKenzie, CA) 4.765 in English at 2200 with news. (Tarte, MI) Yes, this is the Cuban-based Mayak frequency. No idea what VOA was doing there. (Editor)

Family Radio, WYFR at 2200 on 11.853 with "Scripture of the Week." (Cerf, IL)

WINB, Red Lion, PA at 2200 on 15.185, 2300 on 15.145 with religious programs. (Stephens, AL)

WRNO New Orleans current schedule: 1600 to 1800 on 11.965, 1800 to 2000 on 17.775, 2000 to 2200 on 15.420, 2200 to 0000 on 11.965, 0000 to 0300 on 7.355, 0300 to 0500 on 6.185, 0500 to 0600 on 6.045. Sundays only (additional) 0600 to 0700 on 6.045, 0700 to 0900 on 9.585, 0900 to 1300 on 6.185, 1300 to 1500 on 9.715 and 1500 to 1600 on 11.965. (Harmon, OH) Heard on 15.420 at 2000. (Wheeler, VT)

USSR Radio Moscow, 9.795 at 0445 in Spanish with a commentary. Also a broadcast on 15.160 in Chinese at 0424. (MacKenzie, CA)

Radio Moscow, home service via Khabarovsk on 9.780 with Mayak program at 0450, in Spanish on 12.070 at 0455 before World Service at 0500. World Service on 11.950 at 0440. (MacKenzie, CA)

World Service via Blagoveschensk on 15.130 at 0410 in English with commentary. (MacKenzie, CA)

Home service via Krkutsk on 12.030 at 0505 in Russian. (MacKenzie, CA)

World Service via Nikolayev on 12.010 at 0510 in English. (MacKenzie, CA)

World Service via Vladivostok at 0425 on 15.140. (MacKenzie, CA)

World Service via Lvov on frequency 9.765 at 0500. (MacKenzie, CA)

Radio Moscow to Africa via Krasnodar on 11.980 in French at 0525. (MacKenzie, Ca)

Vladivostok with home service in Russian at 0515. (MacKenzie, CA)

Radio Moscow via Havana at 1221 in English to North America on 9.600. (Pastrick, PA)

Radio Peace and Progress at 1630 in English on 15.490. (Williams, MO)

Venezuela Radio Occidente, Tovar, 3.255 with guitar music, identification at 0930. (Tarte, MI)

Radio Continente, Caracas, 5.030 with Coca Cola ad, rhumbas. rooster crowing at 1000. (Tarte, MI)

Radio Barquisimeto, 4.990 at 2320 with Michael Jackson, Flashdance. (Tarte, MI)

Radio Mundial Bolivar, 4.770 at 0339 with Caribbean-style pops, frequent IDs, interference from presumed Kaduna. (Tarte, MI) Kaduna normally signs on at 0400 however. (Editor)

Vietnam Voice of Vietnam in French with identification, news from sign on at 1300 on 15.010. (Ort, NY) On 12.020 from 1620 to 1625. (Spurlock, Saudi Arabia)

Special note: A number of reports this time did not contain frequencies and/or times and thus had to be discarded.

Our thanks to: Bob Tarte, Grand Rapids, MI; Mark F. Tattendaum, Tonawanda, NY; Larry Fravel, Clarksburg, WV; Paul Spurlock, Riyadh, Saudi Arabia; John Stephens, New Hope, AL; Stewart MacKenzie, Huntington Beach, CA; Harold Ort, Jr., Staten Island, NY; Erick Wheeler, Pittsford, VT; Robert E. Pastrick, Baden, PA; Mary K. Minard, Bowling Green, OH; Sheryl Paszkiewicz, Manitowoc, WI; Mark L. Williams, Grant City, MO; Pat McDonough, Pittsburgh, PA; Stephen Phipps, St. Louis, MO; H. K. Rildon, Georgetown, TX; Mike Tarsney, Alpena, MI; Cliff Richey, Jr., Livermore, CA; Bill Oliver, Hewitt, NJ; Thomas R. Cerf, Highland Park, IL; William C. Thompson III, Tracy, CA; Jim Harmon, Avon Lake, OH; and Tom Stovall, Haleyville, AL.

Thanks to all who reported and all who wrote. See you next month. Til then, good listening! **PC**

"Lar's Listening Loft" belonging to Ralph Larson, Sr. of Hector, Minnesota gets plenty of use during those long, cold winter nights.

SURVIVAL

BY R.L. SLATTERY

ESTABLISHING SURVIVALIST COMMUNICATIONS SYSTEMS

Granite Romeo Tango And Friends

"This is Granite Romeo Tango" was an expression which was, at one time or another, heard by every FM operator in the 1st Infantry during the war in Vietnam. Granite Romeo Tango was the tactical ID of the relay site operated by Company C on Nui Ba Den mountain. This mountain was the highest point in the III Corps area and was of major communications importance for relaying VHF communications to members of The Big Red One. While the primary mission of Company C on the mountain was to provide relay for the 121st Signal Battalion, it also provided radio relay for many other units. While very few of the men who were in the battalion ever actually set foot on Nui Ba Den, they all knew of "the mountain," and most VHF operators at one time or another had radio communications with Granite Romeo Tango. When distance or terrain made it impossible to establish communications, Granite Romeo Tango was some kind of magical station. When no one else could be heard or worked, Granite Romeo Tango was there.

Granite Romeo Tango was one way of solving some of the problems that faced those trying to establish communications under trying conditions. Logistical problems relating to the availability of equipment (and also maintenance and spare parts) were a problem, but things such as the coordination of frequencies and trying to achieve effective communications over significant distances were certainly things which took planning and effort to surmount.

Frequency availability, for instance, was a problem which was apparent from the start of the war. The initial impact that the lack of preplanned frequencies had on division combat operations was significant. For example, the 1st Cavalry Division attempted to establish and resolve frequency requirements before its departure from the United States by sending messages and telephoning to the joint headquarters in Saigon which controlled frequency assignments. Their efforts proved fruitless until the signal battalion commander personally visited the frequency control agency and the joint signal officer. He resolved the problem sufficiently to begin "legal" operations in Vietnam.

Lt. Col. Tom Ferguson (commander of the 125th Signal Battalion of the 25th Infantry Division) felt that frequency management was nonexistent outside the division. As he viewed it, the U.S. Army in Vietnam allocated frequencies to the field force HQ's, which in turn suballocated them to its major combat elements. His division, for example, was given some 8 to 12 specific frequencies which supposedly were adequate to avoid mutual interference. Unfortunately, those same frequencies were also assigned to aviation units well outside the field forces. Once helicopter or fixed wing aircraft of those units were airborne and operating on those frequencies, they saturated entire areas where the same frequencies had been assigned to ground combat units. Despite pleas for an authoritative frequency management agency at high level, it never materialized during the early days of the conflict. As a result, what generally happened was massive bootlegging on unapproved frequencies with the ripple effect of even more mutual interference through the combat theatre.

A multi-channel antenna is set up by SP/4 Johnny Phelps, PFC Rodney Hudson, and SP/4 Johnny Anderson. (Photo courtesy U.S. Army)

The initial deployment of the 1st Cavalry Division to its base camp at An Khe pointed out the importance of early involvement by the division signal battalion commander. Some twelve different locations within a 90 mile radius of An Khe were physically tested for multichannel and FM radio coverage, and these sites governed subsequent command post displacements. The 13th Signal Battalion commander, 1st Cavalry Division, Lt. Col. T. Nicholson, was adamant about

the need for actually testing a site for communications suitability instead of drawing conclusions from technical analysis based upon parameters shown in profiles and reports. Nicholson said that it was "most discouraging" to hear some officer or NCO state that "according to an analysis of the profile, communications were not possible." Nicholson was unimpressed by the many technical charts and well designed profiles of terrain. It was his practice to actually transport radio equipment to a site in question — it didn't have to be the entire radio relay set. In most cases a single radio with similar emission operating on the desired frequency was sufficient to give the information needed. He noted that communications profiles did not take into account all of the variables, such as effects of tropospheric conditions, reflecting terrain features, and freak conditions that made it actually possible to operate from locations where profiles and textbooks would declare otherwise.

One way around stretching communications capabilities was demonstrated during Operation Silver Bayonet (October/November 1965) which included the battle of the Ia Drang Valley. This operation highlighted the use and importance of the FM airborne relay in supporting far-ranging and swiftly developing campaigns. The 13th Signal Battalion employed a fixed-wing aircraft equipped with twelve powerful FM radios. The aircraft flew in orbit at 10,000 feet over the widely dispersed combat units and retransmitted FM voice messages for most of the key command nets directing the operation. Granite Romeo Tango was actually a similar arrangement, except that its mountaintop provided a more fixed and permanent variation of a versatile FM communications relay.

Security was also difficult. It was often difficult to distinguish between field or foe on the radio, especially since communications of the enemy and ARVN were conducted in the same language. Because of this, the secrecy of major operations stood on the verge of being compromised. Rapid concentration of forces in remote areas was essential but could not be accomplished under conditions of radio silence. Planning and executing major operations became a trade-off between the need for concentrating quickly and the likelihood of tipping off the enemy about the operation while communicating instructions.

Coordination of external fire support was especially difficult. Close air support and B-52 strikes were needed where friendly and VC units were intermixed in heavy foliage or jungle cover that made identification and location difficult and limited to the range of UHF and FM radios. Since there were no battle lines, there were no secure areas outside base camp and fire base perimeters. Any high ground occupied as a communications site had to be totally secured, a necessity that drained combat resources which were sorely required elsewhere.

Complicating all of these already-complex factors were additional aspects. For instance, radios would sometimes go off frequency. This might transpire through battle damage but could also result from their being dropped or from moisture. Even if the user of such a radio was aware of the fact that such a problem existed (and it might take a while to realize it), there was still the problem of trying to correct it under combat conditions. Even radios which did not face that particular problem were still faced with other malfunctions, such as loss of power source, damage to the antenna system, stuck relays, stuck microphone buttons, modultion problems, etc.

There were times when it seemd that being out of range or suffering from interference from other stations sharing the frequency almost seemed like the least of the problems. It was at times when there was no communication when it was realized how much they might be missed. PC

Vietnam presented its own unique communications problems. (Photo courtesy U.S. Army)

WASHINGTON PULSE

FCC ACTIONS AFFECTING COMMUNICATIONS

Revocation Proceedings Against Three San Diego Area Amateurs

The Commission's San Diego, California, office is engaged in a continuing investigation of malicious interference to communications on San Diego area amateur repeaters. As a result, three San Diego area amateurs—Calvin C. Plageman (WD6DSV), James W. Smith (W6VCE), and Anthony DiBona (K6PWX)—have been ordered to show cause why their amateur licenses should not be revoked.

All three respondents are charged with violating Section 97.125 (wilful or malicious interference) of the Commission's Rules. Additionally Smith and DiBona are charged with violating Sections 97.84(a) and 97.123 (failure to identify); 97.113 (broadcasting) and 97.115 (transmission of music).

The investigation is continuing. Additional malicious interference cases involving San Diego area amateurs may be initiated in the near future.

Maritime Search And Rescue Operations By Government Entities

The Commission has amended its rules to permit radio stations installed in state or local government vessels to operate on maritime mobile frequencies while being trailered by motor vehicles to respond to search and rescue emergencies.

This action came in response to a petition by the Commonwealth of Virginia, which has over 300 trailered rescue boats operating as a "shore patrol" to respond to marine search and rescue calls. Commonwealth requested that radio transmissions concerning search and rescue operations be permitted from vessels before they are launched.

Currently, the shore patrol may not communicate directly with a vessel until the rescue boat is launched. This creates a problem whenever the shore patrol is closer to the distress scene and better equipped to respond than a boat already in the water but farther away.

During the past year, Commonwealth has been operating under a rule waiver. According to Commonwealth officials, the waiver has significantly reduced the workload of the shore patrol while enhancing its capability to respond to rescue operations. Based on this experience and the fact that it has not received interference complaint, the FCC said the public interest would be served by amending its rules.

The FCC said it would permit use of the following Marine VHF intership frequencies: Channels 6 (Intership Safety), 16 (Distress, Safety, and Calling), 17 (State Control), and 22 (Liaison with the U.S. Coast Guard) with a maximum power of 25 watts. VHF Marine Channels 17 and 22 could be used for search and rescue training exercises, while use of Channel 22 would be limited to communications with the Coast Guard.

The FCC also clarified that HF frequencies 3023 kHz and 5680 kHz are available for coast station and ship station use when they are participating in search and rescue scene-of-action coordination.

Delete Protection Requirements For Discontinued Canadian Radiolocation Operation

The FCC amended Parts 2 and 97 of its rules by removing the restrictions placed on the use of the 1900-2000 kHz band by amateur operators due to Canadian LORAN-A operations.

There was no need to continue protecting Canadian LORAN-A operations since such operations were discontinued on December 31, 1983 by implementation of the 1979 World Administrative Radio Conference (FCC 83-511) and amendments in footnotes to the Table of Frequency Allocations.

They added that because modifications of the rules simply removes obsolete restrictions on spectrum use and benefits FCC licenses, compliance with prior notice and effective date provisions of the Administrative Procedure Act is unnecessary.

Standards For Assigning 806-821 And 851-866 MHz In Northern California

The Commission revised the standards for assigning frequencies in the 806-821 and 851-856 MHz bands for co-channel trunked systems in northern California.

The action came in response to a petition by the California Trunking Interference Association (CTIA) to amend the rules by changing the co-channel mileage separation standard for northern California trunked systems. CTIA pointed out that within this area, which includes the San Francisco Bay area and the Sacramento and San Joaquin Valleys, the FCC's present assignment policy of authorizing channels for reuse at a distance of 70 miles is inadequate because of terrain and propagation factors which cause severe co-channel interference, thus making communications impossible.

The Commission noted that in this unusual case the public interest would best be served by increasing the co-channel separation distance for mountain-top sites. However, it would not require frequency coordination in this area, nor designate CTIA as a coordinator. Applicants for trunked systems may request specific frequencies and are free to consult with CTIA or anyone else.

Adoption of these new assignment standards, the FCC said, will not alter the application of loading and construction requirements for all existing applicants in this region.

Commission Denies Texas Two-Way Change In SMRS Construction

The Commission reaffirmed its action denying Texas Two-Way Inc. review of the Private Radio Bureau's determination that Texas Two-Way could not change its elected method of constructing its Specialized Mobile Radio System (SMRS) at Fort Worth, Texas.

Texas Two-Way, licensee SMRS station WQA-505, wanted to change its method of building its system from five channel stages with two years to load the first stage to 70 percent capacity, to building 20 channels at once with five years to load all 20 channels to 70 percent capacity.

In denying the petition, the Commission stated that it was unpersuaded by Two-Way's arguments. The FCC said that it had neither changed the loading requirements nor the period during which a change of election is permissible in Section 90.366(d) in its Memorandum Opinion and Order 79-191 (released November 1, 1983) and had not determined that its loading standards were too rigorous, as asserted by Texas Two-Way.

The FCC added that it did decide that control stations could be counted along with mobiles for loading purposes in order to provide some leeway for systems that had already substantially complied with the standards.

However, contrary to Texas Two-Way's belief, it did not adopt a "substantial compliance" standard concerning the loading requirements.

FCC Proposes Authorizing Narrowband Technologies For Base And Mobile Communications In Private Land Mobile Radio Services

The Commission proposed authorizing narrowband technologies for base and mobile communications in the Private Land Mobile Radio Services.

It noted that through frequent channel splitting and the introduction of more efficient frequency modulation (FM) technology in the land mobile services, FM radio systems generally have been able to keep pace with increasing spectrum demands.

However, FM radios in use today require at least 20 kHz of spectrum for voice communications. The increased demand for spectrum has stimulated interest in developing more spectrum-efficient technologies, with single sideband technology appearing to be very promising. Therefore, the Commission said it was proposing a channel structure and licensing plan for authorizing narrowband technologies on a regular basis in the Private Land Mobile Radio Services in the 150 MHz band, where narrowband equipment is available today.

Although the channeling plan is based on single sideband, the Commission said it did not intend to limit access to the new channels only to these types of systems and would authorize any technology which complies with the proposed technical standards. Comments are requested on the ability of the proposed standards to accommodate other technologies, such as narrowband FM.

One technology available for partially satisfying increased demands for spectrum and reducing congestion in land mobile frequency bands, the Commission noted, is amplitude compandored single sideband. In certain circumstances, this technology might be able to provide a communications capability comparable to FM, while utilizing an assigned channel width of only 5 kHz.

(Amplitude compandored single sideband systems modify an amplitude modulated [AM] radio frequency signal in several ways to narrow the emission bandwidth to a fraction of that necessary for present-day FM technology, while yielding roughly comparable audio quality.)

Despite an earlier report by the FCC's Office of Science and Technology concluding that co-located adjacent channel amplitude compandored single sideband systems seemed to require a wider separation than 5 kHz to minimize mutual interference, the Commission pointed out that as equipment design is refined, interference protection will improve significantly, thus making 5 kHz spacing achievable.

FM stations in the 150 kHz band presently are assigned frequencies spaced at 15 kHz intervals in all services except the Business Radio Service, where they are spaced every 30 kHz. These frequencies designate the center of the FM emission. Therefore, the Commission said, it intended to follow the same procedure with narrowband channels, that is, the assigned frequency would designate the center of the narrowband emission. To minimize the chance that amplitude compandored single sideband receivers will "lock on" to the strong FM carriers in the center of the FM emission, the Commission proposed offsetting the center of the narrowband emission 2.5 kHz from the center of the FM emission, then establishing narrowband channels every 5 kHz referenced to the 2.5 kHz offset channels.

In the Private Land Mobile Radio Services, which presently require frequency coordination, this channeling plan results in a total of three narrowband channels between every two 15 kHz FM channels. The narrowband channels would be located ± 2.5 and ± 7.5 kHz from each regularly assignable 150 MHz band channel. In the Business Radio Service, where separation between channels in the 150 MHz band is 30 kHz, narrowband channels would be ± 2.5 kHz, ± 7.5 kHz, and ± 12.5 kHz from FM-assigned frequencies.

Narrowband channels located between two FM channels allocated to the same service would be allocated to that service. If the narrowband channels are located between FM channels allocated to different services, the channel 2.5 kHz removed would be considered to be in the same service or services as the FM channel. The narrowband channel midway between two FM frequencies would be shared by the two services, the Commission said.

It also proposed requiring frequency coordination for all applications for narrowband channels allocated to services presently requiring coordination in the 150 MHz band. Channels 2.5, 7.5, and 12.5 kHz removed from an FM assignment in the same service would have to be coordinated with the FM assignments and vice versa. If a narrowband channel is 12.5 kHz or less removed from an FM frequency allocated to a different radio service, use would have to be coordinated between services. The coordination procedure also would apply to an FM frequency 12.5 kHz or less removed from a narrowband channel.

The Commission said it was concerned over the potential for interference between existing FM operations and new narrowband systems. Noting that an amplitude compandored single sideband radio operating on a frequency assignment 2.5 kHz removed from an FM assignment provides virtually no protection, the Commission said that for assignment and coordination purposes, narrowband frequencies 2.5 kHz removed will be treated as co-channel with FM. Narrowband assignments separated by 7.5 kHz and 12.5 kHz provide some protection to FM operations, but it may be insufficient to permit same area operation with an FM station. One way to compensate for this reduction in adjacent channel protection is to separate assignments geographically. Comments are requested on ways of reducing the impact of proposed narrowband assignments on present FM users.

In a separate action, the Commission terminated its inquiry into possible new technologies which could improve the efficiency of the land mobile spectrum.

Propose To Remove Non-Voice Limitation On 460/465.525 And 460/465.550 MHz

At the request of International Association of Fire Chiefs, Inc. (IAFC) and the International Municipal Signal Association (IMSA), the Commission has proposed allowing eligibles in the Fire and Special Emergency Radio Services to use the frequency pairs 460.525/465.525 and 460.550/

465.550 MHz on a co-equal, shared basis with eligibles in the Police Radio Service.

At present, the two frequency pairs are allocated to the Police Radio Service for uncoordinated non-voice operations. However, Police use of these channels is secondary to "grandfathered" Fire and Special Emergency base/mobile voice operations. Fire and Special Emergency licensees on these channels have until March 1, 1986 to change frequencies.

Petitioners contended that "time and circumstances have made the limitations on these channels obsolete and antithetical to current policies governing the use of spectrum available in the Private Land Mobile Services (PLMRS) in general, and the Public Safety frequency assignments in particular."

Furthermore, they argued that, in view of the Commission's decision in PR Docket 82-470, elevating non-voice mobile communications to co-equal, primary status with voice communications on all coordinated private land mobile frequencies below 470 MHz, the rationale for reserving two frequency pairs in the Police Radio Service specifically for non-voice operations is no longer valid.

The Commission said the main reason for requiring Fire and Special Emergency licensees to change frequencies was because it considered voice use incompatible with non-voice police operations. However, with the adoption of PR Docket 82-470, there appears to be little reason to require current Fire and Special Emergency licensees to vacate the channels, the FCC said.

Finding that the petitioner's request has merit, the FCC proposed to delete the non-voice limitation on the two frequency pairs and make them available for base and mobile communications. Moreover, it proposed making the two pairs available to eligibles in the Fire Radio Service and to governmental entities able to establish eligibility in the Special Emergency Radio Service for use on a co-equal, shared basis with eligibles in the Police Radio Service. Use of the frequencies by Special Emergency eligibles would be limited to emergency medical operations and coordination would be required.

International Amateur Radio Arrangements

The United States has arrangements for third party communications and for reciprocal operating privileges in the Amateur Radio Service with the governments listed below.

Third Party Arrangements

The United States has arrangements to permit U.S. amateur radio stations to exchange third party communications with amateur radio stations in these countries:

Antigua and Barbuda
Argentina
Australia
Bolivia
Brazil
Canada
Chile
Colombia
Costa Rica
Cuba
Dominica
Dominican Republic
Ecuador
El Salvador
The Gambia
Ghana
Grenada
Guatemala
Guyana
Haiti
Honduras
Israel
Jamaica
Jordan
Liberia
Mexico
Nicaragua
Panama
Paraguay
Peru
St. Lucia
St. Vincent and the Grenadines
Swaziland
Trinidad & Tobago
Uruguay
Venezuela

The United States also has an agreement with the International Telecommunications Union (ITU) permitting third party communications with its station 4U1ITU in Geneva, Switzerland.

International amateur radio communications are limited by the International Radio Regulations, which state in part that they shall be made in plain language and shall be limited to messages of a technical nature relating to tests and to remarks of a personal character for which, by reason of their unimportance, recourse to the public telecommunications service is not justified. Business messages are prohibited.

At the end of an exchange of international third party communications, each amateur radio station must transmit the callsign of the foreign station in addition to its own callsign (see §97.84).

Reciprocal Operating Arrangements

The United States has arrangements to grant reciprocal operating permits to visiting alien amateur radio operators. An alien amateur radio operator licensed by one of the following countries, who is also a citizen of that same country, may apply for a permit to operate his or her amateur radio station in the United States. (A U.S. citizen is not eligible for a reciprocal operating permit in the United States under these arrangements.)

Argentina
Australia
Austria
The Bahamas
Barbados
Belgium
Belize
Bolivia
Botswana
Brazil
*Canada
Chile
Colombia
Costa Rica
Denmark
Dominican Republic
Ecuador
El Salvador
Fiji
Finland
France
Fed. Rep. of Germany
Greece
Grenada
Guatemala
Guyana
Haiti
Honduras
Iceland
India
Indonesia
Rep. of Ireland
Israel
Italy
Jamaica
Jordan
Kiribati
Kuwait
Liberia
Luxembourg
Monaco
Netherlands
Netherlands Antilles
New Zealand
Nicaragua
Norway
Panama
Paraguay
Peru
Philippines
Portugal
St. Lucia
Seychelles
Sierra Leone
Solomon Islands
Spain
Suriname
Sweden
Switzerland
Trinidad & Tobago
Tuvalu
United Kingdom
Uruguay
Venezuela
Yugoslavia

*Arrangements with Canada authorize operation by Canadian amateur radio operators in the United States without a reciprocal operating permit and vice-versa.

An alien amateur radio operator may apply for a permit by completing FCC Form 610-A, available from any FCC office or, in some cases, from United States missions abroad. The permit is valid for one year or until the date of expiration on the applicant's license, whichever comes first. The completed application Form 610-A and a photocopy of the applicant's current amateur license should be sent to: Federal Communications Commission, Gettysburg, Pennsylvania 17325 U.S.A.

Amateur radio operation in areas where telecommunication is regulated by the FCC must comply with Part 97 of the Rules. Reciprocal permit operator privileges (see §97.311) are those authorized by the operator's own government, but do not exceed those of the FCC Amateur Extra Class operator license (see §97.7).

U.S. amateur radio licensees who wish to apply for a reciprocal operating permit should write to the radio licensing authorities in the government of the country to be visited. The regulations of that country apply.

Development Of Nationwide Paging Network; Lotteries To Be Used To Choose Network Organizers

The Commission took further steps to permit the development of a substantially unregulated, nationwide common carrier paging service network.

A lottery will be used to choose from among mutually exclusive applicants to be one of three network organizers. No tariffs for network paging will be filed with the FCC or state utility commissions and comparative hearings will be unnecessary.

Last year, the Commission adopted rules and policies governing the licensing and use of the frequencies allocated for common carriers to provide nationwide network paging, with one carrier—the "network organizer": being licensed on each network frequency and local common carrier; "network organizers": being affiliated with one or more organizers to provide page initiation and/or local distribution of network pages. Network organizers would be required to serve at least 15 markets initially and expand nationwide within two years. In addition, because paging networks will operate nationwide, transmitting interstate messages, state regulation over technical standards, entry and rate regulation for network organizers was preempted.

(A network paging system would enable a subscriber to receive pages when traveling outside the local service area. The system can be divided into three technical components: page initiation, network services, and local distribution. The network services would be furnished by the network organizers, who would be the licensees of the frequency and control its use, with the remaining functions being performed by network operators.)

The Commission noted that open access would be required of carriers desiring to originate network pages, but this requirement would be eliminated for those providing local distribution. Requiring open access to originate network pages will promote the public interest by ensuring that no local paging company is placed at a competitive disadvantage because it cannot offer its customers network paging. This will promote competition among originating carriers, thereby encouraging lower cost and more diverse services for consumers.

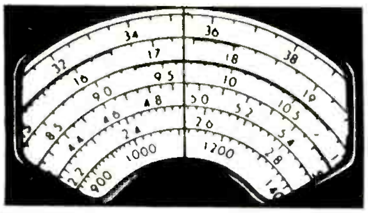
The FCC concluded that network organizers should be free to design their systems for local distribution without having to provide for the distribution of paging signals at the terminating end by multiple entities. An open access policy for traffic termination would necessitate a network organizer granting all local operators the opportunity to distribute pages over the network frequency. Such a policy could deprive the network organizer of control over the number and placement of transmitters to be used in a market. Since traffic termination of network paging entails costly construction and operation of 900 MHz facilities, such a requirement would add significantly to the costs of operating a nationwide network, with no increase in transmitting capacity, and increase service costs for the consumer.

Commission Suspends Filing Of Applications For 18 GHz Band

The Commission will no longer accept any additional applications for operations on the frequencies between 17,700 MHz and 19,700 MHz (18 GHz band) until further notice.

It is considering petitions to adopt a new channel plan for the 18 GHz band in Gen. Dockets 79-188 and 82-334. Until this matter is resolved, except as noted above, no new broadcast, cable television relay, common carrier, or private operational-fixed microwave applications, or amendments to pending applications, will be accepted for filing. Similarly, no pending applications for the 18 GHz band will be processed for grant until further notice.

Applicants for the private operational-fixed microwave service (OFS) are reminded that OFS applications are not considered to be filed with the Commission until they are received at the Commission's Licensing Division in Gettysburg, Pennsylvania. PC



COMMUNICATIONS CONFIDENTIAL

BY HARRY HELMS, KR2H

YOUR GUIDE TO SHORTWAVE "UTILITY" STATIONS

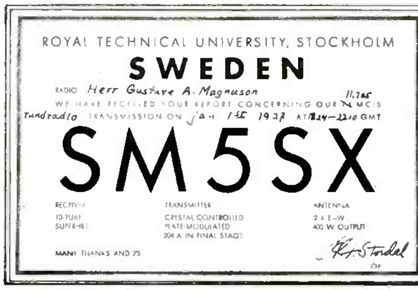
This month I received an interesting letter from Ralph Cameron, VE3BBM, of Nepean, Ontario. Ralph has been following some activity on 3790 kHz around 0035 to 0115. The signals were strong, somewhat chirpy, with one call being "KNI4" and the other call beginning "AG3." The stations sent mixed groups of numbers and letters in CW at 15-18 words per minute. He has also found RTTY signals on 3790, 3580, and 3555 kHz which were sent at non-standard speeds; he was unable to copy these signals on his RTTY equipment.

Ralph also sent along a copy of an article he recently wrote for *The Canadian Amateur*, published by the Canadian Amateur Radio Federation. In it, he wrote how he and two other amateurs had followed a CW station 21165 kHz which was sending coded groups. Their direction-finding efforts placed the station in Cuba, and this was confirmed by Canada's Department of Communications. A formal protest was made by Canada and eventually the signals left 21165 kHz (which is in an amateur band).

Other interesting signals in the 15-meter amateur band included "UMS" on 21032 kHz. The bearing for the signal was a few degrees west of true north, and Ralph says this station supposedly transmits to the Soviet submarine fleet. A signal with the same bearing was found on 21018 kHz. This station sounded like a coffee grinder! Actually, such stations transmit data at such high rates that they sound like coffee grinders.

A final interesting item from Ralph concerns a CW net heard at various times on 80 meters, such as 3523 kHz. These signals were quite strong and consisted of two-way traffic between several stations. Only a smattering of international Morse code was ever used by these stations; most signals were four to six bit characters and were gibberish to Ralph. Eventually, however, Ralph was able to determine that the characters were from the Japanese Morse code! That didn't solve the mystery, however, since CW signals from Japan simply can't be heard in Ontario on 3523 kHz at 0000 GMT; and rough direction-finding indicated some signals were coming from various locations on or near the Great Lakes!

After contacting a young amateur training to become a Japanese marine operator and receiving a copy of the Japanese code from the Japanese embassy, Ralph set to work learning how to copy and translate the traffic. He was eventually able to determine this network was composed of operators aboard Japanese shipping and fishing vessels operating in the Atlantic and Great Lakes area.



ROYAL TECHNICAL UNIVERSITY, STOCKHOLM

SWEDEN

RADIO Herr Gustave A. Magnuson

WE HAVE RECEIVED YOUR REPORT CONCERNING OUR 11.705 MC/S

Rundradio TRANSMISSION ON Jan 1st 1937 AT 1824—2210 GMT

SM5SX

RECEIVER 10-TUBE SUPERHET

TRANSMITTER CRYSTAL CONTROLLED PLATE-MODULATED 204 A IN FINAL STAGE

ANTENNA 2 λ E—W 400 W OUTPUT

MANY THANKS AND 73

Op.

Here is a 1937 QSL from an experimental broadcast station in Sweden. In addition to broadcasts on 11705 kHz, this station also conducted two-way communications in the 20-meter ham band.

One puzzling group of "code words" exchanged by stations in the net turned out to be names of popular Sumo wrestlers back in Japan! Ralph has followed this activity each year since 1980, with activity closely following the fishing season.

Our thanks to Ralph for this report, which shows how effort and patience can unlock even the most baffling of mysteries. How many other puzzles have such innocent explanations?

Mystery Beacons Identified

A few issues ago we covered the strange beacons that can be heard in the 1600-1800 kHz range with their strange "bleep bleep" sounds. John Reed of Oklahoma writes that these stations are likely to be a part of a new navigation and radiolocation system known as "SPOT." Developed by Offshore Navigation, Inc., these beacons transmit with 500-700 watts and are used primarily by seismic boats. The system uses precisely-timed waveforms generated by Cesium clocks and cross-correlates the received pulse against a replica pulse stored in the receiver. This is done digitally, which explains the "bleep bleep" sounds. Most of these beacons are located in the Gulf of Mexico, offshore Florida, and Alaska.

Many thanks for the information, John! Now we need to determine the locations of these beacons . . . anyone want to search FCC microfiche?

Numbers Stations Tidbits

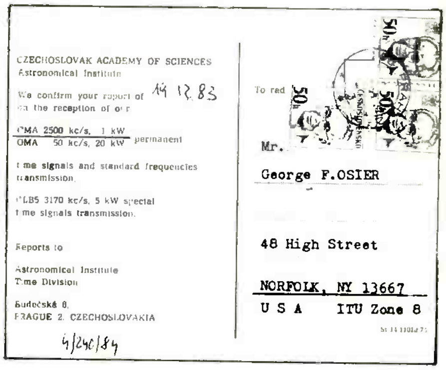
Desmond Tynan of Massachusetts writes that those interested in numbers stations should read the book *Kahn on Codes* by David Kahn. There is a chapter on the Che Guevara cipher, which takes readers step-by-step through the process by which Guevara prepared a message for transmission back to Havana—in five-digit number groups!

Another book you should check out is the new paperback edition of *The Puzzle Palace* by James Bamford. The paperback edition contains a new chapter covering the 1982 spy trial of England's Geoffrey Prime. In it you'll read how Prime received instructions from a station in East Germany which transmitted five-digit English groups read by a woman!

Inside The "Shanachie Identification Group"

In the November, 1983 column there was an item submitted from "HF Operator Banshee 5" of the "Shanachie Identification Group." No details were provided as to who or what the Shanachie Indentification Group was, however.

Recently a second letter was received from "System Controller Shanachie 3" explaining what the Shanachie Identification Group is. Apparently it is a group of former communications intelligence monitors; as the "System Controller" wrote, "Most of us have found that it's very hard to stop some-



CZECHOSLOVAK ACADEMY OF SCIENCES
Astronomical Institute

We confirm your report of 14.12.83
on the reception of our

OMA 2500 kc/s, 1 kW
OMA 50 kc/s, 20 kW permanent

time signals and standard frequencies transmission.

OLB5 3170 kc/s, 5 kW special time signals transmission.

Reports to

Astronomical Institute
Time Division

Budečská 6,
PRAGUE 2, CZECHOSLOVAKIA

4/240/84

To red

Mr.

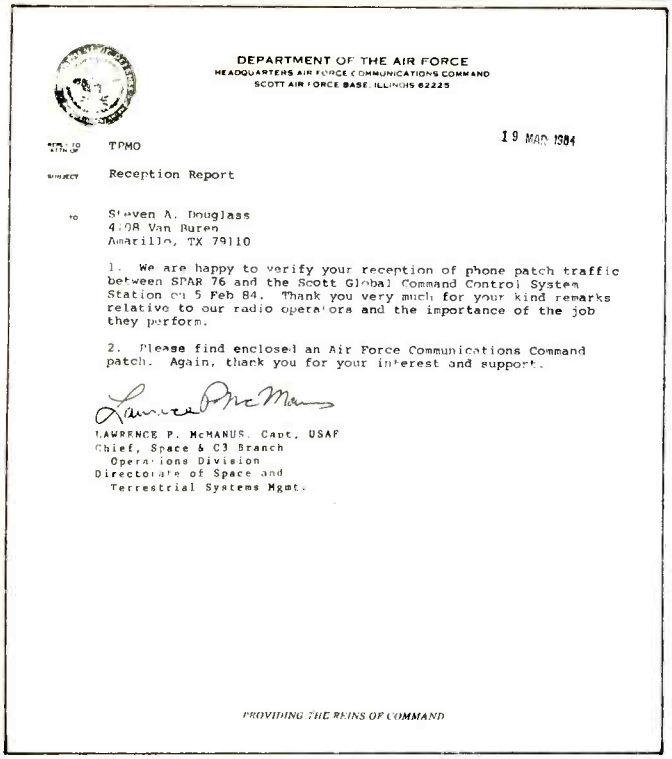
George F.OSIER

48 High Street

NORFOLK, NY 13667

U S A ITU Zone 8

Both sides of the QSL card from Station OMA received by George Osier.



DEPARTMENT OF THE AIR FORCE
HEADQUARTERS AIR FORCE COMMUNICATIONS COMMAND
SCOTT AIR FORCE BASE, ILLINOIS 62225

19 MAR 1984

ATTN OF: TPMO

SUBJECT: Reception Report

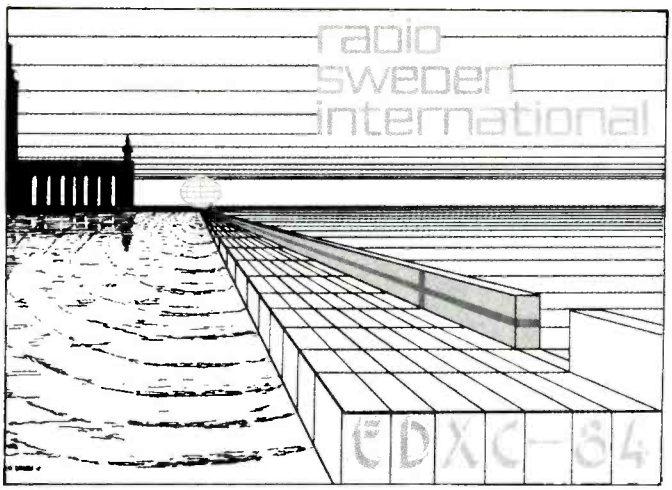
TO: Steven A. Douglass
4108 Van Buren
Amarillo, TX 79110

1. We are happy to verify your reception of phone patch traffic between SPAR 76 and the Scott Global Command Control System Station on 5 Feb 84. Thank you very much for your kind remarks relative to our radio operators and the importance of the job they perform.

2. Please find enclosed an Air Force Communications Command patch. Again, thank you for your interest and support.

LAWRENCE P. McMANUS, Capt, USAF
Chief, Space & C3 Branch
Operations Division
Directorate of Space and
Terrestrial Systems Mgmt.

PROVIDING THE REINS OF COMMAND



Special QSL card used by station 7SKØAC in Stockholm, Sweden, during the European DX Council Conference. The station, using its special 7SK-prefix callsign, operated with CW and SSB in the 3.5, 14, and 21 MHz ham bands. The Conference was hosted by Radio Sweden International. (QSL courtesy Radio Sweden)

thing that you've been doing eight hours a day on shift work for years." Many of these monitors are veterans of the National Security Agency and Army Security Agency. Membership in the group is by invitation only and is "celled" for security; it is limited to a maximum of fifteen. All members have received government training in communications, Morse code, and cryptology. Receivers used by this group are sophisticated and four members have direction-finding capabilities.

A second note stated that the CW station on 4100 kHz transmitting "cut numbers" is from Cuba and that use of a one-time pad is virtually certain. It was also noted that over 50 "cut numbers" schemes are in use today.

A second, separate note was also received a few days later from "Banshee 5." (Unlike the first letter from him, postmarked Fayetteville, NC, this one was postmarked Honolulu, HI.) This letter was in regard to "AME3" which was discussed at length in last month's Communications Confidential. Banshee 5 said that AME3 is commercial press activity from Belize City, Belize! Banshee 5 stated that there was no explanation for the callsigns used. (Note that there was no mention of the correlation between AME3 and numbers station activity.) Frankly, this editor doubts Banshee 5's claim; all that has been reported from this station besides endless markers in both RTTY and CW has been brief segments of five-digit groups—hardly the stuff of commercial press transmissions.

The obvious question is how legitimate these letters and claims are. Numbers station research has been dotted with persons making various claims while hiding behind colorful pseudonyms. More often than not, these "mystery reporters" turn out to be teenagers with overactive imaginations. There is no way at present to determine whether the Shanachie Identification Group is for real or not. Hopefully, they will continue to contribute to Communications Confidential in the future so we all can evaluate their claims and loggings.

DOE Nuclear Transport Safeguard Network

Tom Lewandowski of New York recently saw a TV movie called *Time Bomb* which was about the theft of nuclear material in order to make a bomb. He was inspired to check out the frequencies used by the Department of Energy (DOE) for their Nuclear Transport Safeguard Network. He found both 5750 and 7700 kHz quite active in USB. He says that the DOE gets very nervous when a truck doesn't answer! There are also data transmissions tied into the "Eclipse" computer network. Other frequencies listed include 3335 and 11555 kHz.

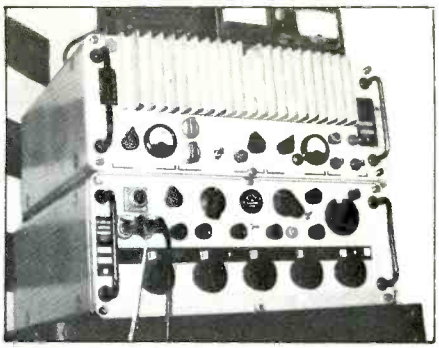
A New Editor For "Communications Confidential"

When Tom Kneitel asked me back in June, 1982 to assume editorship of this column, I had no idea it would grow to its present size. Unfortunately, it has gotten to the point where I can no longer continue on a monthly basis. But I am pleased to announce that my friend Ron Ricketts (WA5VFA) has offered to take over as editor of "Communications Confidential" beginning with the next issue. Many of you are aware of Ron's international reputation as one of the top experts in the "numbers stations" game; the rest of you are in for a real treat each month with Ron at the controls! Send all future reports to: Ron Ricketts, WA5VFA, Communications Confidential, Box 795, Bedford, TX 76021.

My best wishes to Ron as he begins his new responsibilities! Please give him the same *great* support you gave me! As for me, I'll still be around here in *POP'COMM* preparing very special in-depth features and projects which don't have a monthly deadline to meet.

Listening Reports

206: GLS, Galveston, TX, CW beacon 1028. (Tom Adams, WI)
224: BGN, North Platte, NE, CW beacon 1021. (Tom Adams, WI)
344: JA, Jacksonville, FL, weather broadcast 0942, interference from UNU, Juneau, WI. (Tom Adams, WI)
516: YWA, Petewana, ON, Canada, CW beacon 0951. (Tom Adams, WI)
530: NB, North Bay, ON, Canada, CW beacon 0955. (Tom Adams, WI)
1613: RAB, Rabinal, Guatemala, "RAB" repeated in CW 0553. (Rodney Grussling, KS)
2624: "P" marker in CW 0212, 0213 high-speed CW or RTTY message followed by four CW groups sent by hand and then back into a high-speed CW or RTTY. (Don Schimmel, VA) See 2724 kHz log. (Editor)
2690: Five-digit German numbers station with female announcer 0330, opened with "Oscar Echo" and electronic tones. (David Eaton, AL)
2724: Five-character CW groups, letters plus MW character and 2, 3, and 8 at 0142. (Don Schimmel, VA) Could these loggings be Soviet Naval activity in Cuba? (Editor)
3260: Five-digit German numbers station with female announcer 0400. Opened with "Oscar Echo" and electronic tones. (David Eaton, AL)
3370: Five-digit German numbers station with female announcer 2210. (Gregory Pioppi, Italy) Welcome Gregory! (Editor)
3764: Five-digit German numbers station with female announcer 1930; some unknown language heard and many twos and zeros in the German digits. (Gregory Pioppi, Italy)
4011: Five-digit English numbers station with female announcer 2203, was in SSB. Opened with a tone scale. (Gregory Pioppi, Italy)
4030: "Atencion 293 70" repeated by woman in Spanish 0300. (Thad Adamaszek, OH)



Transceiver capable of covering any frequency from 1.5-30 MHz used by "Bill" of Anaheim, CA.

Listening post of Jimmie Joe McKinney of Grethel, Kentucky.

4050: Five-digit Spanish numbers station with female announcer 0539. (Michael Nowicki, CA)
4241: 4XZ, Haifa, Israel, VVV marker in CW 0357. (Don Saunders, NJ)
4310: Four-digit Spanish numbers station with female announcer 0318, parallel to 4670 kHz; off at 0338 with hum and pulses. (Thad Adamaszek, OH)
4328: FFL2, St. Lys, France, CQ marker in CW 0254. (Philip Davis, IL)
4550: "21M DE OA-P-071600Z-GR15 BT" in CW 0152 followed by 6-figure groups. (Don Schimmel, VA)
4638: "Q" marker in CW 0410, interrupted at regular intervals by "WQ TU Q QEE WP QA L WU Z Q QEE WP QA L WI Z U." At 0414 the marker ended and "1971 DE OA" was repeated. Seven 6-digit groups were transmitted to "1971" followed by eight 6-digit groups sent from "OA" to "14." These two messages were repeated several times. (Ken Eichman, OH)
4640: Spanish-speaking male reciting numbers in the 120-130 range 0330 with bits of RTTY between groups. (Thad Adamaszek, OH) A most unusual reception, Thad! (Editor)
4670: "Victor Lima Bravo Two" repeated by woman 0155-0200. At 0234, four-digit Spanish numbers station with female announcer began broadcasting and was parallel to 5812 kHz. (E.R. Quackenbush, NY) This is more evidence for a link between "mystery markers" and numbers station. (Editor) "545" repeated continuously by female in Spanish around 0206. (Cameron Bailey, PA) Four-digit Spanish numbers station with female announcer 0230; simultaneously on the same frequency another station had a woman repeating "Victor Lima Bravo Two" could be heard! The four-digit station left the air at 0300 but "Victor Lima Bravo Two" continued until 0307. (George Primavera, NJ) A great reception, George! (Editor) Four-digit Spanish numbers station on 4673 kHz at 0200, "footsteps" sound at 96 per minute. (Steve Bandler, TX) Last month's *POP'COMM* had a fascinating feature on the "VLB2" type stations.
4755: XJP81, St. Johns, NF, Canada, passing traffic with ships in SSB 1230. (Ken Eichman, OH)
4759: "KCB" and "KCC" each sending three seconds tone followed by seven seconds of silence, with less than one second of silence separating the tones of the two stations. "KCB" transmitted the leading tone. Later switched to a pattern where their tones overlapped for one second, giving an overall impression of five seconds of tone followed by five seconds of silence. "KCB" identified in CW 1210 and "KCC" identified in CW at 1249. (Ken Eichman, OH) This type of activity—indeed, these calls—have been reported for several months now. The calls are allocated to the United States but I can find no listing; anyone have bearings or other clues? (Editor)
4960: "N59" and "N87" discussing problems with a generator 0420 in SSB; interrupted at 0425 by "G4M96" who advised they were on a non-authorized frequency. An argument followed between the stations! (Michael Cunningham, TX)
5016: Five-digit German numbers station with female announcer 0031; was in SSB and opened with "Alpha November." (George Osier, NY)
5413: Woman repeating "1, 2, 3, 4, 5, 6, 7, 8, 9, 0" and "098" three times in English 0310, ten beeps at 0312, and then into "3/2" number groups in English. (Paul LeVinus, NY)
5734: "KCA" and "KCB" each sending three seconds tone followed by seven seconds of silence separating the tones of the two stations. Later tones overlapped giving impression of five seconds of tone followed by five seconds of silence. "KCA" identified in CW at 1207 and 1237 while "KCB" identified in CW at 1212 and 1242. (Ken Eichman, OH) See 4759 kHz item. (Editor)
5750: "3/2" German numbers station with female announcer 2146, was in SSB. (E.R. Quackenbush, NY)
5810: Five-digit Spanish numbers station with female announcer 0331, off at 0340. (Thad Adamaszek, OH) A very active numbers station frequency. (Editor)
6237: "3/2" German numbers station with female announcer 0415, strong hum on signal. (George Primavera, NJ)
6254: "Playground" directing military surveillance net 0602, were tracking "bogies" and watching the ocean surface. (Ken Navarre, Jr., CA)
6270: Female reading English phonetic letters 0509; same voice as found on many phonetic markers. (George Osier, NY)
6286: "BFF2" repeated in CW 1220. (Don Schimmel, VA) As Don points out, this call is allocated to the Peoples Republic of China but no listing of it can be found. (Editor)
6384.5: CKN, Vancouver, BC, Canada, "DE CKN" in CW 0208. (Rodney Grussling, KS)
6411.2: WOE, Lantana, FL, VVV marker in CW 0500. (Rodney Grussling, KS)
6415: SXA35, Spata Attikis, Greece, VVV marker in CW 0503. (Rodney Grussling, KS)
6462: FUM, Papeete, Tahiti, VVV marker in CW 0509. (Rodney Grussling, KS)
6464: VIS3, Sydney, Australia, VVV marker in CW 1206. (Philip Davis, IL)
6467.5: Y5M, Ruegen, East Germany, VVV marker in CW 0512. (Rodney Grussling, KS)
6506.4: NMG, USCG, New Orleans, LA, working USCG cutter at 0306 in SSB. (Thad Adamaszek, OH)
6760: "Skybird" passing traffic with "Eyegoggle" in SSB 0105. (Bill Oliver, NJ)
6785: Five-digit Spanish numbers station with female announcer 0434, announcer had young voice. (Thad Adamaszek, OH)
6790: "Charlie India Oscar Two" repeated 0350 by woman; heavily accented and in SSB. (David Eaton, AL) "Victor Lima Bravo Two" repeated 2246 by woman in AM. (George Osier, NY) Later heard "Charlie India Oscar Two" 0144 in AM. (George Osier, NY)
6802: Four-digit Spanish numbers station with female announcer 0210. (David Eaton, MA) Similar at 0106 on 6801 kHz. (George Osier, NY) Similar on 6800 kHz at 0403, parallel to 9225 kHz. (Thad Adamaszek, OH)
6825: "3/2" German numbers station with female announcer 2218. (E.R. Quackenbush, NY) Five-digit Spanish numbers station with female announcer 0533. (Thad Adamaszek, OH) Perhaps same transmitter? Same agency? Or just a coincidence? Some direction-finding on this frequency would be interesting. (Editor)
6840: Pips 0325, long pip 0330, into slow CW; off at 0340. (Thad Adamaszek, OH) This has long been an active frequency for CW numbers stations. (Editor)
6841.2: "6ARV 4EDT" repeated in CW 0337. (John Tomaszkiewicz, NE)
6854: "3/2" English numbers station with female announcer 2003, was in SSB. (Gregory Pioppi, Italy)
6890: Five-digit Spanish numbers station with female announcer 0502, seemed to be a younger announcer than usual. (Thad Adamaszek, OH)
6916: Five-digit Spanish numbers station with female announcer 0127 in SSB; groups read rapidly and seemed to be live rather than taped or mechanical. (E.R. Quackenbush, NY)

6925.4: KKN50, U.S. State Department Intelligence Service, Washington, DC, QRA marker in CW 0201. (John Tomaszkiewicz, NE)
7374: Four-digit English numbers station with female announcer 0525. (Richard Gleitz, PA)
7428: FTH42, Paris, France, CW identification at 2054, time pulses at 2055, and more CW at 2100. (George Osier, NY)
7434: "VVV 149/24206/05 04417/13 55680/22 AR" repeated in CW 0203. (Don Schimmel, VA)
7447: "Kilo Papa Alpha Two" repeated by woman in AM 0215. (George Osier, NY) Also noted at 0220 in AM. (Alice Brannigan, MA)
7525: Five-digit Spanish numbers station with female announcer noted several times around 0300. (Thad Adamaszek, OH)
7530: Five-digit Spanish numbers station with female announcer 0400. (Thad Adamaszek, OH)
7795: "WFO WFO WFO QSY 518T QSY 518T" repeated in CQ from 0313-1332; at 0332 sent "BU GOM HR QRZ FM T22T UR QSA GRG OK OM QSY 9I QSY 9369 QSY 9369 I VVV VVV OM TEST PSE QSW 9369 OU? RLM" and off, was then found on 9369 kHz for two minutes and then left air for good. (Rodney Grussling, KS) Excellent logging, Rodney! I can't find "WFO" nor "RLM" listed anywhere; I suspect both calls are spurious anyway. (Editor)
7836: Open carrier 0425, time pips at 0430, then woman repeats "110 537 271 679 968" until 0440. (David Eaton, AL)
7905: Five-digit Spanish numbers station with female announcer 0300. (Tom Lima, MA)
8055: Five-digit Spanish numbers station with female announcer 0530, announcer had young voice. (Thad Adamaszek, OH)
8213: Male reading groups of letters in Spanish from the international phonetic alphabet 0555; was in SSB. (Richard Gleitz, PA)
8380: "33AME 2/4/6/8/17 12RG 12RG RYRYRYRY 33AME 2/4/6/8/17 12RG 12RG SGSGSGSG" repeated in RTTY 0330-0340. (John Carcich, NJ)
8478.5: FUF, Fort-de-France, Martinique, VVV marker in CW 0118. (Philip Davis, IL)
8568.7: XFM, Manzanillo, Mexico, CQ marker in CW 0213. (Philip Davis, IL)
8617: "Apollo Control to Sunspot" repeated in SSB 0120. (Alan Berger, PA)
8652.5: PZN3, Paramaribo, Surinam, CQ marker in CW 0011. (Philip Davis, IL)
8657: FUJ, Noumea, New Caledonia, VVV marker in CW 1124. (Philip Davis, IL)
8682: FUM, Papeete, Tahiti, VVV marker in CW 0738. (Philip Davis, IL)
8777: "XST" calling "Overwork" repeatedly 0322, counts to ten. (Wade Blake, FL) Military traffic. (Editor)
8992.5: 6WW, Dakar, Senegal, VVV marker in CW 0538. (Rodney Grussling, KS)
9028: Continuous AM station seemingly rebroadcasting Foxtrot transmissions and other military communications. (Ray Fougnier, NY)
9041: Five-digit German numbers station with female announcer 0117; was in SSB. (George Osier, NY)
9050: Five-digit German numbers station with female announcer 0300; opened with series of double beeps. (Thad Adamaszek, OH)
9050: "N" beacon in CW 0305, then into five-digit German number groups read by woman. (Michael Lake, MA)
9075: Four-digit Spanish numbers station with female announcer at 0300 and 0330. (Thad Adamaszek, OH)
9240: Five-digit Spanish numbers station with female announcer 0404. (Thad Adamaszek, OH)
9265: Five-digit English numbers station with female announcer 0304, opened with series of double beeps and "Group 37" repeated; off at 0316 with "ende." (Thad Adamaszek, OH)
9966: Five-digit Spanish numbers station with female announcer 0115, was in SSB. (Allan Dell, ON, Canada)
10089: Five-letter CW groups 2144; probably Soviet in origin since IM, OE, OT, and AA characters used. (Don Schimmel, VA)
10156: FPK5, Paris, France, English/French voice marker read by man in SSB 2018. English text was "This is Paris, the Radio Control Terminal of the French Telecommunications Network. This is a test transmission for circuit adjustment." (George Osier, NY)
10256: "3/2" German numbers station with female announcer 1930 in SSB. (George Osier, NY)
10570: Pips 0125, long pip 0130, then woman repeats "211 451 219" in Spanish until 0140 sign off. (Thad Adamaszek, OH)
10665: Two alternating tones 1954, one high and one low, lasted ten seconds each with one second of silence. (George Osier, NY)
11035: Four-digit English numbers station with female announcer 2028-2031. (Paul LeVinus, NY)
11269: "7FHR" calling "6YL" in SSB 2010. (Tom Lima, MA) Likely military traffic of some sort. (Editor)
11275: "3/2" German numbers station with female announcer 1015 in SSB. (Robert Comeau, NF, Canada)
11452: "3/2" German numbers station with female announcer 1117 in SSB. (Robert Comeau, NF, Canada)
11570: Five-digit Spanish numbers station with female announcer 0105. (Bill Oliver, NJ)
12710: VRT, Hamilton, Bermuda, VVV marker in CW 2032. (Don Saunders, NJ)
12799: PCH51, Scheveningen, Netherlands, "DE PCH51" repeated in CW 1744. (Rodney Grussling, KS)
12805: Military exercise of some sort in SSB 2150-2300; "Oscar 36" was net operator and kept reprimanding other operators for using the word "repeat" over and over when they couldn't copy his messages. (Mike Schneider, NY) "Repeat" is a no-no word—the proper request is "say again."
13068: OST52, Oostende, Belgium, VVV marker in CW 2016. (Don Saunders, NJ)
13116: Four-figure CW groups 1241; 3, 4, 5, 6, and 7 sent normally and other numbers sent "cut." (Don Schimmel, VA)
13119.4: JDO, Tokyo, Japan, with traffic to ships at 2030 in SSB. (Allan Dell, ON, Canada)
13296: "DE KEA32" repeated in CW 0315, off at 0319. (Ken Eichman, OH) I can't find this listed anywhere; anyone have a location? (Editor)
13392: Spanish military traffic with male announcer 2225, was in SSB and several Mexican cities mentioned. (Don Schimmel, VA)
13429: Five-digit Spanish numbers station with female announcer 2130, was in SSB. (Don Schimmel, VA)
13440: "985272 389420 91936 6975006 295362" repeated in CW 1059. (Robert Comeau, NF, Canada)
13444: "3/2" numbers station in English with female announcer 1411. (Lloyd Curry, KY)
13449: "54 DE 01-R-240345Z GR21 BT" in CW 1424 and into four-figure groups. (Don Schimmel, VA)
13512: "DE OA" in CW 1233 followed by six-figure groups. (Don Schimmel, VA)
13566: Various tones keyed in random fashion 2042. (Don Schimmel, VA)
13571: Military training exercises on this frequency in SSB 2200-0800; almost sounds real! (David Eaton, AL)
13721: "721 721 721 TTT" in CW 1323-1325 and then abruptly off the air. (Don Schimmel, VA) Obviously the end of a CW numbers transmission. (Editor)
13921: English letter groups read by a female in SSB 1900, very active frequency for this traffic. (Allan Dell, ON, Canada)
13966: Spanish-speaking male in SSB 1234 calling "Colega" repeatedly, whistling, shifted up to 14450 kHz and continued calling. (Don Schimmel, VA) Likely smuggler traffic using amateur transceivers. (Editor)
13974: This is an active frequency for Antarctic support transmissions in SSB around 0330. Calls include Hotel Tango Hotel, Victor Kilo Tango, and the South Pole station India Charlie Echo (ICE). (David Eaton, AL)
14555: Five-letter CW groups 1729; probably Soviet since OE, OT, IM, and AA used. (Don Schimmel, VA)
14727: 5-digit numbers station on USB at 1914, read by a YL in German. (Alice Brannigan, MA)
14845: Five-digit Spanish numbers station with female announcer 2106. (Rodney Grussling, KS)
15000: BPM, Lintong, China, time signals and identification 0359; was stronger than WWV or WWVH. (Wade Blake, FL)
15036: Five-digit German numbers station with *male* announcer, was in SSB. (George Osier, NY)
15041: Male voice reading phonetic letters and numbers in English 1614; was in SSB mode. (Glenn Elliott, ND) This was a "Skyking" broadcast . . . a coded message to SAC bombers aloft. (Editor)
15486: APS news in English at 1405 via RTTY (425/66N) from Algiers, Algeria. (Alice Brannigan, MA)
16405: "Foxtrot" broadcast to USAF bombers in SSB 1513, used tactical call "Otis." (John Tomaszkiewicz, NE)
16450: "3/2" Spanish numbers station with female announcer 1728. (John Tomaszkiewicz, NE)
16893: Y5M, Rugen, East Germany running a V marker in CW at 1428 and then into traffic at 1430. (Alice Brannigan, MA)
16906: YIR, Basrah, Iraq calling CQ in CW at 1434. A nice catch and from a nation not too often heard on the ute bands! (Alice Brannigan, MA)
16960: FUF, Fort de France, Martinique, VVV marker in CW 1946. (Don Saunders, NJ)
17290: Russian language telephone conversations here in SSB around 0330. One call was to Kiev and another was from two women in Port Nokhodka (a town near Vladivostok) talking about the long hours their husbands were working and the Party meetings they had to attend. (Bob Mattschei, WA)
19153: Repeating series of tones, first 7 tones followed by a short pause and then 5 tones. Same tones repeated over and over. Noted at 1336. (Alice Brannigan, MA)
19262: VOA feeder noted at 1340 using LSB. (Alice Brannigan, MA)
19480: VOA feeder heard at 1345 with LSB in Spanish. (Alice Brannigan, MA)
19620: NBA, Balboa, Canal Zone, running RTTY test tape at 1457. Noted in 850/100R mode. (Alice Brannigan, MA)
26329: Spanish language traffic 1717, seemed to be cordless telephones of some sort, in FM. (Allan Dell, ON, Canada)
30020: Time pulse on minute followed by ten seconds of open air 1948, repeated. (George Osier, NY) PC

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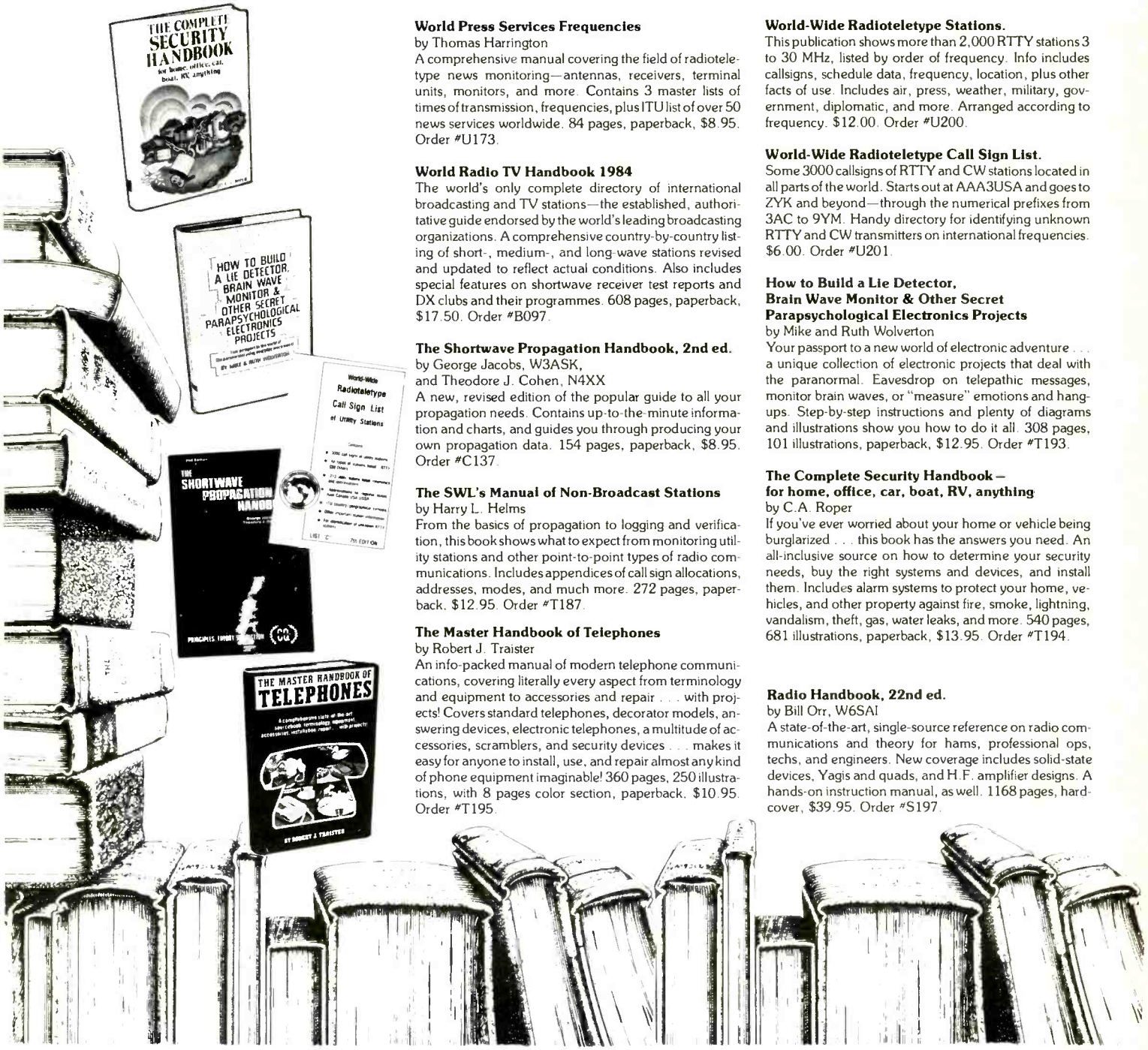

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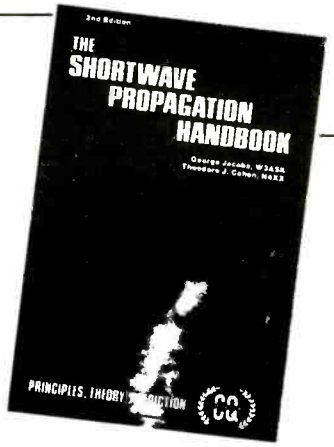

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- 3 SW/MW/FM high performance easy-to-use world band receiver
- LCD frequency readout for all bands
- Dual conversion circuitry for increased sensitivity and reduced interference on SW
- BFO for SSB/CW reception
- Slow/fast tuning dial for quick tuning

* YAESU FRG-7700

Sale $399

SPECIAL PACKAGE DEAL 7700-MU7700 FRA-7700 499.95

- 150 KHz-30MHz
- All mode AM-CW-SSB-FM
- Digital frequency and clock

Options:

- FRA-7700 active antenna $59
- MU-7700 12 channel memory $135
- FRT-7700 antenna tuner $59
- FF-5 VLF low pass filter $20
- DC-7700 12 VDC kit $8
- FRV-7700 VHF converter $135
- ADD $6.50 UPS

* PANASONIC RF-B600

Sale **$429**

List $595 ($6.00 UPS)

- 1.6 to 30 MHz, FM/LW/MW/SW
- Micro computer multi-tuning system
- 9 memory stations, scan
- Slow/Fast rotary tuning
- 10 key direct access tuning
- Universal voltage

RF-9 $99.95 ..... SALE $89.00
RF-B50 159.95 ..... SALE $129.00
RF-085 ..... CLOSE OUT $49.95
RF-B300 $249.95 ..... SALE $209
RF-3100 $379 ..... SALE $279
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CIRCLE 63 ON READER SERVICE CARD

ICOM IC-R71A

The Best Just Got Better

IC-GC4
World Clock

ICOM introduces the IC-R71A 100KHz to 30MHz superior-grade general coverage receiver with innovative features including keyboard frequency entry and wireless remote control (optional).

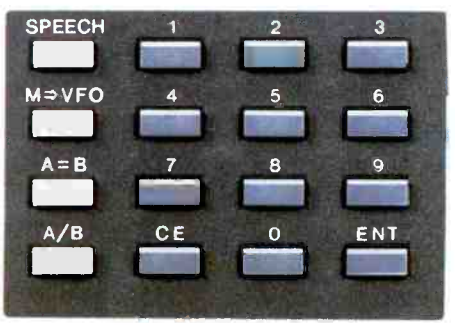
This easy-to-use and versatile receiver is ideal for anyone wanting to listen in to worldwide communciations. Demanding no previous shortwave receiver experience, the IC-R71A will accommodate an SWL (shortwave listener), Ham (amateur radio operator), maritime operator or commercial operator.

With 32 programmable memory channels, SSB/AM/RTTY/CW/FM (optional), dual VFO's, scanning, selectable AGC and noise blanker, the IC-R71A's versatility is unmatched by any other commercial grade unit in its price range.

Superior Receiver Performance. Utilizing ICOM's DFM (Direct Feed Mixer), the IC-R71A is virtually immune to interference from strong adjacent signals, and has a 100dB dynamic range.

IC-RC11
Infrared
Remote

Passband tuning, a deep IF notch filter, adjustable AGC (Automatic Gain Control) and noise blanker provide easy-to-adjust clear reception, even in the presence of strong interference or high noise levels. A preamplifier allows improved reception of weak signals.



Keyboard Entry. ICOM introduces a unique feature to shortwave receivers... direct keyboard entry for simplified operation. Precise frequencies can be selected by pushing the digit keys in sequence of frequency. The frequency will be automatically entered without changing the main tuning control. Memory channels may be called up by pressing the VFO/M (memory) switch, then keying in the memory channel number from 1 to 32.

VFO's/Memories. A quartz-locked rock solid synthesized tuning system provides superb stability. Three tuning rates are provided: 10Hz / 50Hz / 1KHz.

32 Tunable Memories. Thirty-two tunable memories, more than any other general coverage receiver on the market, offer instant recall of your favorite frequency. Each memory stores frequency, VFO and operating mode, and is backed by an internal lithium memory backup battery to maintain the memories for up to five years.

Options. FM, synthesized voice frequency readout (activated by SPEECH button), RC11 wireless remote controller, IC-CK70 DC adapter for 12 volt operation, MB12 mobile mounting bracket, two CW filters FL32 — 500Hz, and FL63 — 250Hz, and high-grade 455KHz crystal filter FL44A.

CIRCLE 67 ON READER SERVICE CARD

ICOM
The World System

ICOM America, Inc., 2112-116th Ave NE, Bellevue, WA 98004 **(206)454-8155** / 3331 Towerwood Drive, Suite 307, Dallas, TX 75234 **(214)620-2780**

All stated specifications are approximate and subject to change without notice or obligation. All ICOM radios significantly exceed FCC regulations limiting spurious emissions. **R71A234**