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- **Selected English Language Broadcasts**
—Summer 1987



AND . . .

- **Death of a Communications Station**
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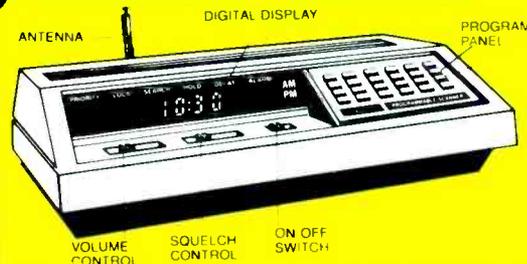
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- Z Mobile Bracket — Special ... \$5.99



home or on the road. It is double conversion, super heterodyne used to receive the narrow band FM communications in the amateur, public safety and business bands: 30-50, 144-174, and 440-512 MHz. Size 10 3/4" W x 7 7/8" H x 8 3/8" D.

Sophisticated microprocess-controlled circuitry eliminates the need for crystals, instead, the frequency for each channel is programmed through the numbered keyboard similar to the one used on a telephone. A "beep" acknowledges contact each time a key is touched. The Z30 scans approximately 15 channels per second.

Any combination of two to thirty channels can be scanned automatically, or the unit can be set on manual for continuous monitoring of any one channel. In addition, the search function locates unknown frequencies within a band.

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CIRCLE 171 ON CARD



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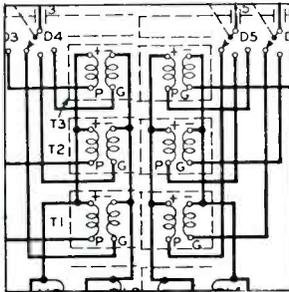
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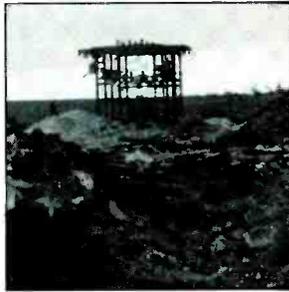
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This month's cover: The Voyager before landing at Edwards Air Force Base on its 'round-the-world trip. Photo ©Mark Greenberg/Visions 1986.

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R-2000

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Gross Encounters Of The Word Kind

If it's got to do with communications, it's grist for the mill here at POP'COMM. Over the years (in issues such as April of '83 and '84, August of '84, etc.) we have even looked at unorthodox and alleged supernatural two-way chatter. Veteran readers of my scribbles keep me abundantly supplied with information about CIA, NASA, and KGB experiments in ESP, about *Ouija Boards*, about Hieronymous machines, and the like.

This has been going on ever since, several years ago, I wrote an article in *Science and Mechanics* magazine speculating on the possibilities of establishing two-way communications with distant galaxies and even with UFO's. When that issue of the magazine came out, I was invited to appear on several talk shows, and one of those who called was James Randi. Randi, investigator-of-the-weird, had an all-night telephone talk program over 50 kW clear channel WOR Radio in New York City. He told me that I might enjoy being on his in-studio panel of experts the night he would discuss UFO's. Sounded like fun, so I agreed.

When I arrived at the WOR Radio studios, just off Times Square, there were four serious-looking fellow panel members settling in for the midnight-to-dawn program. Randi didn't introduce any of us to one another before the program. When the program began, the evening's theme was announced. I was the first one introduced and asked to offer my thoughts on flying saucers from outer space. That was my cue to embark upon an extremely droll, impromptu, free-form soliloquy about saucers and the little green men who staffed them. When I was through with that, I segued into some rude thoughts about those who say that they regularly see UFO's and have met their crews. Randi, as well as the guys in the control room were convulsed with laughter.

Encouraged by their response, and intoxicated by the thought that my voice and thoughts were being propelled across North America by 50 kW, I kept on going, saying the most outrageous things that popped into my head. I was certain that I'd be booked onto Johnny Carson right after my monologue. Move over, Don Rickles!

Too bad the following four and a half hours weren't as enjoyable for me. I very soon learned that the other members of the panel were honchos of the hard-core UFO fringe crowd—not scientists, astronomers, folks from the USAF's *Project Bluebook* or from the NSF, NASA or MUFON. These were guys who constantly spoke to or took

intergalactic tours in UFO's. One panel member claimed to be only masquerading as a human; he was actually the Communications Officer of a saucer that had arrived here from Neptune some 3,000 years ago. Unfortunately (for me), a large percentage of Randi's huge coast-to-coast audience that night were either this cat's shipmates or worse. I had stumbled headlong into the *Twilight Zone* and they were all out for blood—mine! As the hostile telephone calls for me poured in and the members of the

studio panel harangued me with vile epithets, Randi would occasionally look over at me with a half-smile or a wink.

When the program ended, the Neptunian radio operator came over to sternly advise me that I'd be "very sorry" and that henceforth he would be watching my every move. Let me tell you, this guy looked like Ming the Merciless. When I emerged from

(Continued on page 72)

LEADING EXPERTS TELL YOU HOW TO TALK WITH SPACE BEINGS

BE PART OF AN UNUSUAL EXPERIMENT

Millions of tax dollars are being spent to construct giant disc-shaped radio telescopes that span the sky in the unlikely hope of picking up random signals from star systems millions of light years away. At the same time, NASA proceeds with an out-moded space program, building rockets that are both expensive and which utilize a backward propulsion system which will never get us out into the cosmos.

Yet, actually, according to thousands of ordinary individuals living around the world, contact with other life forms is possible and at almost no cost, and can be accomplished by methods other than those devised by the established scientific community. UFO channels and flying saucer contactees maintain that they have established a communications link-up with extraterrestrial beings—human-like aliens from far more advanced worlds—who are hovering around our planet on a mission of peace and well being. It is claimed that these aliens, often referred to as our "SPACE BROTHERS," are here to help in individual spiritual development, and have much to offer our civilization in the way of technical advancements. These other-worldly beings will make themselves readily seen as soon as a larger percentage of the population lets them know they are welcome in love and understanding.

The "BOOK OF SPACE CONTACTS" offers several methods which might enable you to become a UFO contactee and actually communicate with the occupants of these silvery, disc-shaped objects. You will learn what "Talking Them Up" means; how PSYCHIC COMMUNICATION can bring you closer to them, and how a simple meditation can be successfully used to talk with friendly space beings. Furthermore, it is even possible to communicate with extraterrestrial masters by constructing a device which should cost only a few hundred dollars using simple electrical equipment that can be found in any stereo store.

Also learn how to identify space aliens who are said to be walking amongst us right now and discover exactly what their purpose on earth is. WARNING! There are those aliens who mean harm: the "SERPENT RACE" is the "BEAST" of the Bible, and they should be avoided at all costs. Over sixty types of aliens are coming to earth and the "BOOK OF SPACE CONTACTS" contains a large section describing fascinating—and highly incredible—face-to-face confrontations with many of these strange beings from the far reaches of the universe.

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MAILBAG

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NDXE: Anxiously Awaited!

I read with great interest the fine article on callsigns in your March edition. We believe that communications is the only answer to "peace on earth" and the communications industry as a whole has the important responsibility of promoting public interest and awareness everywhere. Your publication does an excellent job; keep up the good work!

H. Dickson Norman
NDXE Global Radio
Opeleika, AL

With the FCC's recent decision to eliminate the geographic restrictions on "K" and "W" prefixed broadcast station callsigns, the outlook for the callsign NDXE to be officially assigned to Mr. Norman's forthcoming shortwave station looked encouraging. All shortwave fans are anxiously awaiting the arrival of NDXE on the airwaves, and Mr. Norman promises to keep us posted regarding the progress he's making in putting his shortwave stereo station into operation.

—Editor

Free For All

When you place a mobile or marine telephone call, how does the operator know if you're giving him or her a correct telephone number for billing purposes. If a person gave the incorrect number, the call would be billed to the wrong party. Wouldn't it?

G. Panakis
Provincetown, MA

On the maritime ship-to-ship this might work, but most mobile (car) telephones automatically send out their ID's in the form of a data burst when calls are placed. This information is interpreted by a computer at the base station office. Within the Cellular Mobile Telephone (CMT) area there's a rapidly growing illegal underground industry that sells bootleg CMT transceivers containing chips specially programmed with CMT telephone numbers that belong to other customers. The bootleg chips are being offered for around \$500 each. That may sound like a lot, but CMT service is expensive and it takes only two or three months of free CMT calls for the customer to come out way ahead—unless he or she gets caught. The CMT industry is already squawking that 3 million dollars in revenue is being lost each year due to bootleg ID chips programmed with wrong numbers, and the FBI has made several arrests in what is certain to grow into a bootleg industry of major proportions. Although the Feds intimate that they are using

high-tech methods to zero in on those who use the unauthorized CMT's, the way they catch 'em is simply by interrogating the people whose numbers have been called.

—Editor

Where Are They Now?

While reading your April issue, I was pleasantly surprised to see the photograph of the RCA DX-77 ribbon microphone. A few years ago, prior to RCA's corporate decision to close their broadcast products group, most of the domestic microphone manufacturers were approached regarding purchasing the RCA microphone line, and the tooling to produce this classic. To the best of my knowledge, there were no takers. We have considered building the type of product you referred to (a replica of the famous RCA 77 microphone); however, our marketing studies indicate that the quantities would cause the unit to be prohibitively expensive. It's a great idea though. As a closing note, I thoroughly enjoyed your article.

Adolph W. Santorine, Jr.
National Sales Manager
The Astatic Corporation
Conneaut, OH

Several readers wrote further to say that old RCA 77 and 44 type broadcast microphones, as well as Western Electric 631 microphones in top condition are still worth big bucks, not only to collectors, but for actual broadcast use. Maybe someday modern facsimiles of these will become available for broadcast and communications uses.

—Editor

But Does His Scanner Glow?

Recently, ABC-TV's program "20/20" made much of the recent discovery that the Dept. of Energy's "Feed Production" plant at Fernald, OH wasn't producing cattle feed as believed by area residents. There was much commotion when it was just realized that the plant actually manufactured radioactive products for use in nuclear warheads. The ABC-TV revelations seemed minimally shocking to me because seven months earlier, POP'COMM's September '86 issue had said that "weapons materials" were produced at Fernald. That issue also provided no less than ten communications frequencies between 2 and 172 MHz used at that facility. I've been monitoring those frequencies since that time and I'd say that, once again, POP'COMM had the "scoop."

N.E.G.
Fernald, OH

Out Of Sight

When aircraft are flying over open ocean areas, can their VHF communications

equipment still be used? It is my understanding that airliners and military aircraft flying at high altitudes can communicate on VHF over great distances. The reason I ask is that, although I've heard international flights over the Pacific on HF frequencies, I can't seem to hear them on VHF until they are approaching the coast.

Martin Yerrington
Vancouver, BC

Air ground VHF communication is possible for high altitude aircraft for about 200 to 250 nautical miles; HF is used for greater distances. Just for kicks, you might try monitoring the VHF air-to-air frequencies airliners use over remote and oceanic areas when they're out of range of VHF ground stations. In the Pacific area, monitor 128.95 MHz; in the Caribbean area it's 130.55 MHz; and in the North Atlantic area monitor 131.8 MHz. These frequencies are intended to be used to exchange operational information, although there is occasional trivial chit-chat to be heard, too. —Editor

Kind Words For Our Efforts

Just received my first issue of POP'COMM and all I can say is "where have you been?" It's the best scanner magazine I've ever seen, I couldn't put it down. In my fifteen years of monitoring scanners and five years of selling them I've never found such an up-to-date publication.

Hayden Johnson
B-In Touch, Inc.
P.O. Box 135

Campbellsville, KY 42718

Three years ago I was on vacation in Myrtle Beach, SC. One day while going to the beach I stopped at a newsstand and purchased my first copy of POP'COMM. After reading it for a couple of hours, I went out and bought a Sony ICF-2002 and a Realistic PRO-30 scanner the same day. Since then I have added a Realistic PRO-54, two Realistic PRO-22 handheld scanners, a weather radio, a Sony ICF-6500, a Yaesu FRG-9600, a Realistic PRO-2004, an MFJ active antenna, and a large library of frequency directories.

Buster Coles
Charleston, WV

We don't have the room to print all of the great letters we regularly receive from our readers, but we do appreciate them and want to sincerely thank those who have taken the time and trouble to tell us that they like POP'COMM. The magazine, just about to begin its sixth year of operation, has been an enormous success and we owe it all to our growing legion of loyal supporters around the world. Thanks, gang!—Editor

Grove's Indoor SWL Antenna SYSTEM

Our "Hidden Antenna System" is your key to exciting short wave reception without an outside antenna!

Here's the apartment dweller's dream—a high performance, amplified indoor antenna system.

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Will You Be A Law Violator This Summer And Not Know It??

Worse yet, will a local law enforcement agency abruptly inform you of the fact? Actually, the answer is unlikely . . . unless you are stopped for some other reason, like speeding. Then watch out! If you have a scanner, you could be in trouble. The states with mobile and/or portable scanner laws include: California, Florida, Indiana, Kentucky, Michigan, Minnesota, Nebraska, New Jersey, New York, North Dakota, Oklahoma, South Dakota, Vermont, and West Virginia. In some of these states the laws are very specific and shouldn't cause the scanner user much concern. For instance, in Oklahoma, the law simply says that it is illegal to use a scanner for illegal purposes or in commission of a crime. Could the law be stretched and the assumption made that you were using your scanner to detect and avoid a speed trap? Yes, I suppose that is possible, but I would guess very unlikely. On the other hand, if it did happen in the middle of your vacation, would you stay and fight it in court? Not likely either. You would pay the fine and move on.

We have contacted some of these states and have been told "informally" that it is their policy to give "a pass" to out-of-state residents when it comes to mobile scanner laws. That's not good enough for us! Why are we only told "off the record"? What guarantee is there that in some town we are traveling through we won't be subjected to unwise enforcement of the law?

The problem with all of these state laws is that they are so obscure that the traveling public does not know if they are violating a law, or even if one exists. Why should a U.S. citizen be subjected to this? Even when a person is aware of the need to have a permit, the state enforcement agency may make it impossible to get one.

We recently heard from M. Wachholz of Shoreview, MN, who explained just how difficult it is to get a permit in Minnesota. First of all, you are asked to write the Bureau of Criminal Apprehension! They will then ask for a written response to a series of questions, such as: "Is this permit a necessity?" and "Will it contribute to your livelihood?" Right on the form it states that the permit, if issued, "is valid only in lawful pursuit of your occupation/trade." Can you guess how many scanner hobbyists have been able to qualify?

How can this situation exist, especially in view of the fact that both the International Association of Chiefs of Police and the National Sheriffs' Association are on record as supporting citizen use of scanners? How can it be that in the state of Minnesota it is virtually impossible to get a permit to use one in a vehicle unless you have a commercial purpose for scanning? Why is it that, in Minnesota, an ordinary citizen, who is not out to make a profit with a scanner, is subject to this kind of legal harrassment? I think that it is time for all scanner owners to take some action—like writing to the state tourist bureaus to tell them you want some clarification before you'll enter their state and spend your money there. And, if you live in one of these states, where you also have the clout of voting power, why not ask the embarrassing question of why your state is outlawing a practice endorsed by this country's leading law enforcement officials. Write a letter or two and see what kind of response you receive. We'd appreciate copies of your letters and the responses here at SCAN Headquarters for inclusion in future columns. Our address is: SCAN, P.O. Box 414, Western Springs, IL 60558.

More On "CAD"

Our editorial on "CAD," variously called Computer-Aided Dis-

patch or Computer-Assisted Dispatch, has produced a flood of interesting mail from members. It is evident from the mail received that not everything is going smoothly with CAD. For instance, Richard Krepps writes us from Houston about the massive failure of the Houston communications system which left the entire city without communications for half an hour. According to the *Houston Chronicle*, "The breakdown of the new computer-aided system, which went into operation in January, was blamed on electrical problems." The *Houston Post* also reported that, "The communications failure left HPD's command staff with little or no communication with patrol officers." Yes, CAD is nice when it is working, but when it fails it can cause very severe problems.

Reader Krepps reports that during the failure all the transmitters turned on simultaneously transmitting noise and effectively blocking conventional voice communications on the frequencies! Luckily, no major problems requiring police attention occurred during the blackout period, but the potential for disaster was there. If nothing else, this incident points up the need for conventional voice backup systems that will work even if the computer system goes down. The liability of those installing these new CAD systems could be enormous if they fail to provide backup communications in the event of computer failure. We expect that this aspect of CAD will alone cause some re-thinking about how to design systems.

All of this is not to say that CAD is wrong or a bad idea. In fact, it offers some very interesting possibilities beyond dispatch functions. SCAN editorial contributor Francis X. Holt has written a very interesting analysis of CAD. While acknowledging all of its problems and difficulties, he also points out some of the "bells and whistles" that are possible with CAD. For instance, a fire department company that has been finally relieved from duty could send a computerized signal that would not only light up the firehouse to welcome them back, but also start the coffee maker and electric stew pan going. The possibilities are endless. In fact, Holt reports to us that CAD has been thoroughly accepted by many departments where it is in use. In one large metropolitan city it is reported that an abnormally high number of "sick days" are reported when the CAD system is scheduled to go down for maintenance. So CAD can be nice, but you had better have the equipment and people ready to handle things when it isn't available. In fact, "multi-mode system fluency"—the ability to operate in either the computer-aided or conventional operation—has become a big issue in dispatcher training.

Incidentally, the *Guide For Dispatchers*, which includes information on CAD, continues to be available. A self-addressed and stamped business size envelope will bring you more information about this unique book and how to obtain one. Write to: SCAN Dispatcher Book, P.O. Box 414, Western Springs, IL 60558.

Letters, Letters, Letters . . .

Because we can't answer every letter we receive individually, we plan to cover at least one subject of special interest in this column each month. Your letters are really helpful to us because they indicate your concerns and interests. We feel that each letter we receive represents perhaps as many as forty or fifty others who did not take the trouble to write. If that is the case, the interest in receiving frequency converters is enormous!

In a sort of off-hand comment when discussing the ridiculousness of Electronic Communications Privacy Act (ECPA), I had mentioned how easy it is to build a converter and how difficult it is to



Where Oh Where Do I Send . . .

There still is understandable confusion about what to send to SCAN and what to send to *Popular Communications*. Even we were confused at first, so don't feel alone! Here's a brief rundown you may want to save for reference.

Change of Address: If you're a SCAN member, your old mailing label and new address should be sent directly to: SCAN Address Change, P.O. Box 414, Western Springs, IL 60558. Sending it to *Popular Communications* will cause delays if you're a SCAN member. On the other hand, if you're *not* a SCAN member, address changes should go to *Popular Communications*.

Communications Shop Ads: These should go directly to: PC Communications Shop, 76 N. Broadway, Hicksville, NY 11801. Please, please type your ad or print very clearly.

Membership Renewal: Please send your SCAN membership renewal (which includes subscription to *Popular Communications*) only to SCAN, P.O. Box 414, Western Springs, IL 60558. *Popular Communications* subscribers who are not SCAN members should continue to send renewals to *Popular Communications*.

Photo Contest Entries: Send to SCAN Photo Contest, P.O. Box 414, Western Springs, IL 60558.

Public Service Award Nominations: Send to SCAN Public Service Award, P.O. Box 414, Western Springs, IL 60558.

Co-Op Service Orders: Send to SCAN Co-Op Service, P.O. Box 414, Western Springs, IL 60558.

SCAN Insurance Claims: Send directly to Hartford Insurance using the address shown on the policy.

Comments and Suggestions: Always welcome at either *Popular Communications* or SCAN, or both!

determine the purpose of the converter. Well, we literally have a stack of letters several feet high asking for plans or kits to build one! SCAN does not have plans or kits to sell. However, you can get the information you need from a number of sources. One of these is the *Radio Amateur's Handbook*, published by the American Radio Relay League, Newington, CT 06111. This book may be available at your local library. It includes circuit designs for converters covering a range of Amateur bands up to 2,304 MHz! The plans are easily modified to cover the frequencies of interest to you . . . If you have some working knowledge of circuitry and building radios.

Judging from the response, I believe there is a tremendous opportunity out there for some manufacturer to offer ready-built converters for the 800-900 MHz as well as the 200-225 MHz bands. Stay tuned to the pages of *POP'COMM* . . . I am sure some manufacturers will step in to fill this void.

Next month we plan to cover another subject voted "most interesting" by your letters. We want to hear from you, so please drop us a postcard or note. Until next month, good listening!

Order Back Issues of

POPULAR COMMUNICATIONS

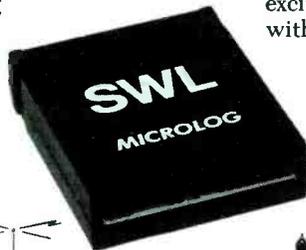
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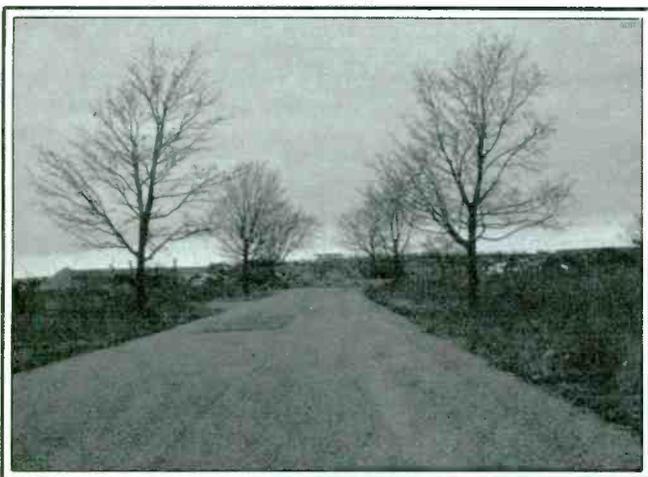
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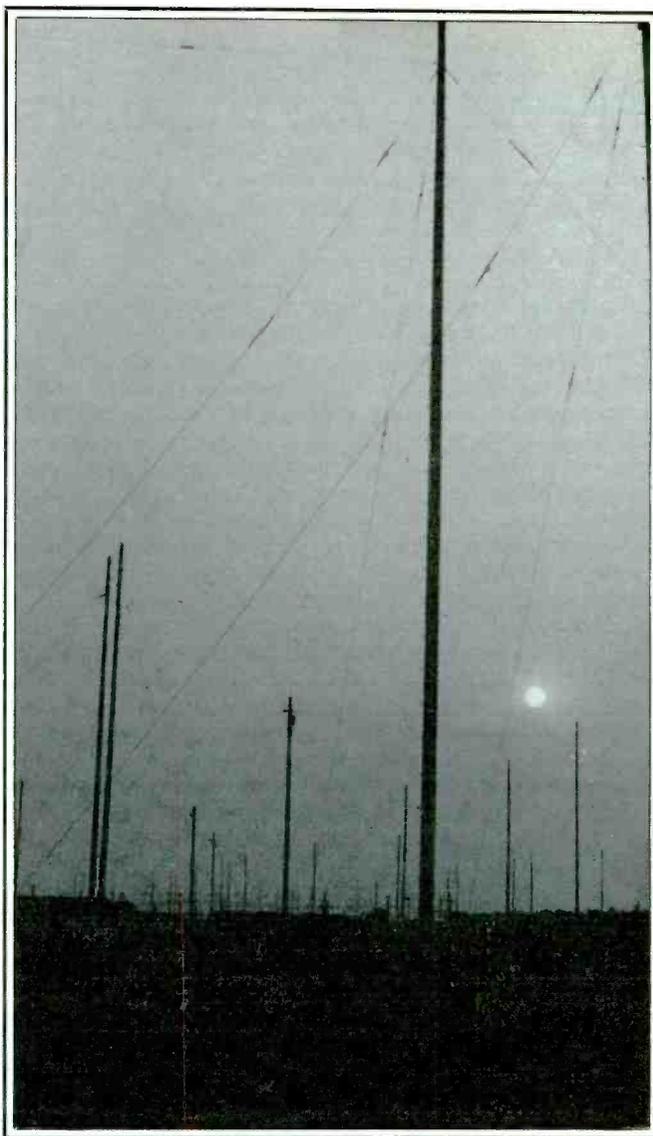




BEFORE: As you approached the transmitter building from the main entrance on Adams Avenue, some of the antenna systems could be seen in the background.



AFTER: Only a flagpole and the trees were left to be seen when looking down the main entrance drive



BEFORE: In happier days, the setting sun illuminated a sea of masts and towers supporting numerous antenna systems.

Exclusive Photos!

The Death of A Communications Station

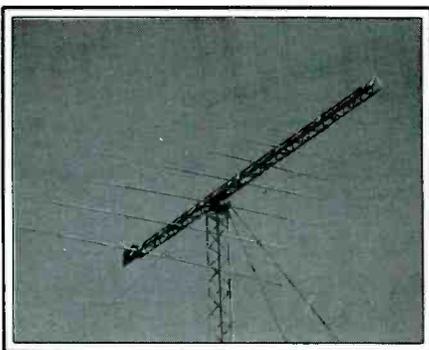
**Once It Was An International Communications
Hub – Now It's A Pile Of Rubble!**

BY TONY EARLL, KNY2AE

For decades, the Mackay Radio international transmitting site at Brentwood, NY was a vital link in worldwide communications. From this site went CW, FAX, RTTY and voice signals used by press services, for

telegrams, for weather broadcasts, for the shortwave signals of coastal telegraph station WSL (Amagansett Radio), and at one time for VOA broadcasts. Even after Mackay Radio's famous transmitting site be-

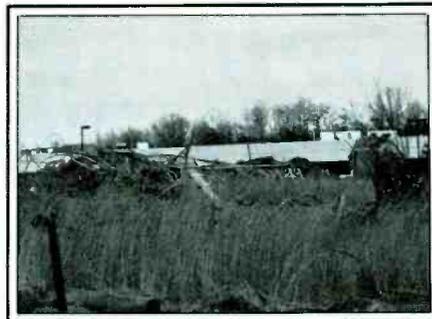
came the property of the International Telephone and Telegraph Company and was called "ITT World Communications" (ITT Worldcomm) it remained a high profile member of the world of communications.



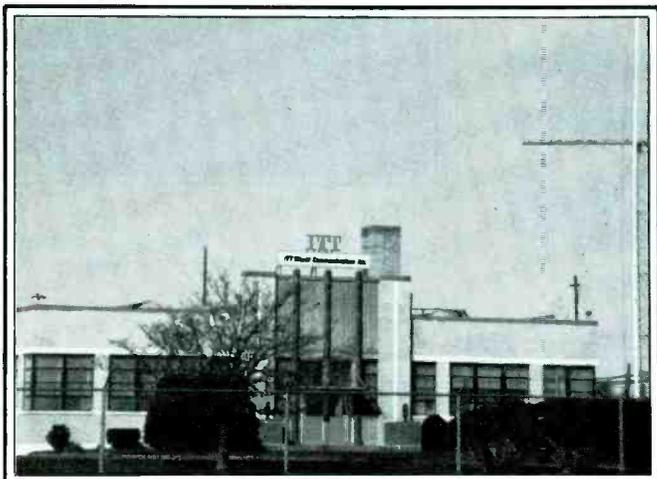
BEFORE: This log periodic beam aimed towards Latin America once graced a fifty-footer next to the main entrance driveway.



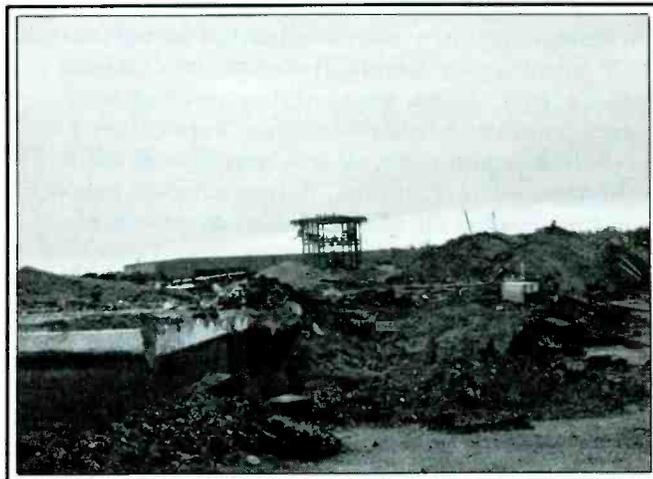
BEFORE: The log periodics mounted on towers can be seen to the right in this photo.



AFTER: The log periodic and supporting tower shown standing in an earlier photo is seen here lying on the ground twisted and mangled. A new building from the encroaching industrial park is seen in the background.



BEFORE: Once this was the transmitter and administration building for ITT World Communications in Brentwood.

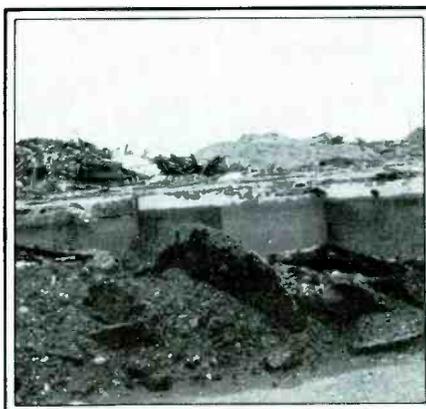


AFTER: It took only one day to convert the transmitter building into this mound of rubble. In the background you can see a structure that served as a distribution point for feed lines to go between the transmitters and various antennas.

It was not possible to tune a communications receiver across more than a few hundred kHz of shortwave spectrum, day or night, without crossing a frequency actively used by this gigantic transmitting station. Yes, gigantic! It covered more than 1,250 acres of land with huge steel lattice towers, wires, poles and masts of every size and shape and pointed in every conceivable direction of the compass. So many signals simultaneously poured forth from the site that it was virtually impossible to drive a vehicle within a mile of the place without the sound of CW and RTTY invading your car's AM radio.

The heart of the facility was a large, grey brick single-story structure that housed all of the transmitting equipment. It sat regally in the middle of the antenna farm. From there, signals could be switched into antennas that would send them flying to the corners of the world and to ships at sea.

About fifteen years ago, however, changes began taking place. One by one, the magnificent lattice towers started being removed in what appeared to be a rather harsh act of destruction. After that, few external changes were noticed for a number of years—until about seven years ago when it was announced that the site was being turned into



AFTER: The basement of the old transmitter building remained as a large cavern filled with bits and pieces of electronic equipment.



AFTER: Miles of heavy coaxial feedline remained on the ground, although cut and torn into short lengths that looked like a large family of pythons frozen in agony.

an industrial park. Hundreds of remaining antenna structures were razed to make room for modern-looking buildings supporting light industry. The operations facilities and satellite uplink transmitters for HBO and MTV were among the new residents on the site.

The ITT international shortwave trans-

mitting site, in greatly reduced form, remained at a small portion of the western end of the area. The grey building remained, surrounded by only those antenna structures that were located closest to that structure. Indeed, even under those circumstances, it was still an impressive installation, although perhaps only one-eighth of

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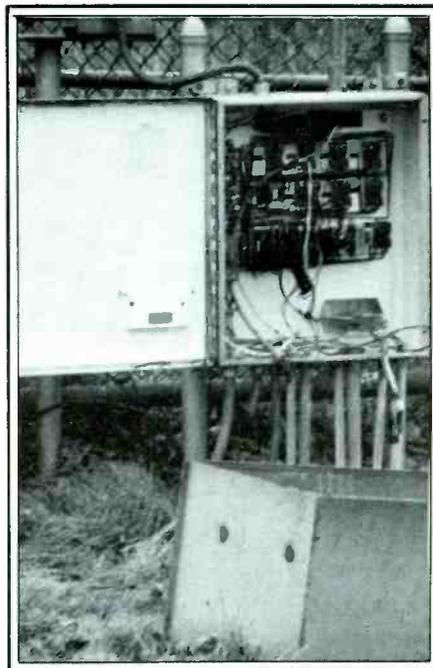
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AFTER: The last thing to be seen when leaving the destroyed site was the remains of the control panel that once operated the main gate.

its original size. Then, about three years ago, coastal telegraph station WSL was taken off the air, further reducing the need for ITT's Brentwood site to continue to exist on any level at all.

The sad fate of ITT Brentwood was sealed, so ITT claims, by advances in satellite communications technology that have diminished the need to tie up large expanses of valuable real estate in order to maintain HF antenna farms. The encroaching industrial park was advancing by inches, almost daily, as individual antenna towers and systems toppled to make room for new additions to the industrial park.

The final devastating blow came in December of 1986 when the final antennas, and even the transmitter building itself, were levelled to the ground. One day you could see log periodic beams, dipoles, sterba curtains, atop towers and poles. The following day all you could see was a desolate expanse of land dotted with debris, piles of bricks, twisted wire and metal, and the phantom of a once magnificent shortwave transmitting facility.

Those who wandered inside the ruined compound, before everything was carted away for scrap and to the garbage dump, were able to spot relics of the old station amidst the destruction—paperwork, odds and ends of electronic equipment and components, insulators.

For my own purposes, all I took were some photos that I could compare with shots that I had taken about three years ago. I am glad to share these exclusive photos with POP'COMM readers—this one last look at the rise and fall of ITT World Communications, Brentwood, NY.

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Monitoring Voyager Communications

A Scanner Owner's Dream Come True: The Historic Voyager Flight

BY MICHAEL SCOFIELD

The Voyager project was unique. The attempt to fly an aircraft all the way around the world without stopping and without refueling was one of the last major achievements in atmospheric flight. Oddly enough, it was not a government which funded this undertaking, but a group of private individuals.

My interest in the Voyager project was first piqued by a colorful exhibit just inside the Independence Avenue entrance to the Smithsonian's Air & Space Museum in Washington, D.C. So, full of curiosity, I "made my pilgrimage" to the hanger at the Mojave airport (in the desert 70 miles north of Los Angeles) to see this remarkable air-

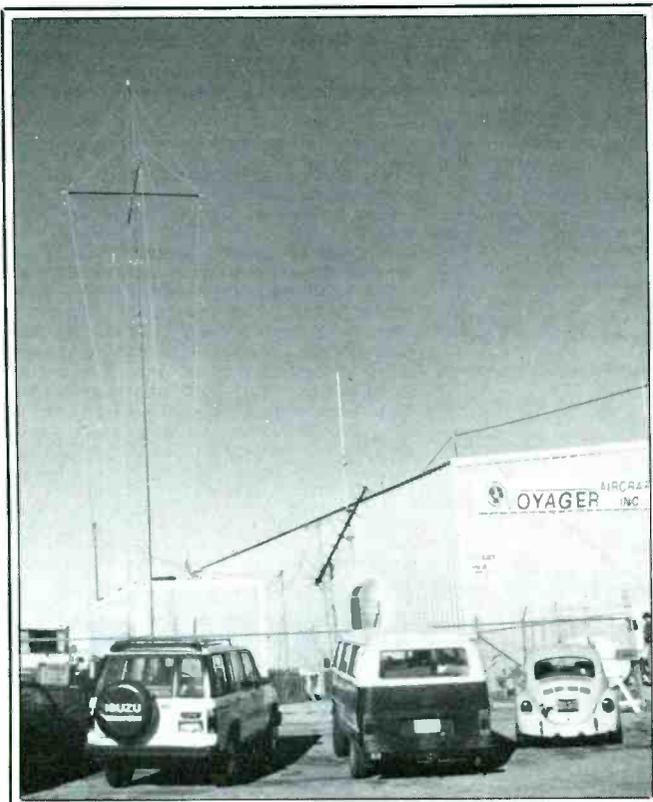
craft and have an opportunity to speak with the pilots, Dick Rutan and Jeana Yeager.

While in the hangar I particularly looked for antennas on the aircraft, and noticed what was probably a HF antenna projecting to the rear from the left vertical stabilizer. I could see few other antennas but they could have been inside the non-metallic frame or hull, and still be quite effective.

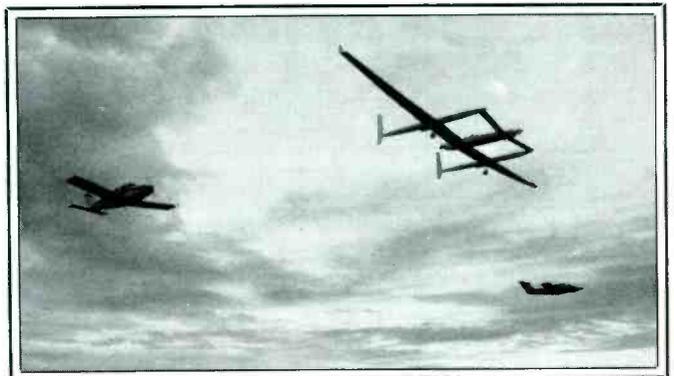
Saturday night, December 13, when I heard that they were about to leave, I resolved to witness the event. I wanted to both see the Voyager in flight, and hear as much of what was going on as I could. That took some careful planning. I figured I would not

be able to get onto Edwards Air Force Base where the actual take-off would occur. Security there is thorough, and I had not made prior arrangements. The departure route, I knew, would go out over the Pacific, but I couldn't predict which route between Edwards and the ocean that they would take—neither could they, as it turned out, because of the turbulence in the passes leading to the ocean.

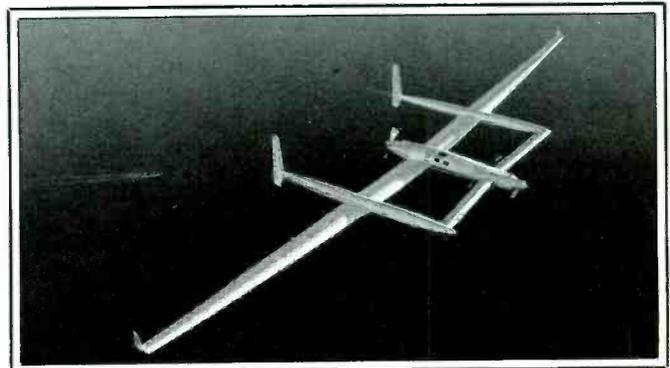
I used a Visual Flight Rule (VFR) aeronautical chart, which clearly showed the topography of the area, guessed at the most likely route to the ocean, and selected Mt. Gleason as my vantage point. At 6,000 feet



Voyager Mission Control and HF antenna. These satellite antennas received weather data for course planning purposes.



Postcard of Voyager and chase planes approaching the dry lake bed landing field.



Another postcard shot of Voyager over the Pacific.

U.S. DEPARTMENT OF TRANSPORTATION FEDERAL AVIATION ADMINISTRATION		(FAA USE ONLY) <input type="checkbox"/> PILOT BRIEFING <input type="checkbox"/> VNR		TIME STARTED		SPECIALIST INITIALS	
FLIGHT PLAN				<input type="checkbox"/> STOPOVER			
1 TYPE <input checked="" type="checkbox"/> VFR <input type="checkbox"/> IFR <input type="checkbox"/> DVFR	2 AIRCRAFT IDENTIFICATION N269VA	3 AIRCRAFT TYPE/SPECIAL EQUIPMENT VOYAGER	4 TRUE AIRSPEED KTS	5 DEPARTURE POINT EDW	6 DEPARTURE TIME PROPOSED (Z) ACTUAL (Z) 4/602	7 CRUISING ALTITUDE	
8 ROUTE OF FLIGHT FICKY N 3135.0 W 12122.0 N 2958.8 W 12500.0 N 1131.5 W 15000.0 GUAM PANILLA KOTA BAHARN MOGADISCO LIGREVILLE FERNARDE NORONHA TRINIDAD MERAIDA MEXICO BROWNVILLE							
9 DESTINATION (Name of airport and city)		10 EST. TIME ENROUTE HOURS MINUTES 2 04 00		11 REMARKS VOYAGER WILL MAKE HALY OPS NORMAL REPORTS AND WILL REPORT THE FIRST TWO HRS. PRIOR TO XING BNDAYS. DHY			
12 FUEL ON BOARD HOURS MINUTES 2 46 00		13 ALTERNATE AIRPORT(S)		14 PILOT'S NAME, ADDRESS & TELEPHONE NUMBER & AIRCRAFT HOME BASE DICK RUTAN & JEANA YEAGER		15 NUMBER ABOARD 2	
16 COLOR OF AIRCRAFT B/W		17. DESTINATION CONTACT/TELEPHONE (OPTIONAL) (805) 824-4646					
18 CIVIL AIRCRAFT PILOTS. FAR Part 91 requires you file an IFR flight plan to operate under instrument flight rules in controlled airspace. Failure to file could result in a civil penalty not to exceed \$1,000 for each violation (Section 901 of the Federal Aviation Act of 1958, as amended). Filing of a VFR flight plan is recommended as a good operating practice. See also Part 99 for requirements concerning DVFR flight plans.							
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A copy of the Voyager's flight plan permit

plane. After more discussion among project engineers on the several aircraft, one of the flight engineers in a chase plane decided that there was no flight safety problem, but entertained the idea of returning to Edwards because of the question of drag. There was further exchange of technical information including a recitation by Jeana Yeager of statistics regarding fuel flow, true air speed, etc. From the computations, it was finally concluded that they could make the round-the-world flight without difficulty, in spite of the loss of portions of each wing.

The chase plane took several fixes from various VOR's (Voice Omin Range; an FAA navigation beacon which tells a pilot his direction and distance from the ground antenna) along the coast to give precise locations verifying that the Omega internal navigation system was working properly. It relayed this information on 123.2 to Voyager. Dick Rutan used his VOR equipment to verify the position, as well as the Omega navigation equipment.

When things settled down at about 9:52, there was more casual discussion about what they did wrong during the takeoff roll. Then they made other efforts to trim the plane for prolonged flight, and Yeager (whose voice came in much clearer on the air than Rutan's) talked as she crawled back to close a vent on the rear engine.

At 10:08, the chase plane made another thorough visual inspection and declared that Voyager "looked clean" with no indications of leaks or oil smears on the surface. One of the chase planes flew directly behind Voyager using its windshield to catch any trace of a fuel or oil leak. None was found.

Finally, at 10:11, and 126 nautical miles from Catalina Island's VOR, the pilot of the chase plane said, "We just turned around to look, and we couldn't see any land, so we're getting scared." Soon afterward, the chase final plane turned back to land, and Voyager continued on alone.

As the chase plane returned, it continued to talk to Voyager. It relayed the message from L.A. Center that radar contact had been lost at 10:41, yet I could still hear Dick and Jeana clearly on 123.2, thus yielding a good 220 mile range from my inland, mountaintop vantage point. (My Regency HX-1200 was connected to an 18-inch vertical on a magnetic mount on the trunk of my car.) There may also have been some bending of the VHF signal over the curvature of the earth, in contrast to the path of the radar signals.

The last I heard Voyager was at 10:48 when Dick was talking about headset failure, and I could barely hear them in the static. Messages from "Mission Control" (in the hangar at the Mojave airport) were relayed to and from Voyager by the chase plane, again on 123.2. Since I could hear all three, I heard an occasional beat frequency tone produced by Voyager and Mission Control transmitting simultaneously to the chase plane. Voyager was finally advised to switch to "frequency number three" on high frequency, and I heard nothing more.

Sunday, Dec. 21, 1986

A visit to the Lancaster Flight Service Station (an FAA office providing weather and other information to private aviation) was fruitful. Since all lengthy flights (especially those going overseas) must file flight plans with the authorities, I asked if a flight plan for Voyager had been filed. Yes it had, and I obtained a copy of it.

I then visited the hangar at the Mojave airport. It was much more crowded than my previous visit, with news media personnel gathering information and looking for interviews. I interviewed some Voyager project personnel and learned a little more about the communications.

Mission Control, itself, was housed in a rented trailer outside the hangar. It con-

tained various workstations including terminals for display and analysis of satellite supplied weather photographs. A status board overhead gave the latest known latitude and longitude of Voyager, crew status, elapsed miles, and other information.

Two tall towers on either side of the trailer held up a relatively simple dipole antenna which, I was told, established very clear HF contact with Voyager when they were over the Atlantic. There were six basic HF frequencies for such communication, with 13.312 used as the primary, and 14.313 MHz a final reserve frequency. High frequency communication was also achieved through relay stations located around the world including at Vandenberg AFB and Cape Canaveral.

HF communications (typical of short-wave) were sometimes outstanding, and sometimes unusable. I was told that, on Sunday, they were communicating quite clearly through the dipole on top of the trailer.

Another method of communication available was satellite UHF frequencies (which they would not disclose) employing a "cross-pole" dipole antenna held in the cockpit. This employed a Motorola LST-5 radio (weighing only 7.5 pounds) and allowed communication through geosynchronous satellites. To further save weight, no metal fixtures or racks were used on board Voyager. All electronic equipment was either loose, or fastened with glue or Velcro strips to the airframe itself.

The geosynchronous satellite network does have some "blind spots"—one over the mid-Atlantic, and one over the Indian Ocean. A ground station in Australia was used, along with HF radio, to provide coverage. Both pilots held Amateur Radio licenses, and thus should have had understanding of propagation vagaries.

In addition to air-ground communication discussed above, other communications at the launch site used MARS frequencies and handheld (probably 2 meter) equipment. Several Amateur Radio operators assisted with miscellaneous communication needs.

Tuesday, Dec. 23, 1986

Up at 4:00 a.m., on the road by 5:00. There was some talk on the media that Mission Control knew that people knew their frequencies. I suspected (correctly) that they wouldn't return to using 123.2 as their primary frequency. While on the freeway I swept 123.075 through 123.800 and heard "Chase One" first at 5:20 a.m. on 123.375. He established VHF contact with Dick Rutan just about then, but the first time I heard Rutan was at 5:30, while driving through downtown Los Angeles.

While they were cryptic in their discussion of location (even trying not to reveal their altitude), I figured they were somewhere off San Diego. Voyager used the HF to ask Mission Control to warn San Diego radar (approach control) where they would be.

At 5:40 Voyager positioned 88 DME (Distance Measuring Equipment) from an



Voyager Mission Control and antennas. The trailer shown adjacent to Hangar 77 at the Mojave, CA airport housed the Mission Control. The temporary towers at either end of the trailer held up a dipole HF antenna through which communication direct to the Voyager aircraft was often clear.



Interior of Voyager Mission Control, as seen on a TV screen in the press area. The specialist in the left rear is manipulating computer data on weather. The status board overhead indicates that the flight had completed 21,469 miles, that Jeana Yeager was currently at the controls of the aircraft and Dick Rutan's status was "rest."

above sea level, the ridge east of Mt. Gleason afforded a clear view of the Mojave Desert. Through my binoculars I could clearly see the hangars and control tower at Edwards AFB, about 40 miles away. Mt. Gleason also overlooked Palmdale-to-Newhall pass which would be the most likely route. This location also afforded a good "radio view" to the southwest, over the ocean. Later, this proved to be quite useful.

Sunday morning, Dec. 14, 1986

The launch window, according to news reports the previous evening, would be from 6:30 a.m. to about noon, so I was up at 5 a.m. to get to the mountaintop by 7 a.m. At this altitude, parts of the road were still covered with ice and snow from a storm five days before.

I started out scanning the Edwards tower frequency (120.7) and several of the six Edwards approach control frequencies (124.55, 126.55, 127.5, 127.8, 133.65, 126.1). Along with normal ATC traffic, these frequencies were active with queries from interested pilots regarding the status of the flight, but they contained no "official" Voyager communications.

Pilots of several aircraft called Edwards tower and were told repeatedly that it would be "another ten minutes." Once the tower cited "icing" problems on the Voyager wings. An American Airlines flight called Edwards tower while enroute a number of miles to the east to learn the status of the flight. That isn't done very often, but such was the level of interest within the aviation community.

Finally, at 8:02, the tower mentioned to another plane that Voyager had taken off, and I knew then that Voyager was not talking on 120.7. CBS radio "News on the

Hour" declared Voyager to still be on the ground—an understandable lag in information since they chose not to use live coverage. But I knew better.

It was clear that the tower frequency was not where the action was. On a hunch, I began to sweep frequencies from 122.5 to 123.5. This range includes various "utility" frequencies, including some standard air-to-air and Civil Air Patrol frequencies. I quickly struck paydirt. The primary Voyager frequency was 123.2, and the net frequency for the fleet of light planes testing the turbulence in the various possible routes to the ocean was 123.375. The primary chase plane (known as "cap com") switched between these various frequencies.

The Voyager took off towards the northeast (Runway 4), and made a wide circle over the lake bed and bombing range to gain altitude. The tower (120.7) released a B-52 taking off from the same runway, but in the opposite direction (Runway 22), and accidentally instructed the B-52 pilot to turn left (Voyager had turned right) bringing the two aircraft into a potential conflict southeast of the runway. Fortunately, the B-52's rate of climb was faster, but there were a few tense moments as reflected in the dialogue between the chase plane and the tower monitored on 123.2.

Next, the discussion centered upon the loss of the tips of both wings. The prospects of a fire had abated after takeoff. It was clear that the plane was flying, and they decided to begin the course out to the ocean while evaluating the "long range" prospects of the flight. There was some concern about the bare wires possibly causing a short circuit, but more visual examination from the chase plane put those fears to rest.

Rutan and Yeager elected (fortunately for me) to fly through the pass to Newhall. I heard the chase plane instruct Dick Rutan to

"follow the freeway," a curious method of navigation for an aircraft so amply equipped with state-of-the-art electronics. As their path took them over Palmdale, and down the pass, I finally spotted the Voyager and its three chase planes through my binoculars. I could clearly see the severe, concave arc formed by Voyager's wings because of the weight of the fuel in the fuselage. They were about 8 miles from me, and slightly higher than my 5,800 foot elevation.

They flew out of sight just about the time they had to switch from Edwards radar coverage to Burbank approach control. Each air traffic controller along the route used the 123.2 frequency rather than his own normal frequency. This appeared to be an unprecedented accommodation—one that I had never heard before—perhaps to reduce the work-load of the Voyager crew. Most of the time, the "cap com" chase plane handled all the dialogue with ATC anyway.

The visual examination of the damage to the wing tips continued as they flew over Oxnard, and then out over the ocean. I drove about five miles further along the ridge to get a better "view" of the air space to the south. About an hour after takeoff, they entered over-ocean airspace controlled by Los Angeles Center. The chase plane had one radio on 132.15 (the normal frequency for that sector), and the other radio on 123.2 talking to Rutan and Yeager. The 132.15 frequency is commonly used by heavy jets between Los Angeles and Hawaii, but they are normally much higher than was Voyager.

At 9:10 Voyager was given its high frequency assignments of 5.574 primary, and 8.843 secondary over which they would talk to Oakland Oceanic control after they went beyond the range of L.A. Center radar and VHF communications. Again, this information was relayed through the chase

on the frequency at 6:36 cautioning everyone not to touch the plane after it landed and the action proceeded as follows:

6:41. Dick asks, "Who's going to fly this to Washington?" Chase planes (three now) are assigned positions off the left wing, the right wing, etc. Crossing 7,900-foot altitude. At 6:45, all aircraft switch to "Tac-one" frequency (123.2) because Riva at Edwards is putting that frequency on the loud speakers for the crowd. From now on, Dick Rutan addresses some of this comments for the benefit of the waiting thousands.

6:50. More positioning for photographs, with and without the chase planes. One chase plane gives an assessment of the stains it finds on Voyager; there is some speculation about the causes. Pilots are amazed that more covering has not come off the wing tips. Chase plane asks L.A. Center to please keep any traffic away from ahead of Voyager because of the problem

with turbulence. Center protests that they see only regularly scheduled commercial flights in that area, but Chase One again asks to even keep those away from leaving a wake. A little later, on 128.2, the controller informs a few passing commercial jets of Voyager's relative position (generally, below them), but they don't see it.

7:00. A curious comment about being 5 miles south of Van Nuys may have been to confuse any "gawker" planes attempting to find them. Shortly thereafter, another admonition from Mission Control to be discrete causes the Chase Plane to respond that there has been "absolutely no evidence of sightseers." The comments certainly had me confused, as I was attempting to guess by their compass headings where they were. My binoculars were scanning the eastern and western sky now.

7:05. Voyager calls Edwards tower and gets the weather report which basically indi-

cates wind calm, and clear, with some scattered clouds to the south about 7,000 feet. Voyager actually had come into Edwards air space above these clouds, which is why I could not see them until they were circling the lake bed at about 2,000 feet preparing for a "grandstand" flyby. Several passing commercial jets (Air Cal, United Airlines, and others) come on frequency and express their congratulations. Quite a surprise. Who else is listening?

7:13. Edwards approach takes over radar control, and instructs Voyager (actually the chase plane a few feet behind) to squawk 5510 and "ident." Radar contact is made. The landing is to be on the compass rose north of the NASA facility at Edwards, and there is discussion on how to land on the lake bed there without any surface bumps caused by the oiled markings themselves.

7:28. Approach control hands Voyager off to the tower, which has visual contact. Rutan comments that he has never flown a plane this light before. Observing pilots in the chase planes say the wings are very straight. Descent at 500 feet per minute. All during this time, everyone is quite conscious that their on-the-air discourse is being heard by the waiting crowd. Rutan makes some comment for their benefit, describing the equipment on board, his appreciation for the reception received in Costa Rica, and how great it is that in America, anyone who wants to do something like this can, on his own, without government help.

7:40. Two flybys are performed, and Yeager goes to work lowering the landing gear. One chase plane observes the gear and condition of the tires, while two other chase planes land on a nearby runway. Left gear down at 7:52, final gear down at 7:59.

8:05. Rutan finishes his base leg to the north of the field, and comes in for a landing. A chase plane calls out feet to go, and finally there is silence. Then, "Welcome home!" Rutan: "That wasn't the best landing I've made." Others assure him that it was just fine. At the end of his roll, Rutan asks where he should turn. "Turn right towards the 747" are the instructions, that 747 used by NASA to carry the space shuttle. Then the frequency goes quiet, and the celebration begins. I head home from my mountaintop vantage point. The Ham radio frequencies continue to crackle with discussion between Hams leaving the parking area.

In reality, we later learned, they did have only four usable gallons of fuel left. On December 29, 1986, Jeana Yeager, Dick Rutan, and Burt Rutan (designer of the aircraft) went on to receive a special civilian medal from President Reagan in a ceremony held in Los Angeles.

There are other shortwave enthusiasts who, I am told, managed to listen to the HF communications for much of the trip. I wish my receiver was that good, and that I had the time and the frequencies. I would love to hear what they learned. But, to be able to both see and hear history being made was plenty satisfying.

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CIRCLE 23 ON READER SERVICE CARD

Selected English Language Broadcasts

Summer 1987



BY GERRY L. DEXTER

Note: This list of English language broadcasts was accurate at the time of compilation, but stations often make changes in the hours and frequencies of their broadcasts with little advance notice. Hundreds of broadcasts are aired in English every day on shortwave, many of them directed to an audience in North America. This is a representative sampling and not intended as a complete reference. Some broadcasters air only a part of their program in English during a given hour or may run the English segment into the following hour. Times are in UTC. Numbers in parenthesis indicate a starting time for English that many minutes past the hour.

Time	Country/Station	Frequencies	
0000	REE, Spain	6125, 9630	
	BBC, England	9515	
	R. Sofia, Bulgaria	6070, 11720	
	R. Beijing, China	9550	
	R. Havana, Cuba	6090, 9740	
	R. Berlin Int'l, E. Germany	6080, 9730	
	R. Portugal (30)	9680	
	R. Discovery, Dominican Rep.	6245	
	Radio Vatican (50)	6030, 9605, 11845	
	R. Austria Int'l (30)	6155	
	BRT, Belgium (30)	5910	
	R. Canada Int'l	5960, 9755	
	V. of Israel	5885, 7465, 9435	
	R. Moscow	5915, 5940, 6000, 7115, 7185, 7215, 7310, 13665	
	R. Korea, S. Korea	15575	
	0100	V. of Greece (30)	7430, 9430
		RAE, Argentina	9690, 11710
RAI, Italy		6010, 9575	
SRI, Switzerland (15)		6135, 9625, 9725, 9885	
RCI, Canada		5960, 9755	
HCJB, Ecuador		9870	
DW, West Germany		6040, 6085, 6145, 9545, 9565, 11785	
R. Budapest, Hungary		6025, 6110, 9520, 9835	
R. Belize		3285	
R. Baghdad, Iraq		11750	
AFRTS, USA		6030, 11790, 15355	
R. Prague, Czechoslovakia		5930, 7345, 9740, 11990	
VOA		5995, 6130, 9455, 9650, 9775, 9815, 11580	

Time	Country/Station	Frequencies
0200	R. Bras, Brazil	11745
	R. Havana, Cuba	6120, 6140
	R. Berlin Int'l, E. Germany	6125, 6165
	R. Polonia, Poland	7145, 7270, 11815, 15120
	WCSN, USA	9465
	R. Tirana, Albania (30)	7065, 9745
	HCJB, Ecuador	6230, 9870
	R. Cairo, Egypt	9475, 9675
	V. of Israel	5885, 7465, 9435
	R. Netherlands (30)	6020, 6165, 9590, 9895
	R. Bucharest, Romania	6155, 9510, 9570, 11810, 11940
	R. RSA, So. Africa	6010, 6185, 9615
	VOFC, Taiwan	5985, 9555, 11740
	R. Japan	5960
	R. Korea, So. Korea	15575
	R. Kiev, Ukraine	7165, 11790, 11860, 13645
	0300	V. of Greece (40)
R. New Zealand (45)		15150
R. Beijing, China		9645, 11970, 11980, 15445
R. Berlin Int'l, E. Germany		6010, 9560
R. Polonia, Poland		6095, 6135, 7145, 7270, 9525, 11815
SRI, Switzerland (15)		6135, 9625, 9725, 9885
R. Vatican (10)		6150
RFI, France (15, 45)		6055, 9800
R. Prague, Czechoslovakia		5930, 7345
DW, West Germany		6045, 6185, 9545, 9565, 9640
R. Portugal		9705
HRVC, Honduras		4820
TGNA, Guatemala		3300
R. Budapest, Hungary		6025, 6110, 9520, 9835
TIFC, Costa Rica		5055
TWR, Netherlands Antilles		9535
R. Earth (WHRI), USA		7400
0400	BBC, England (30)	5975, 9510
	R. Sofia, Bulgaria	7115
	R. Havana, Cuba	6035

Time	Country/Station	Frequencies	Time	Country/Station	Frequencies
	R. Berlin Int'l, E. Germany	6010, 9560		R. Tirana (30)	9480, 11855
	WCSN, USA	9840		R. Japan	6120
	V. of Turkey	9560		R. Pakistan	9825, 11820, 11835
	R. Tirana, Albania (30)	9480, 11835		RFI, Finland	11945, 15400
	RFI, France (15, 45)	6055, 9800		V. of Vietnam	9755, 9765, 12035
	R. Botswana	4820, 7255		TWR, Netherlands Antilles	11815
	R. Bucharest, Romania	5990, 6155, 9510, 11810, 11940	1200	R. Singapore	11940
	TWR, Netherlands Antilles	9535		R. Bangladesh (30)	15525
	R. Uganda	4975		R. Beijing, China	9535, 9645, 11980
0500	HCJB	6230, 9870, 11910		R. Ulan Bator, Mongolia	9615, 12015
	V. of Israel	7465, 9435		RFI, Finland	11945, 15400
	R. Netherlands (30)	6165, 9715		VOPK, Kampuchea	9695, 11938
	R. Moscow	5915, 5945, 6000, 7115, 7150, 7440		SLBC, Sri Lanka	6075, 9720, 15425
	BBC	5975, 6005, 7160, 9410, 9510, 9600		R. Tashkent, Uzbek SSR	7325, 9600, 9715, 15460
	AFRTS, USA	6030, 11790, 15330		AIR, India	11620, 15245
	REE, Spain	9630		R. Australia	6060, 7215, 9580, 9770
	V. of Nigeria	7255		RAE, Argentina	15345
0600	R. Cook Islands	11760	1300	FEBC, Philippines	11850
	ELWA, Liberia	4760		BBC	6195, 9410, 9510, 9740, 11705, 11775, 15070, 15105
	BBC	9640		R. Beijing, China	9550, 9730
	R. Havana, Cuba	9525		R. Australia	6080, 7205, 9580
	WCSN, USA	7365		V. of Vietnam	9840, 15010
	R. Tirana, Albania (30)	7065, 9500		RFI, Finland	11945, 15400
	R. Korea, So. Korea	6060, 9570		BRT, Belgium	15580
	R. RSA, So. Africa (30)	7270, 11900, 15245, 17780		R. Norway Int'l (Sun.)	15185, 15310
	GBC, Ghana	4915		R. Pyongyang, No. Korea	9345, 11665
	VOFC, Taiwan	5985		KTWR, Guam	9870
0700	R. Sofia, Bulgaria (30)	9700, 11720		UAE Radio (30)	11940, 17775, 17865
	R. Moscow	7165, 7290	1400	R. Sweden Int'l	9695, 15345
	SIBC, Solomon Is.	5020, 9545		HCJB, Ecuador	15115, 17890
	VOA	5995, 6035, 6080, 6125, 9530, 9540		RFI, Finland	11945, 15400
	BBC	9510, 9600, 9640		R. Korea, So. Korea	9750, 15575
0800	WCSN, USA	7365		Radio Norway Int'l (Sun.)	9530, 15315
	R. Australia	5995, 9655		AFRTS, USA	9700, 11805, 15330, 15430
	BRT, Belgium	9880		AIR, India	11810, 15335
	R. Netherlands (30)	9630, 9715	1500	DW, West Germany	15135
	R. Pyongyang, No. Korea	9530		Africa #1, Gabon (30)	11940, 15200, 15475
	HCJB, Ecuador	6130, 6205, 9745, 9860		HCJB	11740, 15115, 17890
	KNLS, Alaska	5960		R. Veritas, Philippines	9565, 15120
0900	AWR, Sri Lanka	6005, 7270, 15425		RCI, Canada	11955, 15440, 17820
	R. Kuwait	15505		R. Moscow	9895, 11705, 11840, 13790, 15425
	HCJB, Ecuador	6130		TWR, Guam	9870
	DW, West Germany	6160		R. Australia	9580
	NBC, Papua New Guinea	4890	1600	BBC	9410, 9515, 15070, 15260, 15390, 17885
	R. Australia	5995, 6080, 9580, 9710, 11720		RFI, France	6175, 11705, 11805, 11930, 15315
	FEBC, Philippines	11890		WCSN, USA	15270
	BBC	9700, 9750, 11750		R. Pakistan	11615, 15595, 17660
1000	R. New Zealand (30)	11780		AWR, Guam	11910
	R. Australia	5995, 6080, 9580, 9710, 11720		V. of Indonesia	11790, 15150
	R. Netherlands (30)	6020, 9650		EAE Radio	9640, 11955, 15230
	R. Moscow	9600, 9795, 13645, 13665, 13680		V. of Vietnam	9840, 15010
	R. Norway (Sun)	9590, 15175, 15185, 15230	1700	R. Norway Int'l	9590, 9655, 11850
	SRI, Switzerland	9560, 9885, 11905, 15570		AFRTS, USA	9700, 11805, 15330, 15430
	V. of Vietnam	9755, 9765, 12035		R. Moscow	9470, 9490, 11840
	BSKSA, Saudi Arabia	11855		BSKSA, Saudi Arabia	9720
1100	R. Pyongyang, No. Korea	9750		V. of Nigeria	11770
	BBC	5965, 6195, 11775		RBI, East Germany (45)	9730
	R. Beijing, China	9535	1800	R. Kuwait	11675
				R. Sofia, Bulgaria (30)	9740, 11735, 11835
				WCSN, USA	21640

Time	Country/Station	Frequencies
	R. Bras, Brazil	15265
	R. Netherlands (30)	17605
	Africa #1, Gabon (30)	11940, 15200, 15475
	SRI, Switzerland	9535
	AIR, India	11620
	BBC	9410, 11820, 12095, 15070, 15400
	RCI, Canada	15260, 17820
	V. of Nigeria	11770, 15120
1900	R. Afghanistan HCJB	9635 11740, 15220, 15270, 17790
	R. Algeria	9509, 9640, 15215, 17745
	ZBC, Zambia	9581
	AIR, India	7412, 11620
	AFRTS, USA	15330, 15430, 17765
	BBC	9410, 11820, 15070, 15400
	R. Havana, Cuba	11795
	R. Kuwait	11675
2000	R. Havana, Cuba (50) WCSN, USA	11725, 15300 9465
	R. Cairo, Egypt (30)	9655
	R. Netherlands (30)	9540, 9715, 11740
	R. Damascus, Syria	9550, 12085
	BRT, Belgium	5900, 5910
	AIR, India	9910
	V. of Israel	7465, 9435, 11610, 12080
	RCI, Canada	11945, 15325, 17820, 17875
2100	RBI, East Germany (45)	6125
	R. Finland Int'l (30)	11945, 15400
	HCJB (30)	11740, 15270, 17790

Time	Country/Station	Frequencies
	R. Jamahiria, Libya	7425, 11815
	R. RSA, So. Africa	9585, 11900
	R. Vatican	7250, 9645
	SRI, Switzerland	9635, 9885, 11955, 12035
	WRNO, USA	15420
	V. of Nigeria	15120
	R. Cairo, Egypt	15375
2200	BBC	5975, 6175, 9410, 9590, 9915, 11750, 15260
	R. Polonia (30)	7125
	V. of Turkey	9560
	WCSN, USA	7365
	V. of Israel (30)	5885, 7465, 9435
	VOFC, Taiwan	7355, 6155, 9955
	RCI, Canada	5960, 9755
	BRT, Belgium	5900, 5910
	VOA	6045, 11775, 15185, 15290, 15445, 15580, 17740
	WRNO, USA (30)	9852.5
2300	R. New Zealand (45)	15150
	BBC	6120, 9590
	R. Sweden Int'l	6045, 9695
	RCI, Canada	9755
	R. Japan	9645, 9675, 15235
	V. of Nicaragua (50)	6015
	RBI, East Germany	6070, 6125, 6165
	R. Sofia, Bulgaria	11720
	R. Vilnius, Lithuanian SSR	6200, 7165, 9765, 11790, 13645, 15180
	R. Moscow	5915, 5940, 6070, 7115, 7150, 7190, 7310, 7440
	R. Korea, So. Korea	15575

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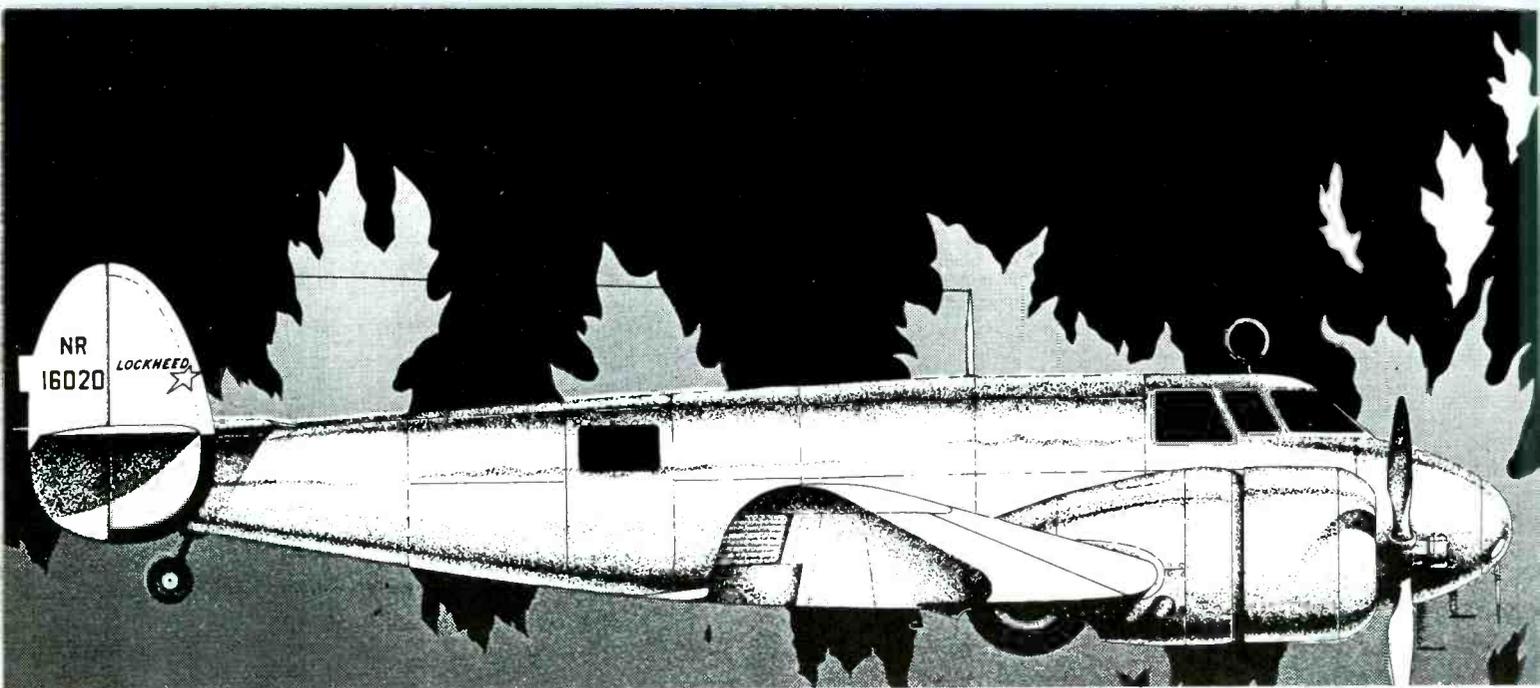
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Aircraft illustration from the book Eyewitness: The Amelia Earhart Incident.

Radio's Role In . . .

The Mystery Of Amelia Earhart

It's Been Exactly 50 Years Since This Famous Aviator Vanished. A Cryptic Radio Communication Was Her Final Message To The World!

BY TOM KNEITEL, K2AES, EDITOR

Was Amelia Earhart on a secret espionage mission for the American government when her aircraft vanished over the Pacific on July 3, 1937? Perhaps it was nothing of the kind. Perhaps this world-class aviator and her experienced navigator simply lost their way.

It's been fifty years and the search for the truth still continues—long after the search for Earhart's Lockheed Electra 10-E, tail number NR-16020, and its crew of two has long been abandoned. Books have been written about the incident, and many conflicting pronouncements and guesses have been made. Some have said that the truth will never come out and accuse the U.S. Government of keeping the lid held down tightly on the facts.

What has thusfar been given relatively lit-

tle attention amidst all of the digging has been Earhart's use of radio communications during "Lady Lindy's" attempt to fly around the world at the equator. This 27,000 mile route was the longest and most difficult challenge she could devise after duplicating Lindbergh's solo flight across the Atlantic, and after setting many flying records for speed, distance, altitude, and endurance.

Earhart was about 40 years old when she embarked upon her final flight. Her navigator, 44-year-old Fred Noonan had been a pilot with Pan American. The aircraft was a twin-engine type with a range of 4,000 miles.

The flight began with equipment problems and delays, and a total switching of the flight plan which had originally been established for a flight from east to west, from Hawaii, in March of 1937. The actual flight



Amelia Earhart

began on June 1st in Miami with the planned route over Puerto Rico, Brazil, Africa, Pakistan, Burma, Singapore, Australia, New Guinea, Howland Island, Hawaii, and Oakland. Still plagued by equipment problems, the aircraft arrived at New Guinea on June 30th. The leg of the trip ahead was 2,556 miles to tiny Howland Island. This was the longest and most dangerous segment of the trip.

Anchored off Howland Island, where a landing strip had been specially constructed for Earhart and Noonan, was the U.S. Coast Guard Cutter *Itasca*. The Cutter crew was manning a radio direction finder on the island so that the approaching Earhart could have her exact location verified when she established communications with the *Itasca*.

At 2:45 a.m. Earhart radioed the *Itasca* on 3105 kHz, one of her two available channels, by voice to report cloudy and overcast conditions, but static covered the remainder of the transmission. Later she again called to say that the aircraft was low on fuel. She wanted the *Itasca* to take a DF bearing on her signals, but her transmission was too brief to allow a DF fix.

At about 8 a.m. she radioed, "we are circling but cannot hear you." Forty-five minutes later she again radioed, "We are on a line of position 157 dash 337 . . . we are running north and south . . ." Amelia Earhart never made another transmission. That's when the mystery began.

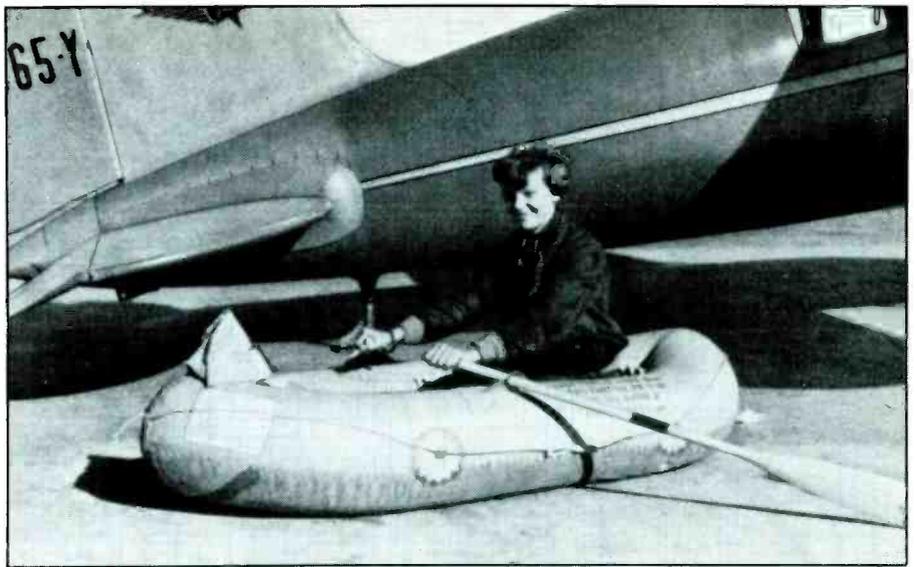
Questions Arise

In the interests of speed, Earhart had sacrificed all elements of safety, at least so far as her communications equipment was concerned. The most important communications safety factor she might have had would have been the ability to send out a CW distress call on 500 kHz. Not only was it a physical impossibility for her to operate her radio in case of a forced descent at sea, but when she took off for Honolulu she had junked the 500 kHz transmitter, trailing-wire antenna and the telegraph key.

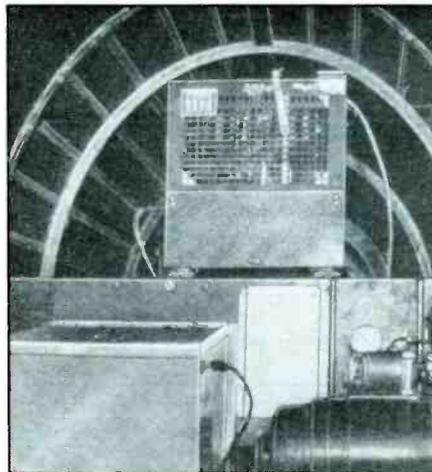
Besides, neither Earhart nor Noonan had any knowledge of CW transmission or reception. Apparently, the only knowledge of communications they had was the need to throw a switch one way to turn the equipment on and the other way to turn it off. The plane had no pontoons (Earhart said they would retard her flight speed), so even the possibilities of operating on shortwave voice would have vanished had the aircraft gone down at sea.

The *Flying Laboratory*, as the *Electra* was called, was equipped with a 50-watt Western Electric type 13-C three-channel transmitter equipped to transmit with AM voice on only 3105 and 6210 kHz. Neither 3105 nor 6210 kHz were frequencies that were constantly and completely monitored by ground stations around the world, although the frequencies were popular in the U.S. with General Aviation flyers. The third available channel slot was not used.

Earhart refused to respond clearly to the inquiries of the *Itasca* which repeatedly re-



In this 1935 photo, Amelia Earhart demonstrates some of the survival gear she normally carried during trans-oceanic flights.



The Western Electric two-way communications equipment installed in Amelia Earhart's plane was assigned the callsign KXABQ.

quested that she provide flight and frequency information; she ignored the *Itasca's* requests for flight data. She gave contradictory replies regarding her frequency usage, alternately asking the *Itasca* to transmit to her on 3105 and 6210 kHz.

The Coast Guard's RDF gear was designed primarily for use in the 270 to 550 kHz band, they weren't expecting to have to get it to operate efficiently on shortwaves. Moreover, they couldn't get a good fix on her signals because it required a continuous transmission of two minutes and Earhart was transmitting in short bursts lasting only a few seconds each. There were several ground stations that had agreed to monitor her voice frequencies but when the emergency arose none of them heard any call for help.

A Ham in Honolulu, Ernie Johnson (K6KMB), said that he did hear a distress call from Earhart on 3105 kHz when he happened to be tuning past that frequency.

Some questioned the accuracy of the claim because of the distances involved versus the time of day and the season of the year. Daylight reception during the summer on 3105 kHz would have been limited to relatively short distances. Even reception on 6210 kHz wouldn't have been very promising under the existing conditions.

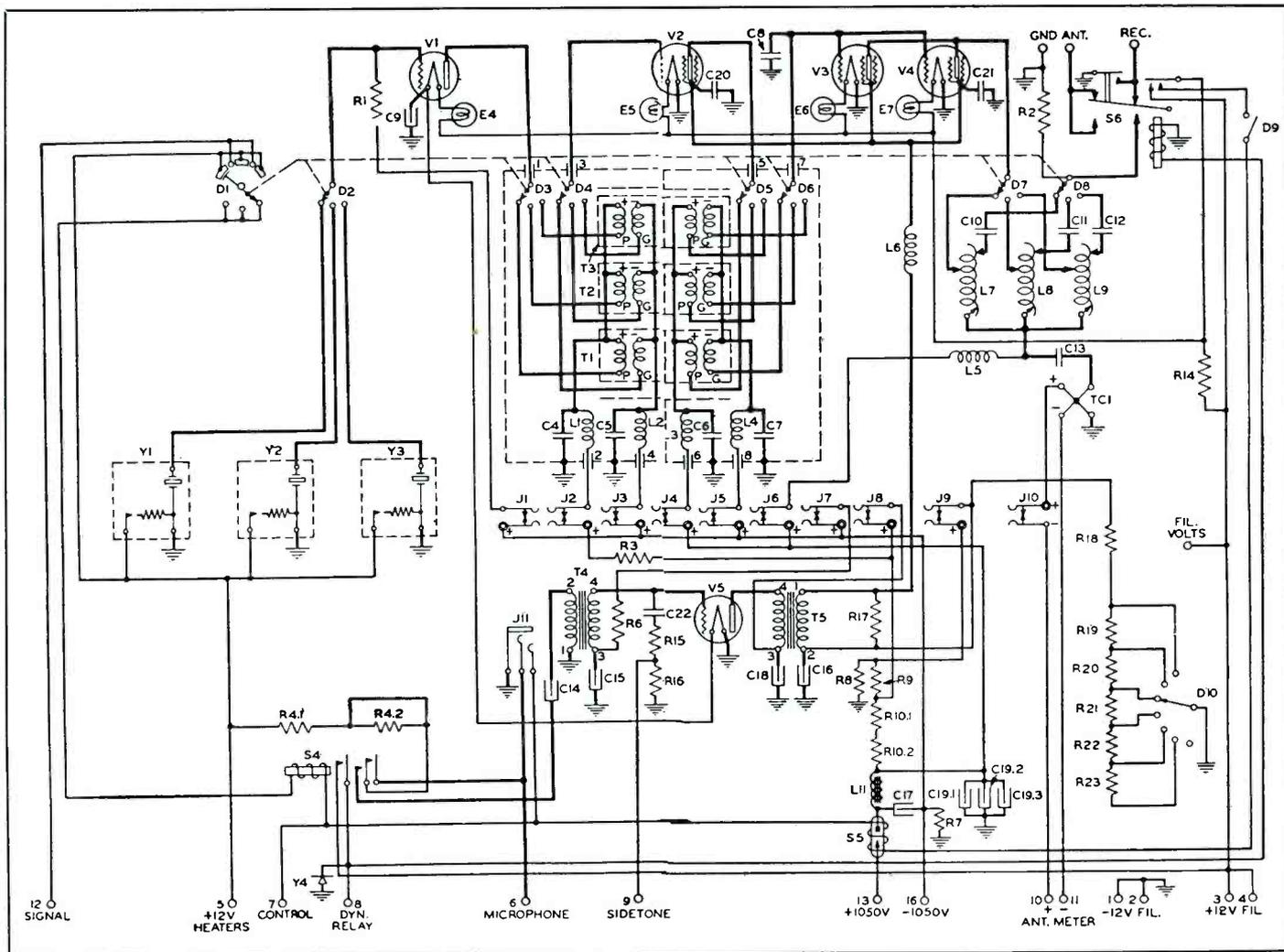
Earhart could have easily obtained special permission to operate in or near the 20 meter (14 MHz) Ham band where her communications would have had a better chance of being heard by the world's Amateur operators, even with her 50-watt transmitter.

Speculation

Speculation that Earhart may have been on a spy mission to observe Japanese-held territories was spurred by her apparent radio silence and failure to properly communicate with the *Itasca*, although the poor communications were quite possibly the result of frequency selection combined with her own lack of ability to properly use the equipment. Noonan, it later came out, had been fired by Pan American because of a drinking problem. Moreover, he went on a binge while the plane was in New Guinea so he might well have been totally incapacitated while enroute Howland, or at least functioning at reduced efficiency.

Some have the opinion that Earhart lost her way and, missing Howland, crash-landed in the Marshall Islands thinking that she had come down in the British-held Gilbert Islands. The Marshall Islands, under the control of the Japanese, were the site of secret military bases and Westerners arriving there might not have been released.

Indeed, several residents of Mili Atoll claimed to have witnessed the Lockheed *Electra* landing there, its crew of two being taken into custody by Japanese military forces. The Japanese claimed that they searched for Earhart and Noonan but were unable to find any trace of them or their air-



Schematic for Earhart's W.E. Model 13-C transmitter. The final amplifiers (V3 and V4) were two type 282A tubes in parallel. This equipment could be remote controlled.

craft. The *Itasca* searched too, along with a task force that included the aircraft carrier, *USS Lexington*, and the battleship *USS Colorado*, and an armada of smaller ships. Some quarter of a million square miles were combed (with the help of the *Lexington's* sixty aircraft) without sighting Earhart's plane or its wreckage.

In 1960, researchers spoke to an American woman who had lived on Saipan in 1937 and said that she had seen two captured Americans there who fit the descriptions of Earhart and Noonan. Thirteen natives of Saipan corroborated her story, although inquiries to our own government concerning Earhart's fate were met with hostility and closed doors. That researcher, Fred Goerner (of CBS News in San Francisco), published his findings in a book entitled *The Search for Amelia Earhart* (1966).

Goerner felt that Earhart and Noonan were asked by our government to fly over the Truk Islands (in the Carolines) to look at secret Japanese military installations there. He thinks that on the way towards Howland Island they hit squalls and crash-landed on Mili Atoll where they were captured and taken to Saipan for interrogation and later murdered. He thinks that their bodies were

uncovered by the U.S. Marine Corps and secretly returned to the United States.

Another researcher, Joe Klass, in his book *Amelia Earhart Returns from Saipan*, claimed that Earhart sat out WWII in the Imperial Palace (Tokyo) and left Japan in secret after the war, possibly still being alive as long as twenty-five years after the war ended. He said that her life had been spared in exchange for American assurances that the Emperor of Japan would not be charged with war crimes.

In late 1986, researcher T.C. (Buddy) Brennan of Houston said that he spoke to Marshall Islands and Saipan residents who support the story that Earhart had been imprisoned and then executed on Saipan. A reputed gravesite was opened in 1986 and, although no bones were seen, a piece of cloth was found—it was claimed to have been the blindfold used during Earhart's execution. Brennan said that Earhart and Noonan, after landing on Mili, were taken aboard the Japanese ship *Fukuun Maru* to Saipan for interrogation. He said, "Her plane was doused with gasoline and burned on Saipan." (One report said the plane was found and destroyed by our own forces in 1944.)

Virtually every researcher agrees that our own government knows far more than it is willing to say about Amelia Earhart's mission as well as her ultimate fate. It's apparent that until and unless our government opens its files on this curious incident, the search for the truth will continue. For those interested in communications, the story seems to hold many clues on the basis of Earhart's electronic equipment and radio transmissions, although none of those who have done extensive research on the subject were communications experts and analysts.

Perhaps some of our readers might wish to embark upon a research analysis of the communications and electronics aspects of the incident.

Additional Reading

The Search for Amelia Earhart, by Fred Goerner, 1966.

Amelia Earhart Returns From Saipan, by Joe Klass, 1970.

Amelia Earhart: The Final Story, by Vincent V. Loomis with Jeffrey L. Ethell, Random House, 1985.

Eyewitness: The Amelia Earhart Incident, by Thomas E. Devine with Richard M. Daley, Renaissance House, 1987. **PC**

Amtrak locomotive #397, Battle Ground, Indiana electronic defect detector. (Note antenna: 161.370, Seaboard frequency)



Amtrak #95 boarding passengers, Lafayette, Indiana station.



Scanning Amtrak

All Aboard, And Bring Along Your Scanner!

BY ROBERT PRIEST

This is the head end of Seaboard Train #95, Amtrak, calling the coach crew. Monon hot box detector a mile and a quarter, George, over."

The scanner crackles to life at a few minutes past 8:00 p.m. on 161.37, the Seaboard System's road frequency. Most of the evening it has been quiet, with just a few routine transmissions by Earl and Walter on the 201 Yard job. The Amtrak engineer's call to the coach crew marks the beginning of some 50 minutes of messages as the passenger train passes through the Lafayette area on its trek from Chicago to Indianapolis.

These conversations between crew members and between train personnel and the Lafayette operator or Yardmaster are picked up by a standard high band antenna mounted on my CB radio tower some 35 feet in the air and brought into the house to my Bearcat 300 by RG 58 coax running beside the CB coax from the PDL2's higher up the tower. My log book of Amtrak #95 information begins with this transmission near Monon, Indiana, and carries to near Crawfordsville, Indiana, the former about 25 miles north of my antenna, the latter about 25 miles south. Several detailed pages indicate almost daily loyalty to this Amtrak project. All times and other vital information are included, and although we've never met, the various mem-

bers of the train crews are almost as familiar as my family, but only by names and voices.

"Roger, Jim, approaching Monon detector, coach crew in position." About 70 seconds later, the engineer calls, "White Light," indicating power to the defect detector. As the train passes the detector, it is inspected electrically and a synthesized voice transmits that there are no defects or dragging equipment, total number of axles on the train, speed while passing the detector, and total train length. Everything is normal, so "Hiball, Seaboard #95, Monon Detector. Seaboard #95, out."

This scenario is repeated twice more before Amtrak passes from our listening range—once at Battle Ground, Indiana, and finally at South Raub, Indiana. If a detector finds a problem and shows a red light, or if it indicates malfunction, the train must immediately stop and the crew is required to walk the train for a visual inspection.

The next radio message, 11 minutes later, reports Amtrak south of Brookston, Indiana, and cleared to enter the Lafayette Yards area down the main track. A 3-minute stop at Lafayette Shops is for a change of train crew for the trip on to Indianapolis. The 9-minute ride from the Shops to the downtown depot, about two minutes at the depot for passengers off and on, then a "Hiball Amtrak #95," and a message to the Lafayette operator with times in and out of the station.

One more scheduled stop, at Crawfordsville, will be made before this Amtrak train

leaves the Seaboard System's rails and transfers to Conrail for the final leg into Indianapolis. My daily log ends here as we are now out of range.

Several logged pages show that rail passenger service in Lafayette is usually at or near the time-table schedule. Also, special notes indicate that most days are routine. Notable exceptions include the Sunday they ran out of water and made an unscheduled stop at the small town of Battle Ground, where the Volunteer Fire Department spent 25 minutes pumping several hundred gallons of water into the locomotive; or at Thanksgiving when the detector indicated a total of 54 axles instead of the normal 16 or 20. I jumped into a jacket and rushed down to see Amtrak come into town with 12 coaches; also, on a Sunday when the engineer called in a hurried voice that they had hit an auto at Union Street. Fortunately, no one was injured badly; the driver said he was blinded by the sun and did not see the train or flashing lights.

My Regency HX 1000 portable allows me to share all the action when I ride Amtrak or when I visit family members near Benton Harbor, Michigan. Amtrak numbers 370 and 371 round trip daily between Grand Rapids and Chicago on the Chessie System, 160.230 and on Conrail 160.80.

My interest in railroads and in scanning is neatly tied into a convenient bundle and affords many hours of pleasure following both pursuits.

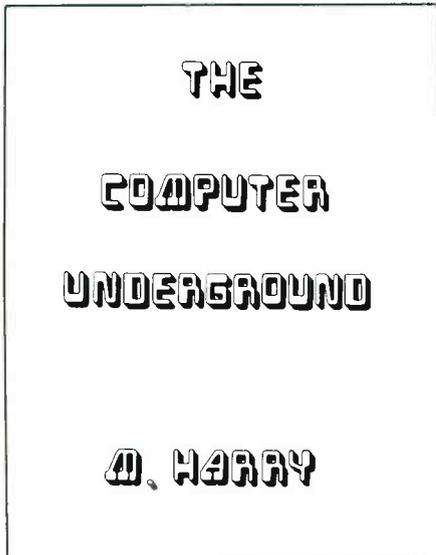
PC

BOOKS YOU'LL LIKE!

BY R.L. SLATTERY

Phreaking Out

W. Harry's new book, *The Computer Underground*, is a highly detailed and close-up look at computer hacking, piracy, phreaking and crime. Since there are about 38 to 50 computer data banks that keep detailed records on each and every one of us, this is a topic that is more than just a little relevant to us all.



Harry's 280-page book is a report of the high-tech tricks that have become world headlines—thanks to the efforts of those who have figured out how to tap into bank, credit card, commercial, and government computers and add to, subtract from, modify or simply peruse the data they contain. Some basic security rules are discussed, as are the methods that are used to defeat those rules.

These new high-tech crimes have blossomed into a multi-million dollar underground industry. *The Computer Underground* reports on who's doing it and why it's become fashionable to break into corporate or government computers and destroy information (crashing).

This book provides an overview of the entire computer underground, including the three staples in that world: computer assisted software piracy, computer assisted telephone phreaking, and breaking into computers (hacking or crashing).

The tools of the trade are common to all three varieties of computer crime; these are discussed at the beginning of the book. There is also technical information on how these tools actually work. Some material in this book has never appeared anywhere before, such as an exclusive study of computer bandits, and an analysis of password use.

The bulk of the material has appeared on the underground's computerized bulletin boards. Selected actual documents from this thriving alternative medium are included.

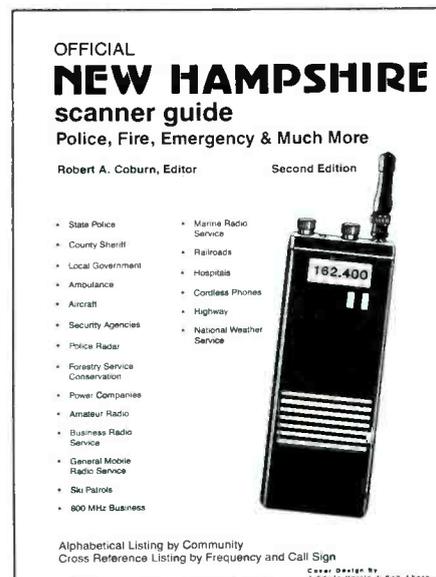
The Computer Underground takes you behind the scenes to meet those who are involved and shows you their methods. It is \$14.95, postpaid in the USA. Add \$4.79 postage for all orders outside the U.S.A. Order it from Loompanics Unlimited, P.O. Box 1197, Port Townsend, WA 98368.

New Hampshire, Revised

Bob Coburn, W1JJO, has done a splendid job in updating and expanding his excellent *Official New Hampshire Scanner Guide, Second Edition*. The previous edition of this book was 192 pages in size; the new edition runs to 256 pages. There are now 6,500 listings as opposed to 4,900 the last time around.

The new edition includes *all* business licenses (not just selected ones), plus all police, fire, local government, medical, forestry, highway maintenance, and other units. A detailed section including statewide systems is accompanied by maps and frequency assignment tables.

There are police codes, ambulance codes, listings by location, all cross indexed by frequency. In other words, lots of data packaged in a really good looking volume designed by and for scanner users located anywhere in New Hampshire from Actworth to Woodsville, and at every location between!



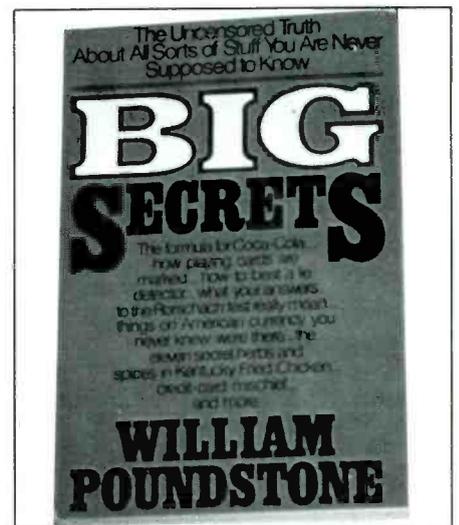
This edition has been typeset on a laser printer that looks really sharp. Bob has done a good job, and this edition contains the latest changes throughout the entire state.

The Official New Hampshire Scanner Guide, Second Edition, is available at \$14.95, plus \$2.05 shipping/handling from Official New Hampshire Scanner Guide, P.O. Box 712, Londonderry, NH 03053.

Inside Stuff

Finding that which is hidden appears to be a favorite quest of those who own communications receivers and scanners. A 228-page book called *Big Secrets*, by William Poundstone, provides an enormous amount of exactly this kind of information. Poundstone set about, with determination, to unearth as much inside information as could be obtained on things that often come under the heading of "forbidden facts."

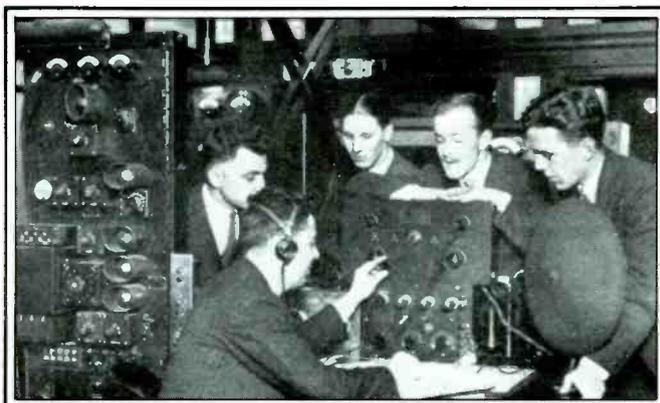
We especially liked the book's section discussing secret radio frequencies lying within the tuning ranges of scanners and HF communications receivers. The author provides lists showing plenty of actual frequencies that are reportedly used by intelligence agencies, used for "room bug" transmitters, used for sending espionage messages, etc. Poundstone discusses these frequencies and gives his own thoughts and insights on their uses, with special attention given to mystery stations transmitting those odd strings of numbers.



But *Big Secrets* goes on to explore far more than only secret communications. Poundstone gets into a discussion of the secret formula for Coca-Cola, how to pass an eye chart exam even if you can't see the thing, the "eleven secret herbs and spices" in the Kentucky Fried Chicken recipe, secret messages on rock music discs played in reverse, how David Copperfield and Uri Geller produce some of their famous illusions, and secrets of and on credit cards.



This unusual structure, made from oyster shells and logs, has been headquarters for broadcaster WFOY for many decades.



The staff at short-lived WRST/WINR gather 'round the control desk.

Radio Remembered

Looking Into History For The Roots Of Broadcasting And Communications

BY ALICE BRANNIGAN

Those who are driving towards Walt Disney World near Orlando, FL might wish to stop along the way to see one of the quaintest looking broadcasters in the U.S. That's station WFOY in St. Augustine, FL.

WFOY is located in what St. Augustine residents call a tabby house. That's a structure made of oyster shells that are covered with logs and Spanish moss. That conglomeration of structural materials not only makes the walls more than a foot thick, it also makes for a building that looks like it dates back to the days when Ponce de Leon was searching for the Fountain of Youth around the St. Augustine area. As it turns out, the WFOY studios are right next to the Fountain of Youth near Magnolia Drive. The callsign, in fact, stands for "Wonderful Fountain Of Youth."

The WFOY tower is a 200-foot single radiator located near the shores of the Atlantic Ocean, right in a salt water marsh. The tower is actually standing on a foundation of rock sunk more than 9 feet below the surface of the marsh. In earlier days, the tower was located right on Magnolia Avenue at the studio site.

WFOY has been operating since 1936, having commenced its career running 250 watts on 1210 kHz. When most stations shifted frequencies in the early 1940's, WFOY was reassigned to its present dial spot at 1240 kHz, only these days it runs 1,000 watts (3 kW on FM). According to the *POP'COMM Broadcast Topix* columnist, Mark Manucy (who has mentioned WFOY in his column), the station used to employ former USN radiomen who could copy

shortwave CW news broadcasts from overseas. The WFOY news broadcasts were made up from these intercepts!

Gone But Not Forgotten

In September of 1925, the Radiotel Manufacturing Company was granted a construction permit for a 250-watt broadcast station to operate on 1390 kHz from 5 First Avenue, Bay Shore, NY. The callsign WRST was assigned and the station began operation around Christmas of that year, under the direction of Louis A. Wittenborg.

In less than a year, Wittenborg sold his interest in WRST and joined the announcing staff of station WOR in Newark, NJ. The new owners moved WRST to 76 West Main Street in Bay Shore and soon increased the power to 500 watts. By April of 1927, WRST had been reassigned to 1420 kHz where it shared time with stations WCDA and WBRS. At that time it was also told to cut its power back to 250 watts.

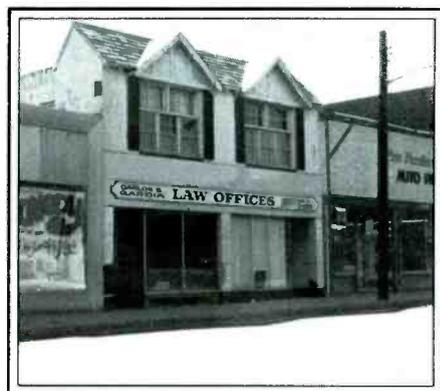
A year later, WRST changed its callsign to WINR and changed frequency to 1210 kHz where it shared time with WCOH and another area station, WGBB. That move caused the government to advise WINR to further reduce its power to only 100 watts.

In early 1929, without the necessary federal approval, the WINR transmitter was relocated from 76 West Main Street to the original WRST site at the rear of 5 First Avenue. The WINR studio was then changed to 88 West Main Street and the WINR slogan became "The Garden Spot of Long Island."

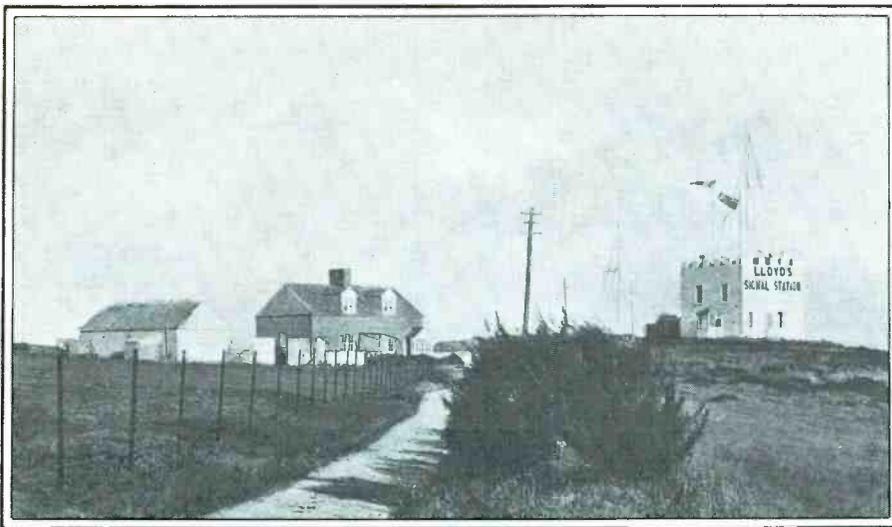
The license for WINR expired in late July of 1929 and, since no renewal had been

granted, the station had to leave the air. Two months later, a Federal Radio Commission inspector arrived to see the station and noted that neither the transmitter nor the studio was where they were supposed to be. Furthermore, the studio door was locked and the transmitter was shut down. In late October of 1929, the FRC told WINR's owners to forget about putting the station back on the air because its license renewal had been denied. Thus ended the brief (four years) downhill career of one of those colorful little broadcasters that were so plentiful in the 1920's but are now all but totally forgotten (except by you and I).

We were able to come up with a photo of the entire staff of WINR looking over the station's equipment at some early point in its existence. In the community of Bay Shore,



This is how the old WINR building looks today.



"Lloyd's Signal Station" at Lizard Point, Cornwall, England.

both 76 West Main Street and 5 First Avenue were razed many years ago. The small building at 88 West Main Street, final (unauthorized) home for WINR, still stands and a current photo shows that (with the exception of a sign describing its present tenant, an attorney), the building probably looks much the same as it did 58 years ago when the station was located there.

Not A Reptile

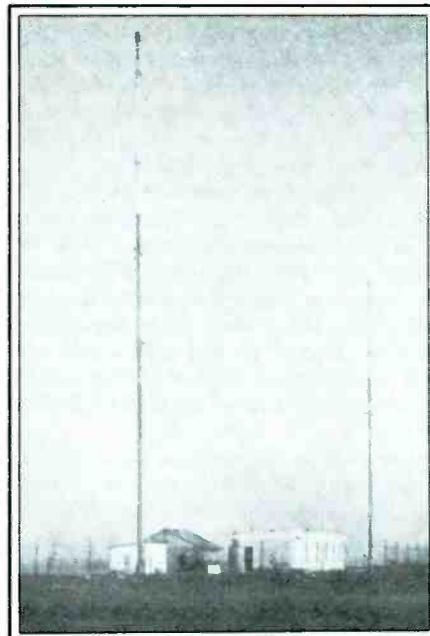
The Lizard Signal Station wasn't a place that warned people of approaching reptiles, or vice versa. Lizard Point is a peninsula jutting out into the sea where the land ends in Cornwall, at the southernmost point in England. It has long been a signalling station for communicating with passing ships by means of flags and lights and, eventually, by wireless.

We located a view of Lloyd's Signal Station at "The Lizard" as it looked just after the turn of the century when wireless was in-

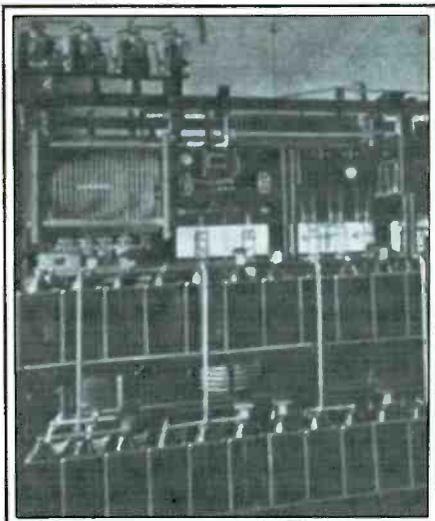
stalled. Atop the structure at the right, and also on the ground (just to the right of the telegraph or telephone pole) there are masts and antennas.

Lettered on the side of the building are the words, "Lloyd's Signal Station," which was operated by the famous Lloyds of London. The callsign for this station was BVY and it both transmitted and received on 667 kHz. This frequency was the common wave used by all British maritime direction finder stations. These stations (there were nine of them) could take signal bearings on ships so that the vessels could compare several simultaneous bearings and determine their exact locations. It was a primitive LORAN-C system, except in reverse!

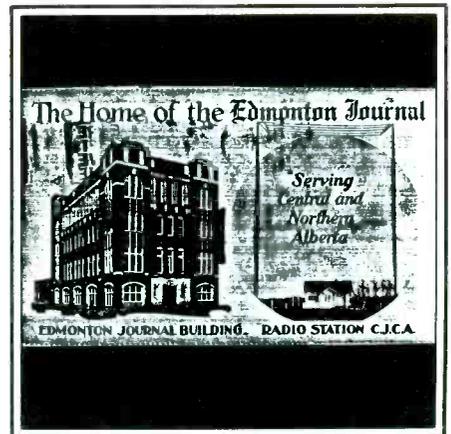
Our view of the Lizard Station is on a postcard mailed in 1913. The sender of the



The antenna system of the Prague station was described as an Alexanderson type with three leads.



"Radio Journal," using the callsign OKP, in Prague, used this Western Electric 5-kW transmitter during the late 1920's.



CJCA, in Edmonton, sent this picture card showing its studios (on the left) and the transmitter site/antennas (on the right).

card reported that she had just seen the ships *New Amsterdam* and *Rotterdam* pass by, and that the sea was "exceedingly rough." She wrote that her next stop was a visit to the "Margoni" (I assume she meant "Marconi") station.

Czech Mate

In the 1920's, the Western Electric Company was able to secure the contract for supplying the 5-kW transmitter used in Prague, Czechoslovakia by broadcaster OKP on 259 kHz. The transmitter was remotely located in Kbely and had a capability of running 7.6 kW although the normal output to the antenna was 5.2 kW. A companion station in Strasnice operated on 815 kHz with another 5 kW transmitter.

We have secured several photos of station OKP. One photo shows the Western Electric transmitter, and a second shot gives you a look at the antenna system used on 1204 kHz. The antenna was an Alexanderson type with three leads strung between two solid masts, each 165 feet in height.

Alberta Calling

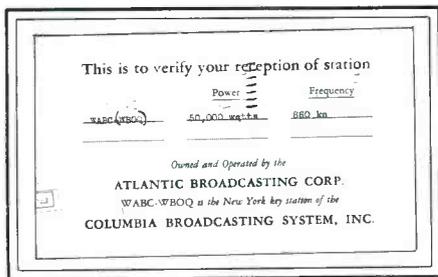
You can't go back into broadcasting too much before station CJCA started sending out programs in 1922 from Edmonton, Alberta. At first, CJCA (owned by the *Edmonton Journal*) operated on 667 kHz with 500 watts, but by 1925 the frequency had changed to 580 kHz and the slogan became, "The Sunniest Spot in Sunny Alberta."

In 1931, when CJCA had shifted over to 930 kHz, the station added to its slogan the comment, "Serving Central and Northern Alberta." After a brief stint on 730 kHz with 1 kW, CJCA returned to 930 kHz but kept its 1 kW signal. With its transmitter in Belmont and its studios on Jasper Avenue, by the end of WWII the station was planning to increase its power to 5 kW. This project was completed by 1948 and was only a prelude to a later power hop to its present 50 kW power rating.

Joe Hueter, of Philadelphia, PA shares with us a look at his 1931 QSL from CJCA.



A reader sent in this mystery photo of a vehicle-mounted transmitter mounted on a car showing the broadcast callsigns WGMU and WAHG. It turned out to be just what it looks like, a late-1920's mobile broadcaster! It was owned by the A.H. Grebe Co., owners of regular broadcaster WBOQ.



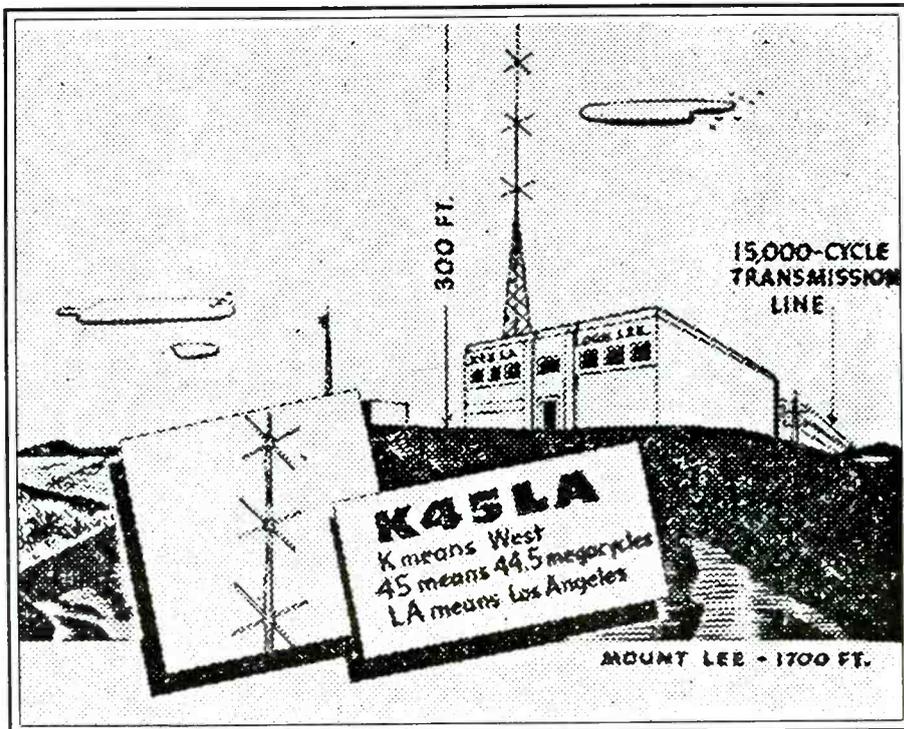
Grebe's WBOQ was eventually combined with New York City station WABC (now WCBS), and the WBOQ callsign was used for experimental purposes and tests exclusively at least into the late 1940's, possibly later. Here's a rare WBOQ QSL from Joe Hueter of Philadelphia.

This card, which is typed on the reverse side, shows the *Edmonton Journal* Building.

Mystery History

A reader in San Luis Obispo, CA forwarded an old radio photo and asked if we could provide any information on the station it shows. Dating from the 1920's, it has a parked mobile unit with communications equipment mounted just above the spare tire. One antenna mast is mounted near the equipment, and that supports a four-wire antenna system that runs to a distant portable antenna mast. An operator standing near the equipment is shown talking into a microphone.

There's an almost-impossible-to-read sign located in the folding lid that seems to



A 1941 artist's rendering of FM station K45LA in Los Angeles. This was the very first FM broadcaster in the far west.

be able to drop down to cover the top of the transmitter. The best I can do with the lettering is see the words "Grebe" and "mobile" above the callsign WGMU, and (below that) the callsigns WAHG and WBOQ.

A.H. Grebe and Company, of Richmond Hill, NY was an early manufacturer of radio equipment. Also, in the 1920's they owned broadcasting station WBOQ which ran 100 watts on 1270 kHz. Station WBOQ was eventually combined with New York City station WABC (now known as WCBS-AM, 880 kHz, 50 kW). The combined station's primary callsign was WABC, with WBOQ being used only on rare occasions for tests and experimental purposes. Reader Joe Hueter has supplied us with a rather rare WBOQ veri card from those days (when WABC/WBOQ was on 860 kHz).

During the days when Grebe owned WBOQ, the company also held some other rather unusual station licenses, such as WRMU (1270 kHz, 100 watts). WRMU was a broadcasting station licensed to be operated aboard Mr. Grebe's yacht, the *MU-1*. Grebe's company, located at 70 Van Wyck Blvd., also held "Special Land" license 2ZV as well as Experimental License 2XE during the 1920's.

Here's where the car in the photo comes in. Amongst Grebe's assortment of odd and unusual licenses were WAHG and WGMU. These were broadcasting station licenses issued for portable and/or mobile use. WGMU operated with 100 watts on WBOQ's 1270 kHz channel. WAHG was authorized for 5 kW on 950 kHz, although the transmitter shown in the photo doesn't look much like one that ran anywhere near 5 gallons!

My information is that WAHG/WGMU, although licensed as full-fledged broadcasting stations, were primarily used for conducting field strength tests at proposed locations for new broadcast stations. Most likely, that's the type of activity taking place in the photo.

FM From LA

The first FM broadcaster in the far west was K45LA on 44.5 MHz. This station started broadcasting on August 11th, 1941 and quickly went to a noon-to-midnight sked every day of the week. In the station's first month of operation, estimates were that 2,000 FM receivers were sold to the K45LA audience.

Owned by the Don Lee Company, and running 1 kW, the transmitter was placed atop Mt. Lee where it had a coverage area of 6,944 square miles. As soon as the station commenced operation, a 50-kW transmitter was planned for. Programs originated seven miles away at the KHJ studios and were carried to the mountaintop facilities by a special 15-kHz high-fidelity transmission line. While K45LA repeated some of KHJ's programming, it also originated many of its own programs.

By 1946, the callsign had been changed to KHJ-FM and the station was operating in the newly-created 88 to 108 MHz FM broadcasting band. KHJ-FM's frequency was 99.7 MHz, although it later moved to 101.1 MHz. The present callsign of the former K45LA/KHJ-FM is KRTH.

An early illustration we have shows an artist's conception of K45LA atop Mt. Lee, using a turnstile type antenna.

Historic Ham QSL's

According to some historians, Bahrain Island (in the Persian Gulf) is the site of ancient Dilmun, one of the earliest civilizations known to have existed. Smaller in size than New York City, Bahrain is a place of relentless heat and humidity that exists in an almost constant state of drought. Oil and gas reserves provided the main staple of Bahrain's commerce for about 40 years, beginning in 1932. Those wells are mostly dry now.

Bahrain was a British protectorate for 110 years until 1971, when it resumed its status as an independent nation. Presumably, with the oil supplies pretty much depleted, there was reduced interest in retaining the status of Bahrain as a British protectorate. What remains of the oil industry had its controlling interest purchased by the Bahrain government in 1975. A billion dollar causeway now runs 15 miles over open water to link Bahrain with its western neighbor, Saudi Arabia.

FROM: **BAHRAIN ISLAND**
PERSIAN GULF
RADIO - MP - 4BBD

YOUR CW ~~PHONE~~ SIGS TX @-616 XTAL OSCILLATOR-75T
 RST 578-9 FREQ 14MC WATTS 12 -
 DATE MAY 22/51 TIME 5:35 A.M. ANTENNA 1/2 WAVE DIPOLE - 40 FT. HIGH
 WX - HOT, DUSTY, LOUSY!! (Hz) RX - IRO TYPE STAI

ROY J. FLEMING
 BOX 613 - AWALI
 BAHRAIN ISLAND
 PERSIAN GULF

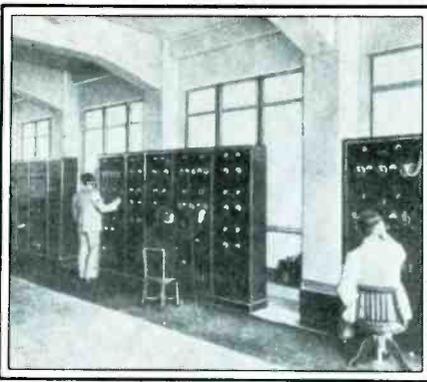
EX - W6BZS W6DQD
 90 CALIFORNIA

Early Amateur Radio operators on Bahrain used call signs with a VS8 prefix. After WWII ended, the prefix was changed to VU7 for local residents. Military personnel temporarily stationed there were given the use of the prefix MP4. Two-letter prefixes commencing with the letter "M" were plentiful in those days, being used in many areas by Allied Forces for Ham purposes.

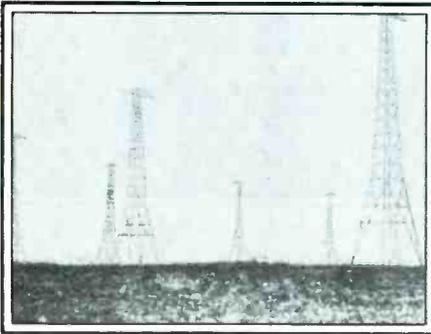
Presently, as an independent nation, Bahrain's Ham operators all use prefixes utilizing the alphanumeric A9.

Our QSL this month is from the relatively short period when MP4 was in use. The card from MP4BBD is dated 1951 and signed by Roy J. Fleming, formerly W6BZS/W6DQD from southern California. Roy was running a mere 12 watts CW when he made a stateside contact that produced this QSL with the unusual call sign. Roy's description of the weather in Bahrain was direct and to-the-point: "Hot, dusty, lousy!!"

Since July 3rd this year is the 54th birthday of Bahrain's ruler, Amir Isa bin Sulman al-Khalifa, it seemed an appropriate time to trot out this unusual card.



The shortwave receivers at Komuro in 1935.



Six 280-foot steel towers at Japan's Komuro receiving station supported an antenna array that assured optimum reception of signals from America.

Trans-Pacific Pickup

In 1935, regular commercial two-way service was established between the United States and Japan, thus permitting telephone calls and broadcast programs to be exchanged across the 5,130 mile oceanic gap separating the two nations.

In Japan, a huge transmitting facility at Nazaki (near Tokyo) was built and had 20 kW transmitters using antennas oriented towards California. Frequencies between 6 and 16 MHz were employed for this purpose, with call signs such as JVT on 6750 kHz, JVN on 10660 kHz, JVM on 10740 kHz, JVF on 15620 kHz, and JVE on 15660 kHz. The Japanese receiving station was established at Komuro.

Through these facilities, scheduled service was established with KWO (15415 kHz) and KWU (15355 kHz), the Bell System stations in California. The receivers were in Point Reyes while the transmitters were located at Dixon. Those facilities were connected by landline to sixty CBS affiliates, two American shortwave relay stations (W2XE relaying WABC in New York City, and W3XAU relaying WCAU in Philadelphia). There were also connections with telephone exchanges for passing telephone calls. One interesting aspect of this system was that all telephone calls were processed through speech inverters that scrambled the voices so that they couldn't be monitored by unauthorized persons.

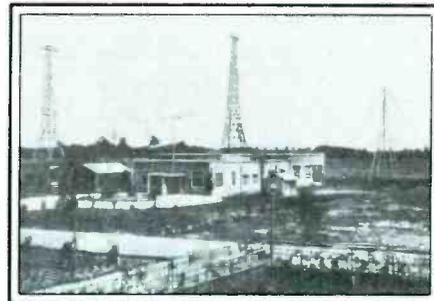
Japan was the fourth Pacific area to be connected in this manner to the North Am-

erican continent by shortwave, the other areas being Hawaii, Java and the Philippines. This Japan/U.S. connection was used several times to send special CBS broadcasts to listeners in Japan and, likewise, Japanese programs were broadcast in the United States over about sixty of the ninety CBS affiliated stations. The American programs originated in New York City. The system worked so well that American listeners were astonished at the high quality of the programs that came from Japan; listeners couldn't hear any degradation in quality caused by the shortwave hop across the Pacific.

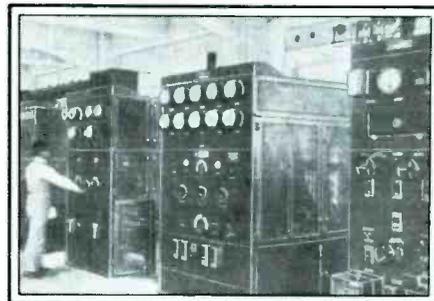
By the way, Japanese transmitter JVT on 6750 kHz put in such a good signal that, when it wasn't normally involved with point-to-point activities, it acted as a regular shortwave broadcasting station and relayed the programs of broadcast band station JOAK!

When WWII erupted in late 1941, the Japanese stations were obviously not needed for two-way communications with the United States. These stations were, for the most part, assigned duties related to broadcasting war propaganda towards North America. This was an unfortunate end to a most interesting arrangement that had been established between the two nations.

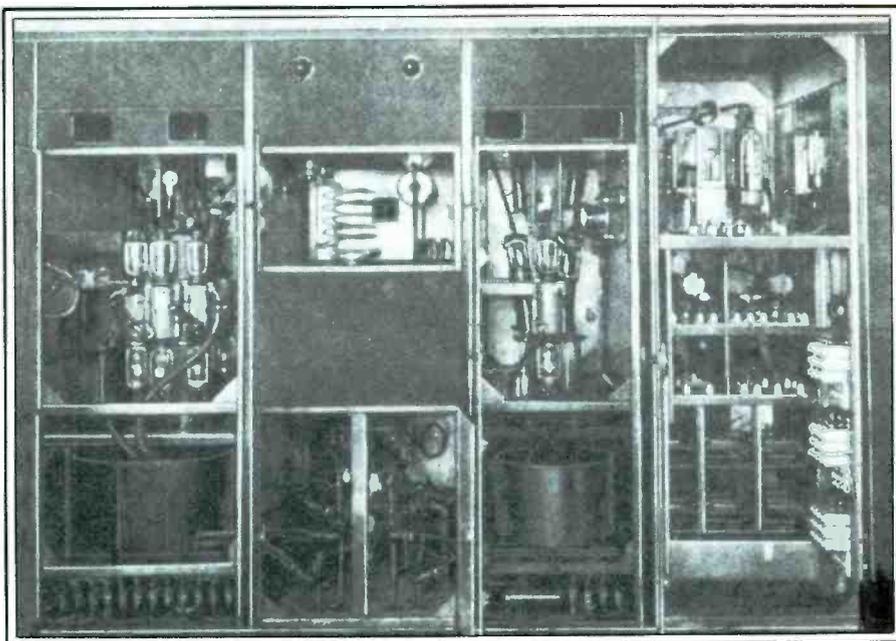
We have some wonderful old photos of the various facilities involved in the Japan/U.S. shortwave hookup. A QSL card from the Nazaki stations after they were placed into propaganda operation was run in these pages last December. For those who might have missed it, we're running it



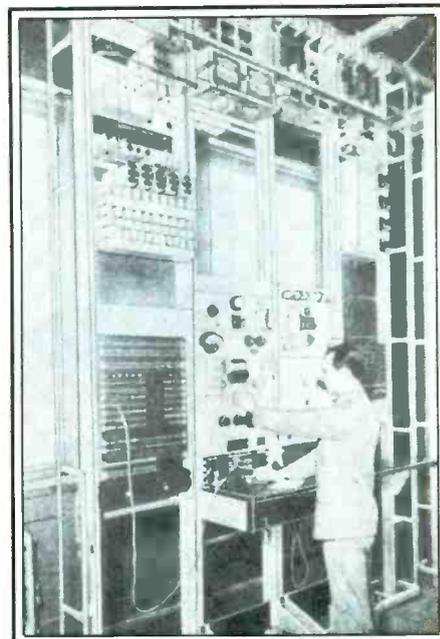
Another view of the Komuro Trans-Pacific receiving facility, this time showing the operations building with the towers in the background.



A Japanese engineer attends to one of the 20 kW 'phone transmitters at the Nazaki transmitting station in 1935.

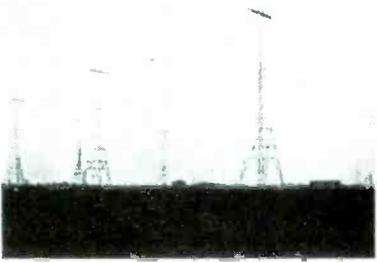


Rear view of one of the transmitters at Dixon, California. Beginning at the left we see water cooled vacuum tubes for the second stage amp, next the interstage unit with tuned circuit and water flow alarms, then the first amplifier stage, and (at the far right) the RF input apparatus.



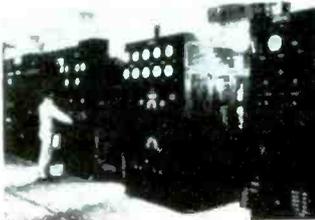
This shows the Dixon transmitting station's line terminal equipment. The room was totally shielded in copper to keep out stray RF.

Nazaki Station Longitude 138°51'00" E
Latitude 36°10'44" N



I. Overseas broadcast for North America, Hawaii, etc.
Transmitter:
JVN 10660 K.C. 20 KW. Beam Antenna
JVH 14600 K.C. 20 KW.
Program:
0500-0600 GMT. News in English and Japanese, Music Entertainment, Lecture, etc.

II. Relaying broadcast for Manchukuo and Formosa
Transmitter:
JVT 6750 KC. 20 KW. Vertical doublet Antenna
JVP 7510 " 20 " "
JVN 10660 " 20 " "
JVM 10740 " 20 " "
Program:
0000-0010 GMT. Weather forecast, Market quotations
0240-0245 Market quotations
0340-0410 News, Market quotations
0650-0720 Market quotations, News
0900-1230 Children's Hour, News, Lecture, Entertainment, Music, Drama, etc.
1230-1300 Time Signal, News, Weather forecast, etc.
2220-2340 Physical Exercise
20 KW. Transmitter



III. Overseas Broadcasting Test
Transmitter:
JVP 7510 K.C. 20 K.W. Beam antenna
JVN 10660 " " " "
JVM 10740 " " " "
JVH 14600 " " " "
Program:
1. For the East Coast of North America & South America
2100-2200 G.M.T. Announcement, Gramophone music, Etc.
For Europe
1900-2000 G.M.T. Announcement, Gramophone music Etc.

Eventually the Nazaki stations were used for propaganda broadcasts directed at North America. Here's a QSL from that era, courtesy of Howard Kemp, Laconia, NH.

again this month, and thanks to Howard Kemp of Laconia, NH for passing along this rare QSL card.

Ask Dr. Alice

Walter S. Andariese, of Atco, NJ sent in the photo of the WRCA railroad spike we ran here last year. Now he writes again to

ask about the background of the famous "NBC Chimes." Walter says that he hadn't thought about the three tones until he heard Richard Strauss' 1904 composition called Sinfonia Domestica; it ended with those exact three notes. He wonders if this obscure musical composition inspired NBC's bong-bong-bong.

I had always assumed that NBC's chimes

were based upon Big Ben in London. On the other hand, when I stopped to think about it, it didn't ring true. Besides, Big Ben doesn't play that tune.

I did, however, check with someone at NBC and they said that the chimes are the notes G-E-C on the musical scale. According to our NBC source, the original reference here was to the initials of the *General Electric Corporation*. This, based upon a long-ago corporate connection between the two companies. Personally, I'm not completely sold on this explanation and if anybody in readerland can confirm or deny this story with any certainty, please step forward. It's a really good question.

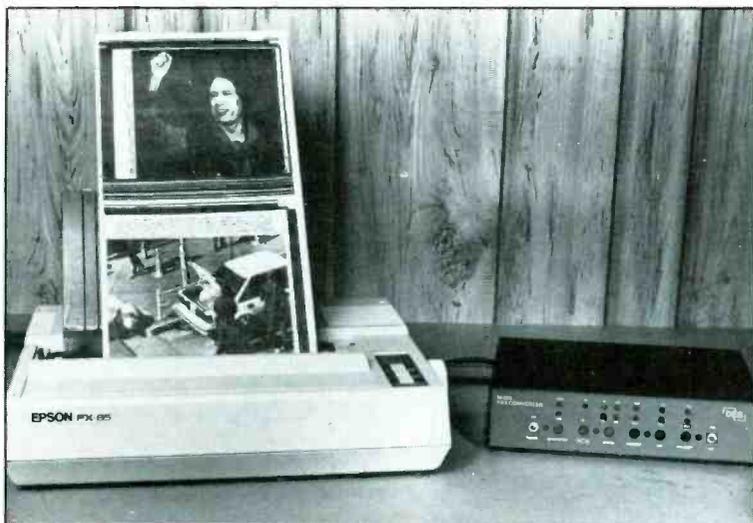
Reader V. Palikoff, who hails from San Francisco, asks me to explain how I make the decisions every month regarding which things to cover in these pages. I make the decisions with much trepidation because there is so much to cover and I always run out of my allocated space before I run out of things to discuss here. I'm not much of a decision-maker anyway. I even ponder over whether to listen to the *Solid Gold Saturday Night* program over WWKB (Buffalo, NY on 1520 kHz) or WHAS (Louisville, KY on 840 kHz) since they both come in at my location with almost-equal signal strength.

Readers are invited to keep me in my perpetual state of consternation by continuing to flood me with things relating to broadcasting and communications history—postcards, QSL's, photographs, and whatever. Since we can't return anything, you may wish to send good-quality copies of QSL's made on an office copier instead of sending the originals (unless you don't need the originals returned). Tune in next month, same time, same station!

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SCANNER SCENE

BY CHUCK GYSI, N2DUP

MONITORING THE 30 TO 900 MHz "ACTION" BANDS

If you like listening to special industrial radio service users such as construction crews and farming operations, there are several new channels you may want to check out.

You may already be familiar with the 12.5 kHz offset splinter channels used in other UHF radio services, particularly business band. For instance, FCC rules allow the licensing of frequencies offset 12.5 kHz from regular 25 kHz channels as long as power output doesn't exceed two watts and antenna height doesn't exceed 20 feet above ground. Thus, a business might use a frequency such as 464.0875 MHz, a channel between 464.075 and 464.100 MHz, for low-power, on-site operations.

The special industrial radio service has been allowed use of the splinter channels in the 451-452 MHz band as well; however, the FCC has decided to try an experiment with higher power outputs and higher antenna heights. The FCC has relaxed restrictions on splinter channel operations on 10 channel pairs allowing licensees to use up to 100 watts of power output and antenna heights of up to 100 feet.

Now that frequency coordinators play an increased role in reviewing license applications, potential interference problems caused by increased power and antenna heights on adjacent regular channels should be minimized. In expanding the use of offset channels in only one radio service at first, the FCC said it would be able to develop a record by which they could determine whether similar action would be beneficial in other radio services as well.

The special industrial radio service channels on which increased power and antenna heights would be allowed are:

451.7875	451.9125
451.8125	451.9375
451.8375	451.9625
451.8625	451.9875
451.8875	452.0125

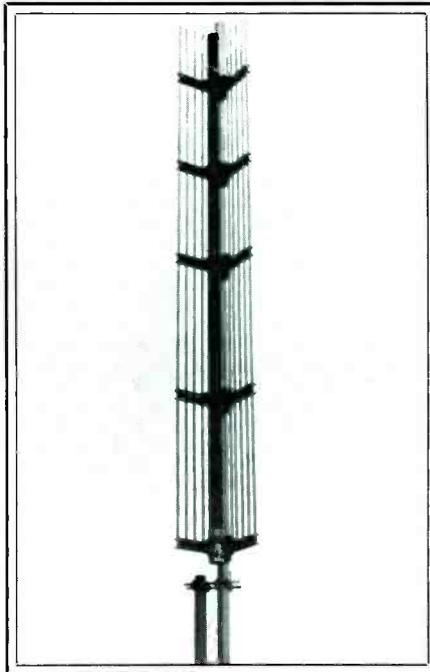
In repeater operations, input frequencies would be 5 MHz higher than the listed output frequencies above.

Calling All Cars

You may not be able to afford vanity license plates to boast your personal message or plug your hobby, but chances are you could afford a specialized license plate frame.

In Southern California, a place with a lifestyle of its very own, motorists are tooling about the interstate highways with license plate frames carrying the callsigns of the Los Angeles Police Department and the California Highway Patrol.

That's right, they're the very same call-



If you see a base station antenna such as this, the odds have it that it is a cellular telephone cell site. This Antenna Specialists antenna operates on 800 MHz with 17dB gain.

signs that are heard not only on the VHF bands throughout southern California, but also on popular TV shows about law enforcement agencies in California. Surely, if you were attentive enough when watching "Adam-12" on TV last decade, you saw the callsign KMA367 on a plate mounted on the front of the patrol car's two-way radio control head. Now, LAPD's KMA367 and KJC625 and the CHP's mobile callsign of KA4993 can be found on frames surrounding license plates.

The CHP frames are sold at the CHP Academy in Sacramento, however, only CHP employees are able to purchase them. Meanwhile, anyone who wants to display the LAPD's handle can stop by the Revolver and Athletic Club at the LAPD Police Academy. In fact, the KMA367 and KJC625 frames are the most popular item at the Academy, where 15 to 20 are sold daily.

While the CHP frames help identify fellow highway patrol officers, almost anybody can be spotted with the LAPD frames. One LAPD officer said that while no one knew what they were three or four years ago, he's even seen little old ladies driving down the freeway with the license frames.

Then again, there have been a lot of scanners sold in that amount of time. It's very likely that many of the license frame holders

are scanner hobbyists tuned in to their favorite stations.

APCO BBS

In past editions of *POP'COMM*, we've listed several computer bulletin board systems operated by some scanner and short-wave listener hobbyists. If you use your computer to check into these bulletin boards, you'll usually find current frequency information and information exchanges between other hobbyists. But now, a large-scale organization is operating a computer bulletin board and anyone is invited to check in.

You may be familiar with the name APCO because the standard 10-code list was devised by them. APCO stands for the Associated Public-Safety Communications Officers Inc., an umbrella organization of public safety radio users. In fact, APCO is the frequency coordinator for several of the public safety user groups as well. APCO has put its bulletin board on line and anyone is allowed to check in.

The BBS offers late-breaking FCC news affecting public-safety radio users, as well as other news and current information from other agencies that may be of interest. The BBS also has a software library so that you can download various computer programs. There are several levels of users, with APCO members being granted higher privileges on the board.

To join the users on the APCO National Office RBBS, check in at (904) 423-1312. The board should be in operation 24 hours a day by now; otherwise you can check in between 6 p.m. and 8 a.m. EST weekdays or 24 hours on weekends. The board allows access at either 300 or 1200 baud; set your parameters for either 8N1 or 7E1. To find out the latest in public safety radio news, check in on the APCO BBS.

Ohio Lockups

The All Ohio Scanner Club gives us a look at a radio system used in Ohio state prisons. The Lima Correctional Institute and the Oakwood Forensic Center have a basic radio system of 45.22 MHz as Channel 1 and 45.02 MHz as Channel 2. The Allen Correctional Institute, a 500-bed medium-security prison on the grounds of the Lima Correctional Institute, was to have opened this month. However, because of possible overcrowding conditions on the airwaves, new Ohio prisons are using VHF high band, with VHF high band base stations installed at existing prisons to allow communications between facilities. The new channels are 154.740 MHz as Channel 1 and 154.935 MHz as Channel 2 (Ohio's LEERN channel).

Prison guards use Motorola HT220 hand-held radios while on duty and have two channels. In that some guards control as many as 120 inmates at a time, the hand-held provides communications and a request for help, if needed. On top of the radio is an emergency button that the guard can activate if he or she is threatened, and an encoded signal is sent to the control room receiving board. This lights up the area that needs assistance and help is dispatched to the area. In addition, the radio contains a man-down alarm so that the emergency signal is set off if the guard is knocked down. The radio will continue to transmit the alert until it is reset. In fact, the radio will start transmitting everything it hears through its built-in microphone back to the control room so personnel can monitor the situation or find out the reason for the alarm. The units at Lima Correctional Institution use 158.940 MHz, but only transmit with about a watt, so unless you're very close to the prison (or in it!), you won't hear these units.

On The Air

The All Ohio Scanner Club (P.O. Box 2496, Springfield, OH 45501-2496) also offers a look at frequencies that were heard recently during an air show at March Air Force Base in California:

- 141.850 Thunderbirds, plane-to-plane during show (AM mode)
- 148.175 Maintenance
- 148.515 Grounds maintenance, traffic signals
- 149.175 Clean-up detail after air show
- 149.235 CEs on flight line, runway sweepers
- 149.475 Motor pool, base taxi
- 150.175 Flight line services
- 150.255 Hospital paging
- 150.345 Hospital and crash units
- 163.4625 Security (open house control network)
- 163.4875 Blue Control (with radio test and tones)
- 164.700 Base police (normal law enforcement operations)
- 165.0625 Alpha Control (SAC security)
- 173.5125 Commanders net phone patches (input 149.535)
- 407.475 CE Job Control
- 413.025 Flight line operations during air show
- 413.450 Radio test

Some of you may be wondering where to search when taking your scanner along to an air show. In addition to catching aero communications in the 108-136 and 225-400 MHz aircraft bands, there are usually plenty of interesting ground communications to be found on the government land mobile bands. While you may want to give a quick search through VHF low band for various operations on government channels, also check 136-144 and 148-150.7 MHz as these are primary military bands. Activity can also be heard around 163, 165 and 173 MHz, as well as around 407 and 413 MHz.



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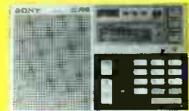


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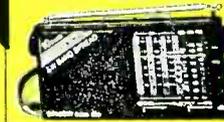
- (High Performance)
- 24 hour bench test.
- Spike protection Mod.
- Final alignment & checkout.
- NRD 525 HP (MF) Mechanical Filter & at ove options: \$200.00
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THE EXCITING WORLD OF RADIOTELETYPE MONITORING

Over the bounding main . . . *Pacific Princess*, the luxury liner better known to RTTY monitors as "The Love Boat" from the popular television show, moves from the West Coast to the world's largest cruise port at Miami, FL to ply the cruise trade there during next fall and winter. Its sister ship, *Sun Princess*, will also be based there. Another sister ship, *Sea Princess*, currently sails out of Port Everglades, FL.

New cruise ships to monitor are: Astor Cruises' *Astor* (the old *Astor* is now *East Germany's Arkona*), Regency's *Regent Star* (formerly *Paquet's Rhapsody*), Royal Caribbean's *Sovereign of the Seas* (arrives in Miami on Jan. 3, 1988, with its inaugural cruise 13 days later), Royal's *Crown Odyssey* (debuting March 1988), *Clipper's Charleston Clipper* (arriving April 1988), Norwegian Caribbean Line's yet-to-be-named passenger ship (in May 1988), and the first of two new Sitmar ships (late next year). This list is from the *Chicago Sun-Times*. Other cruise ships noted in the article have been mentioned here in recent issues.

The Polish cruise ship *Stefan Batory* (SPYM) may be making its last ocean voyage this year, at least on its North Atlantic route. The 25-year-old vessel is showing signs of advanced age. Operated by Polish Ocean Lines, the *Batory* sails between Montreal, Canada, and London, England, or Rotterdam, Holland. The *Batory* and the *Queen Elizabeth 2*, are the only ships with regular passenger service across the North Atlantic, the *Post* says. But while the *QE2* takes about four days to make the journey, the *Batory* plods along in nine or ten days.

The final cruise may come on Oct. 7, when the *Batory* heads home to Gdynia, Poland from Montreal.

If you want further information about the *Batory*, write to Polish Ocean Lines, c/o McLean-Kennedy Inc., 410 St. Nicholas St., Montreal, Quebec, Canada H2Y 2P5.

Police bulletins via RTTY from INTERPOL are regularly noticed at many spots along the HF radio dial. How accurate the agency's files are will have to be taken lightly when you consider the following item from the *Chicago Tribune*: INTERPOL says the ten most crime-ridden nations are Austria, Fiji, Finland, Guyana, Monaco, Netherlands Antilles, New Zealand, St. Kitts-Nevis-Anguilla, Sweden, and the United States. The ten with the least crime are Egypt, El Salvador, Greece, Madagascar, Malaysia, Mali, Nigeria, the Philippines, Sierra Leone, and Spain. You have to consider that some countries are more accurate in reporting crime than others. Maybe it's a good thing that INTERPOL isn't in the travel agency business!

IPCP LONDON NR03609 W 23/0949 GMT

IP ZONES 1 AND 2. MAY R. A. T.

F/18/8750/HAR/2194

PERSON CURRENTLY DETAINED AT CANNON ROW POLICE STATION, LONDON FOR SUSPECTED THEFT AND BEING AN ILLEGAL IMMIGRANT. AN UN-IDENTIFIED FEMALE (WHITE) AGED 15 YEARS. DATE OF BIRTH BELIEVED TO BE 15. 4. 68 EUROPEAN ACCENT. 1. 63M. SHORT BROWN HAIR. WEARS GLASSES AND IS DRESSED IN A BLUE ANORAK, BLUE TROUSERS AND BROWN SHOES.

SHE GIVES THE NAME OF [REDACTED] FIRST NAME STEPHANIE (POSSIBLE FALSE) PLEASE FORWARD ANY INFORMATION AS TO THE IDENTITY OF THIS PERSON AND ANY OTHER INFORMATION OF HER COMING TO POLICE NOTICE.

REGARDS
INTERPOL LONDON<>

George, G3JZK, passed along this copy of an INTERPOL bulletin he copied via RTTY. It does seem that RTTY monitors have the inside track on what's going on behind-the-scenes around the world!

In a recent column, I mentioned that SITOR traffic can be encrypted. I referred the reader to checking out 8951.7 kHz at around 1825. Well, it turns out that that station wasn't sending encryption, but text that I later judged to be in Arabic. After writing that column I monitored similar traffic on frequencies throughout the HF radio spectrum (see loggings). It appears to be either from MFA, Cairo, Egypt, or from Egyptian embassies.

If you want to view encrypted messages sent via SITOR, however, you could tune to 16147.5 kHz at around 1600 and see the output of the French military.

Monitoring of RTTY on the HF radio bands has shown noticeable improvement this year compared with the last few months of 1986. If you were put off by RTTY monitoring because of the poor receiving conditions the past couple of years, now's the time to return, as the higher bands begin to open up again. The 18, 19 and 20 MHz bands have opened up considerably, enabling the logging of stations not seen for nearly a year, and a few new ones.

Starting with this issue, all RTTY settings will be notated by baudot rate/shift/normal or reverse, rather than shift/words-per-minute rate/N or R setting. The reason for this is twofold. Most of the loggings I receive are in baudot. All RTTY demodulators and microcomputer software I have seen show a status line using the baudot rate. All frequency guide books use baudot, too. Second, confusion sometimes arises over whether 75 bauds or 75 w.p.m. (57 bauds) is meant in the listings. Therefore, changing to baudot listings is most sensible. Also, in listing time-division-multiplex (TDM) loggings, I will not use the channels on which the traffic was found, both to simplify the

loggings and to conserve space. Frequency-division-multiplex (FDM) RTTY will be designated only with the speed; the 85 Hertz shift is to be assumed.

RTTY monitoring has been excellent and it seems as though there are more RTTY/ARQ/FEC/TDM/FDM stations than ever filling the bands, with new stations appearing on a regular basis. If you haven't yet started monitoring these stations, then perhaps a look through this month's enormous list of loggings will inspire you to join the excitement. And be certain to send your own loggings in to us here so that we can pass them along to the waiting world! In this month's listings, unattributed loggings are from the logbook of your columnist.

Abbreviations Used in The RTTY Column

AA	Arabic
ARQ	SITOR mode
BC	Broadcast
EE	English
FEC	Forward Error Connection mode
FF	French
foxes	"Quick brown fox..." test tape
GG	German
ID	Identification/led
MFA	Ministry of Foreign Affairs
nx	news
PP	Portuguese
RYRY	"RYRY..." test tape
SS	Spanish
tfc	traffic
w/	with
wx	weather

RTTY Intercepts (All Times Are UTC) (Baud rates are shown)

2197: 96OQZ, a Spanish naval station, calling 97OMR at 0450 in CW and 850/75R (Tom Kneitel).
2307: AAR2BV, an Army MARS station somewhere in NY at 2307 w/training msgs & bulletins in CW, packet and 170/45N (Kneitel, NY).
2407: Encrypted text at 0251, unusual 170/57 mode is seldom encountered (Kneitel, NY).
2420: 98OQJ, Spanish naval, calling 95XRA at 0104 along w/RYSG tape, 850/75R (Kneitel).

2474.7: PBC, Dutch Navy, Gorie Island, Netherlands, at 0503 w/RYYR, 850/75R but weak & garbled (Kneitel, NY).

2808: RETJ, Spanish Navy, Madrid w/foxes & RYSG tape at 0349, 850/75R (Kneitel, NY).

3175: LPAZ, Santa Maria Aeradio, Azores at 0343 w/RYYR, 850/50R (Kneitel, NY).

4171: 3EOM4, Panamanian merchant vessel CLIPPER BUENO working WNU in ARQ at 1517.

4271.3: CFH, Canadian Forces Maritime Command, Halifax, NS w/coded wx at 2130, 75R.

4352: AP sports nx in EE at 0415 in ARQ mode (Kneitel, NY).

4607.7: 960QZ calling "970MR CAPGEDES," and sending encrypted mil format tfc addressed to: RETL Comte Princesa; RETJ Ajema; RETLS Jidenal; RETL Cadarso; RETLC Comte Maquinista; RETM Comte Torpedista Hernandez; and RETL Comte Lazaga. Spanish Navy at 0138, 850/75R (Kneitel, NY).

4632.5: ONA20, INTERPOL Brussels, Belgium in ARQ at 0147 w/IPBX marker tape (Kneitel).

4817: (Presumed) FIT37, Tours Prefecture, France, idling in ARQ at 0153 (Kneitel, NY).

5093: "Guerre Dirpommt P/Tripot Paris" with encrypted tfc & QCKF marker in ARQ at 0144 (Kneitel, NY).

5104: FSB, INTERPOL HQ Paris running a "DFDF" marker in ARQ at 0514 (Kneitel, NY).

5112.2: 4OC3, TANJUG Belgrade, Yugoslavia w/nx in Serbo-Croat, 75R at 0230.

5140.7: RPTIH, w/RYYR & foxes marker at 0206, 850/50N (Kneitel, NY).

5159.5: CLN21, PTT Havana, Cuba w/Telexes to USA at 0528, TDM mode 96/425.

5195.5: ADN nx in EE at 2140, 425/50N (Kneitel).

5198.5: HZJ Jeddah Aeradio, Saudi Arabia w/RYYR at 0211, 425/50N (Kneitel, NY).

5206: Whiskey 74 and Romeo 69 at 2112, mil (USA) stations at 1212 in USB & also 85/75 encrypted (Kneitel, NY).

5275.1: SUA311, AFP Cairo, nx in EE at 2145, 425/50R (Kneitel, NY).

5286: US mil net with C4P, P7N, C7X and A40 at 1211 in USB & 85/75 encrypted RTTY (Kneitel, NY).

5287.6: FBSK marker plus RYYR slip at 0442, 425/50R (Kneitel, NY).

5442.5: ZOC, Khartoum, S. Yemen at 0334 w/RYYR marker in reverse & ID appearing as "COU COU COU EDK." Was 400/50N (Kneitel).

5457: LZA6, BTA Sofia, Bulgaria w/RYYR at 0452, 425/50R (Kneitel, NY).

5460: WWV45, VOA Tangier, Morocco ends xmsn w/RYYR at 0445, 75N.

5715: LZJ5, Sofia Meteo, Bulgaria w/RYYR & SINPO report to another sta at 0108, 50N.

5740: TNL96, Brazzaville Meteo, Congo w/RYYR & coded wx at 0112, 50N.

6260: OW2353, Danish coaster FAROE TRADER w/Telexes in ARQ at 0303.

6265: SQLC, Polish ship VLADISLAV SIKORSKI w/Telexes in Polish to Gdynia R., ARQ at 0323.

6288.1: 58FGX, Spanish Navy unit, w/RYYR at 0532, 850/75N.

6770: CLN40, PTT Havana, Cuba w/Telexes in SS to USA at 1910, TDM 96/425.

6775: XTU, Ouagadougou, Burkina Faso w/aero wx at 2242, TDM 96/425.

6834.5: GFL22, Bracknell Meteo, England w/coded wx at 2228, 425/50R.

6837: RFFXI w/tfc to RFFVAD at 2130 in ARQ, FF text mentioned Chad (Kneitel, NY).

6865.1: VER, Canadian mil, Ottawa w/RYYR & foxes in FDM at 1920, 75N. Was //6865.6 (75N)//6866.1 (75R)//6866.5 (75R)//6867 (75N).

6866.5: D4B, Amilcar Cabral Aeradio, Sal, Cape Verde at 0109 w/RYYR, 850/50N (Kneitel).

6896: CLN48, Havana, Cuba w/RYYR ZRO ZHC?? & foxes tape at 1215, 425/50N (Kneitel).

6920: Kiev Meteo, USSR w/coded wx at 2117, 850/50R (Kneitel, NY).

6941.5: TRK, Libreville Aero, Gabon w/coded aero wx & msg telling someone to contact the captain of an Air France plane & have him call his base sta; was TDM 96/425 at 2108.

6983.1: Un-ID sta w/coded wx at 0203, 50N.

6998.3: CSY, Santa Maria Aeradio, Azores w/coded wx, 50N at 0212.

7426: TNL, Brazzaville Meteo, Congo w/RYYR & erroneous "5NL" callsign, 50N at 0157.

7508.6: OEM27, Vienna Meteo, Austria w/coded wx at 2102, 100N.

7512: ZRO2, Pretoria Meteo, RSA w/coded wx, 75N at 0225.

7520: BZP57, XINHUA Beijing, PRC w/nx in EE, 50R at 1946.

7571: Un-ID Mexican sta w/SS t in ARQ at 2118 them into USB mode w/2 OM's in SS.

7572.5: FLMG, un-ID sta w/RYYR at 0448, 50R. Tape reads FLMG FLMG TESTING QRK IMI.

7583.1: Encryption or FF tfc from French mil at 2345, ARQ.

7657: Dakar Meteo, Senegal w/coded aviation wx at 2330, TDM 96/425.

7689: TUH, ASECNA Abidjan, Ivory Coast w/aviation wx at 0440, 50R.

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7741.7: Tfc in EE or 5L gps from BOSTAN WASHINGTON to KHARGIA CAIRO in ARQ at 0335. Telex in AA at 0413, s/off 0430.
 7795.5: LMMM, Malta Aeradio, Malta w/RURY at 0107, 50R.
 7819: 5NK, Kano Aeradio, Nigeria w/RURY at 0107, 50R (Margolis); calling YJH6 & sending RURY at 0215, 600/50R (Kneitel, NY).
 7886.5: BZ527, XINHUA Beijing, PRC w/nx in EE at 0128, 50R.
 7832.5: AFF4TR, USAF MARS station w/RURY & count at 0135, 170/75R (Kneitel, NY).
 7892: SPW, Warsaw R., Poland sends CW ID followed by ARQ phasing sig at 2320 (Margolis); noted at 0132 w/text in Polish, non-standard ARQ mode <170 Hz bandwidth (Kneitel, NY).
 7954.6: DyN Buenos Aires, Argentina w/nx bc in SS at 0147, 75R.
 7961.5: MKD, RAF Akrotiri, Cyprus w/RUYI & foxes at 2050, 50R.
 8136.5: XVM2, VNA Hanoi, Vietnam w/RURY & asking ZHC? at 1214, 525/50R (Kneitel, NY).
 8344.5: ONEL, Belgian bulk carrier HELEN working WNU in ARQ at 2141.
 8346: UJXB, the Soviet refrigerated fish carrier KALININGRAD sending a "kriptogram" at 0232 in 170/50N (Kneitel, NY).
 8457: NMA, USCG Comsta Miami, FL w/plaintext wx bc at 0140, 170/75R (Kneitel, NY).
 8529.5: PWZ33, Rio de Janeiro Naval Radio, Brazil w/aviation wx at 2255, 50R.
 9058: 9PL, Kinshasa Aeradio, Zaire at 0110 with tape "ZAIRE CENTER LINE TEST" & RURY, 85/50R (Kneitel, NY).
 9224: TJK, ASECNA Douala, Cameroon w/RURY QJHI tape at 0250, 425/50R (Kneitel, NY).
 9252: ELRB, Roberts Field, Monrovia, Liberia at 0254 w/RURY slip, 170/50R (Kneitel, NY).
 9280: RUZU, Soviet Molodezhnaya Base, Antarctica at 0257 calling CQ & running RURY "TESTING TAPE" (it read) followed by coded wx, 425/50N (Kneitel, NY).
 9341: FDY, French Air Force, Orleans, France at 1306 w/RURY & "le brick" tape, 425/50R (Kneitel, NY).
 9430: ZAT, ATA Tirana, Albania at 1738 w/EE nx, 425/50N (Kneitel, NY).
 9942: MKD, RAF Akrotiri, Cyprus w/RURY & foxes at 1941, 50R.
 9966.5//10543: ADN Berlin, GDR beams RURY to Southern Asia at 1258, 50N.
 9980: RFFIC of the French Air Force w/encrypted tfc at 1950 to RFXVLX in TDM 96/850.

9994.2: CSY65, Santa Maria Aeradio, Azores w/EE wx at 1306, 50N.
 10062.5: Tfc in an un-ID language (maybe AA) at 1614, 75R, s/off in CW on 10063 kHz.
 10136.5: TNL96, Brazzaville Aeradio, Congo w/CQ & RURY at 1907, 50N.
 10162.5: YIL70, INA Baghdad, Iraq w/nx in EE at 1628, 50R.
 10176.1: French Justice Dept., Paris, France w/FF tfc to Fort de France, Martinique at 1630, TDM 96/850.
 10213: CNM29, MAP Rabat, Morocco w/nx in FF at 1546, 50R; nx in EE at 1717, 425/50R (Kneitel, NY).
 10215: HZN48, Jeddah Meteo, Saudi Arabia w/coded wx at 1916, 75N.
 10282.4//10283.2: MKK, RAF London, England, test tape at 1907, 400/50R (Kneitel, NY).
 10295: FSB71, INTERPOL HQ, Paris, France at 1320 w/FF bulletins, ARQ (Kneitel, NY).
 10435: ZAY, ATA Tirana, Albania w/nx in FF at 1516, 50N.
 10465: Y7A45, MFA Berlin, GDR w/RURY at 1504, 50R.
 10468: Crypto tfc at 1950, ARQ (Kneitel, NY).
 10471.6: "Uniform Ocho X-Ray" w/RURY tape at 2202 while calling "Uno Sierra Uniform." Was 50N; based upon of sent may have been Montevideo Navrad, Uruguay.
 10497.4: MKD, RAF Akrotiri, Cyprus w/test & count tape at 1924, 170/50N. Was //10497.7 (50R)//10588.4 (50R)//10588.6 (50R)//10588.7 (50R)//10589.1 (50R) (Kneitel, NY).
 10805: NA Buenos Aires, Argentina w/nx in SS, 50R at 2241.
 10815: IRH58, ANSA Rome, Italy w/RURY then EE nx at 1918. Mentioned ops on -4804, 5035, 9052.5, 12120, & 20430 kHz, was using 425/50N (Kneitel, NY).
 10880: REM50, TASS Moscow, USSR w/nx in FF at 1605, 425/50R (Kneitel, NY).
 10892.7: GXQ, British Army, London, England w/RUYI & foxes at 1940, 170/50N. Was //10893.1 kHz 170/50R (Kneitel, NY).
 10894: LRB39, TELAM Buenos Aires, Argentina w/nx in SS at 2346, 50R.
 10916.5: RFTJF, French Navy, Dakar, Senegal sends collison tape at 0000, TDM 96/850.
 11003.5: 5F gps to UFB, Odessa R., 75N at 2034. Sender may be MFA Havana, Cuba.
 11013.5: SUU29, Calco Meteo, Egypt w/coded wx, 425/50R at 2030 (Margolis); at 2006 (Kneitel).
 11026.1: IINA Jeddah, Saudi Arabia w/nx

in AA at 1648-1656, 50N.
 11026.6: 9PL, Kinshasa Aeradio, Zaire w/RURY & "De Zaire Centre Line Test," 50R at 1858.
 11059: "BDA," un-ID aero sta w/coded wx, 50R at 1725, TDM 96/425. Wherezit?
 11061.2: Un-ID aero sta w/coded wx, 50R at 1626. Freq shifts up/down between 11061 & 11062.1. Couple of aero stas listed around here, so no positive ID.
 11108.5: RTTY circuit between French Navy at Fort de France, Martinique & Paris in TDM 96/850 at 1937. One msg in FF from "Jeanne d'Arc" to a French naval aviation facility, another used "Jules Verne" as an ID.
 11123.5: DPA Hamburg, FRG w/nx in EE at 1609, 50N.
 11150: VOA Greenville, NC w/RURY at 2100, 75N.
 11262.7: AP nx & sports in EE followed by lengthy listing of Wash DC govt & quasi-govt events w/locations & times, then DC aero wx at 2024, 850/50N (Kneitel, NY).
 11325: Coded wx bc at 1303, 525/50N. This freq is in the aero SSB band. Whozit? (Kneitel).
 11423.5: SOL242, PAP Warsaw, Poland w/Polish nx in FEC mode at 1429 (Kneitel, NY).
 11453: IMB33, Rome Meteo, Italy, w/coded wx at 1448, 50N.
 11494: SOL249, PAP Warsaw, Poland w/nx in Polish at 1248, 50R (Margolis); same at 1743, 425/50R (Kneitel, NY).
 11497: SOL349, PAP Warsaw, Poland w/nx in EE at 1430, 425/50R. Announced similar bc over SOE262 on 4623 kHz at 2000 (Kneitel).
 11501.9: LZH4, BTA Sofia, Bulgaria w/RURY & QRA tape at 1427, 50N.
 11543.3: 5YD, Nairobi Meteo, Kenya w/coded wx, 50R at 1910.
 11574: 9KT29, KUNA Safat, Kuwait w/nx in EE at 1341, 50R.
 11599.1: Coded aero wx at 1341, 50R. Could be 7XA98, Algiers Meteo, Algeria which is listed near this freq.
 11637.5: DDK8, Frankfurt Meteo, FRG w/coded wx at 1343, 50R.
 12074.7: 9KT292, KUNA Safat, Kuwait w/nx in EE at 1731, 50R. This station previously reported "closed in 7/83."
 12128: IRJ31, ANSA Rome, Italy w/nx in FF at 1445, 425/50N (Kneitel, NY).
 12131.5: Mexican govt sta "DF" says "recibio su mensaje" at 1735, 57N, before s/off.
 12137: RFFI or RFFIQR sending encrypted tfc & marker reading "AZEQ RFFIQR IAINCONNU" in ARQ at 1330. On another day at 2047, a marker reading KFQC noted here in non-standard ARQ (<170 Hz shift) (Kneitel, NY).
 12186: JANA Tripoli, Libya w/nx in EE at 1742, 50R (Margolis, IL); same at 1800, 850/50N (Kneitel, NY).
 12305: GYU, Royal Navy, Gibraltar calling MUL to "QSY to the F18...and F22," adding that it is "QLH on the F15 and F13 att." QLH here means "simultaneously keying." Was 50R at 1748.
 12326.5: LZU78, Sofia, Bulgaria w/RURY tape at 1400, 425/75N. Unlisted here (Kneitel, NY).
 12494: OGFM, Finnish general cargo carrier LAPPONIA w/Telex at 1935 in ARQ.
 12513: Stations heard working ZRQ5 in RSA in ARQ from 1814 to 1940 included: Bermudan cargo ship SEA PIONEER (VSBE9); VIRGO (J8FO) from St. Vincent & the Grenadines; PIQR the Dutch freighter NEDLLOYD WILLEMSKERK; ICIE the Italian freighter AFRICA, and ZRCT, the RSA container ship S.A. WINTERBERG.
 12692.8: ZRQ5, Cape Navrad, Simonstawn, RSA sends NAWS at 2020, 75R followed by plaintext wx from Pretoria Meteo.
 12797: UDK2, Murmansk R., USSR w/Telexes & bulletins in RR at 2046, 170/50N (Kneitel, NY).
 13281.5: RR traffic in ARQ to Odessa R., USSR at 1745.
 13371.5: NBA, USN Balboa, Panama w/RYSG tape at 1654, 850/75R.
 13482: DPA Hamburg, FRG w/EE nx at 1336, 425/50N (Margolis, IL); same at 1452 (Kneitel).
 13516: MKD, RAF Akrotiri, Cyprus w/RUYI & foxes at 1340, 50N. Same output at same time on 13517.7 kHz but 50R.
 13521.5: INA Baghdad, Iraq w/nx in EE at 1359. Sig drifts up/down in between 13521 and 13521.7 kHz.
 13530: RWV33, Moscow Meteo, USSR w/coded wx at 1424, 50R.
 13538: Y7A54, MFA Berlin, GDR w/RURY at 1406, 50R; then ADN nx in GG at 1636.
 13540: SS nx at 2104, 850/50R (Kneitel, NY).
 13567: MKD, RAF Akrotiri, Cyprus w/RUYI's & foxes at 1408, 425/50R.
 13585.5: PKPV marker in ARQ at 2123 (Kneitel).
 13597.5: CTK Prague, Czechoslovakia w/RURY at 1627, 50N.
 13610: 3VF40, TAP Tunis, Tunisia w/nx in AA at 1410, 50N.
 13647.5: OLI5, CTK Prague, Czechoslovakia w/RURY at 1453, 50N.
 13649.5: RFFIC, French Air Force sta w/encrypted tfc to RFPQDCF at 1817, TDM 96/425.

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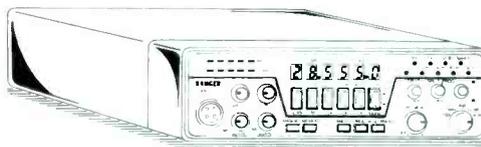
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13665: 6VU73, Dakar Aeradio, Senegal w/aviation wx at 1623, 50N.
 13728: AFP Paris, France nx in FF at 1620, 50N.
 13777: ZRO3, Pretoria Meteo, RSA w/coded wx at 1607, 50N.
 13925.7: MKD, RAF Akrotiro, Cyprus w/RYYI's & foxes at 1556, 50R.
 13979.5: MFA Havana, Cuba w/encryption at 1528, unusual 95R baud rate. Subject was "relacion para Panama."
 14373: YIL73, INA Baghdad, Iraq w/nx in EE at 1330, 50R.
 14418: KUNA Safat, Kuwait w/nx in EE at 1305, 50N.
 14451.5: MFA Havana, Cuba w/Prensamintex nx in SS at 1324, 50N.
 14462: "RIP RIP RIP 1/69" & RYRY's at 1335, 50R followed by 5F grps. Appears to be GDR embassy in Havana.
 14490: RNK36, TASS Moscow, USSR w/RYYR at 1312, 425/50R. Mentioned other xmsns over RVW57 12315 kHz; RTV55 6870 kHz; RMN51 8140 kHz; RTT44 7615 kHz; RVO70 9420 kHz; & RCG77 13490 kHz (Kneitel, NY).
 14675.5: CLP1, MFA Havana, Cuba w/tfc in SS, RYRY & encryption at 1325, 50N.
 14700: REB24, TASS Moscow, USSR w/nx in EE at 1325, 425/50R (Kneitel, NY).
 14760: CNM61, MAP Rabat, Morocco w/nx in EE at 1327, 425/50R (Kneitel, NY).
 14793.5: AFP Paris, France nx in AA at 1321, 50N.
 14795: AFP, Paris, France nx in FF at 1318, 50N.
 14882: IINA Jeddah, Saudi Arabia w/nx in EE at 1240, 50N.
 14931.5: APS Algiers, Algeria w/RYYR & nx in FF at 1253, 50N.
 14950: CLP1, MFA Havana, Cuba w/hand keyed SS tfc & machine 5F msgs to Bissau & Sierra Leone at 1315, 425/50N (Kneitel, NY).
 15480: APS Algiers, Algeria w/RYYR & nx in FF at 1618, 50N.
 15555: BTA Sofia, Bulgaria w/nx in EE at 1308, 50R.
 15575: REW30, TASS Moscow, USSR at 1300 w/nx in EE, 50R.
 15580: REM58, TASS Nikolayev, USSR w/nx in FF at 1303, 50R.
 15620: ZRH, Cape Town Navrad, RSA working NMN at 1315, 75R.
 15705: YZJ6, TANJUG Belgrade, Yugoslavia w/nx in FF, 50R at 1334. On top of this was heard a single letter HF CW beacon ID'ing as "U"
 15844.4: SUA289, MENA Cairo, Egypt w/nx in AA at 1342, 50R.
 15940: ELE25, Goodyear Plantation, Harbel, Liberia at 1538 in ARQ w/Telexes (Kneitel)
 15963: Y7A62, MFA Berlin, GDR w/nx in FF at 1353, 50N.
 15965.8: 5L tfc from Dutch embassy in Paramaribo, Surinam & Telexes in Dutch, ARQ at 1655 to PCW1 (on 15985.5 kHz).
 15967.5: CLP1, MFA Havana, Cuba w/encrypted tfc to Cuban embassy in Luanda, Angola at 1720, 75N.
 15985.5: PCW1, MFA The Hague, Netherlands w/CW call marker & ARQ phasing sig at 1600.
 16000: MAP Rabat, Morocco w/nx in EE at 1320, 50R.
 16010: MFA Havana, Cuba w/Prensamintex nx in SS at 1653, 425/50N (Kneitel, NY).
 16044: Un-ID MARS station in FRG sending telegrams addressed to Houston, TX. <170/45R at 1340 (Kneitel, NY).
 16050: TASS Moscow, USSR w/nx in EE at 1325, 50R.
 16108: 5L grps & diplomatic GG texts at 1550 addressed to: Amldondro, Ammdridoz, Amparisfo, Amromito, Amwaskino, Amlisbano (London, Madrid, Paris, Rome, Washington, Lisbon). Was non-standard ARQ, <170 Hz bandwidth--about 130 Kz (Kneitel, NY).
 16117: 6VK317, PANA Dakar, Senegal w/nx in EE at 1330, 50R.
 16133: MAP Rabat, Morocco, w/nx in EE at 1336, 50R.
 16136: TASS Moscow, USSR w/nx in EE at 1523, 50R.
 16136.7: Un-ID sta w/5L grps in ARQ at 1420.
 16140: RGW28, TASS Moscow, USSR w/nx in EE at 1337, 66R.
 16142.2: Grocery list in FF from French Navy HQ in Paris. Was TDM 96/850 at 1741. Sounded delicious!
 16147.7: FDZ asking FDZ2 for a QSL to a msg. French Air Force units, but where? Was ARQ at 1435.
 16202.2: AFRTS Los Angeles sending AP/UPI nx briefs to USN ships & select US embassies at 1354, 75N. Unclassified diplo tfc to American embassies at 1438.
 16210: SOQ221, PAP Warsaw, Poland at 1518, 50R w/RYYR. Was //SON278 13785 kHz.

16234: 4UZ, UN Geneva, Switzerland sendg Telexes at 1432 to Rome, 75R.
 16243: Y7A64, MFA Berlin, GDR w/5L grps & GG tfc, plus ADN nx to several GG embassies at 1419, 50N.
 16245.2: VOA Tangier, Morocco calls VOA Greenville, NC in FDM (75/85N) also on 16246.5, 16247.8, & 16249.1. A brief msg was sent at 1446 on 16246.6 kHz.
 16260: TASS Moscow, USSR w/nx in FF at 1346, 50R.
 16298: Un-ID sta sends encryption at 1530, 75/629R. Noted were "13 214457 09000 0175 VCVCVCVC..." as a header to the next msg. The first set of #'s obviously are the msg. #'s. "QRU QSL TKS OM 73 73 SK SK" sent at 1537.
 16318.5: Msg in FEC mode at 1520 w/add letter combos. Could be in AA from MFA Cairo, Egypt or an Egyptian embassy.
 16329.5: 5F tfc at 1522 ends w/"FIN DEL TEXTO." Was from Mintex, Cuba, 50N.
 16343: YZ14, TANJUG Belgrade, Yugoslavia at 1342, 50R w/nx pooled from various press services.
 16348: TASS Moscow, USSR w/nx in EE at 1446, 50R.
 16356.6: Y7L36, GDR embassy in Havana on "Kanal B" w/RYYR & QRA, 50N at 1659. Also at 2045 followed by a Telex & nx in GG.
 16361.7: Diplo tfc in EE & tfc in AA to Boustan Freetown from Boustan Lagos in ARQ at 1324. Was from minister Pleipotentiary Ahmed Samir Mokhtar to Minister Ali Hegazi. Are they Egyptians, or what. Similar to logging on 7741.7 kHz.
 16369.6: Czech embassy in Havana, Cuba w/telegrams in Czech at 1315, 75N.
 16397.1: FTQ39, DIPLO Paris, France w/nx in FF at 1313, 425/50N (Margolis, IL); same at 1623 (Kneitel, NY).
 16661: VRCD, Hong Kong flag bulk carrier LANTAU TRADER w/AMVER tfc at 1715 in ARQ.
 16666: HZXT, Saudi cargo ship AL MOSHTAREE w/wx obs to NMT in ARQ at 1803.
 16667.5: FNEH, French ore carrier MONTCALM w/wx data to WLO in ARQ at 1839.
 16698: UKKM, Soviet tanker MOSKOVSKIY FESTIVAL w/Telex in ARQ at 1706 (Kneitel).
 17198: GKE6, Portishead R., England w/tfc list in FEC at 1505.
 17201: FFL81, St. Lys R., France calling CQ w/tfc list in FEC at 1500.
 17205: HEC17, Berne R., Switzerland w/Telex to DLAL, W. German passenger liner EUROPA, 1535 in ARQ.
 17213.5: HPP, Panama R., Panama sending msg "If any sightings please contact Howard Reserve Center or Panama Intelmar Radio/HPP," but gave no details of what to look for. Was FEC at 1710.
 17623: KUNA Safat, Kuwait w/nx in EE at 1500, 50N.
 17627: KUNA Safat, Kuwait w/nx in AA at 1513, 50R.
 18006.7: "KGHRH KZVBK GK KDWFSJ LUS TUC KDDR LHXYT DDS B5F" & other similar msgs in FEC at 1339. Could be in AA.
 18011.5: Tfc in FEC at 1355 but severe QSB

made copy impossible. Probably related to xmsn on 18006.7 kHz.
 18040: ZRH84, Cape Navrad, Flsantkeraal, RSA calling NMN & RYSG/foxes tape at 1316, 75R.
 18103.5: SUU, Cairo Meteo, Egypt w/coded wx at 1607, 50N.
 18106: SUU9, Cairo Meteo, Egypt, w/aviation wx at 1407, 50N.
 18133.6: "Piccolo" RTTY sig at 1412.
 18215: VOA nx in EE & SS, 1700, 75N.
 18221: CNM76X9, MAP Rabat, Morocco w/nx in EE at 1334, 50N.
 18230: GFL25, Bracknell Meteo, England w/coded wx at 1618, 50N.
 18242: ZRO4, Pretoria Meteo, RSA w/coded wx at 1652, 75N.
 18267: VOA Kavala, Greece calling VOA Greenville & sending RYRY at 1327, 75N.
 18274: HBD20, MFA Berne, Switzerland sends nx in GG via ARQ mode 1309-1324 to another sta on this freq. Other sta was too weak to get a copy.
 18363: 9PL, Kinshasa Aeradio, Zaire at 1822, 50R w/its "LINE TEST" marker & RYRY.
 18420.6: LQB54, TELAM Buenos Aires, Argentina w/nx in SS at 1824, 50R.
 18536.5: MKD, RAF Akrotiri, Cyprus w/RYYI's & foxes at 1441, 50N.
 18542.5: VOA Greenville, NC sending list of items scheduled for xmsn. Was 75N at 1600.
 18547: YZJ, Deutsche Post, Berlin, GDR w/RYYR & QRA tape at 1442, 50N.
 18669.2: FTS67H1, AFP Paris, France w/nx in FF at 1456, 50N.
 18690: MFA Havana, Cuba w/RYYR at 1530, 45N.
 18697.5: DPA Hamburg, FRG w/nx in EE at 1500, 50N.
 18785: FTS78, DIPLO Paris, France w/nx in FF at 1601, 50N.
 18964.5: French mil tfc at 1847, TDM 96/850.
 19005.7: Un-ID sta sending foxes at 1333, FDM 75R.
 19006: Foxes w/o ID at 1322, FDM 75N.
 19143.2: French Navy tfc, either encrypted or in FF at 1350, TDM 96/425.
 19312.3: 4UF, UNECA Addis Ababa, Ethiopia sending tfc to "DKR," Dakar, Senegal & "NBB," Nairobi, Kenya at 1521, 75N.
 19384.5: French mil tfc at 1544, TDM 96/425.
 19405: INTERPOL Buenos Aires, Argentina w/policie bulletins in SS to Washington DC at 1705, ARQ. Callsign is AYA here.
 19448: TASS Moscow, USSR w/nx in EE at 1352, 50R.
 19575.5: OR149, PTT Brussels, Belgium w/tfc in FF via TDM 96/425.
 20078: FTUB, DIPLO Paris, France w/nx in FF at 1736, 50N.
 20178.5: RFFVIK of the French mil sends tfc either in FF or encrypted to RFFVIC of Frency Navy, Reunion via TDM 96/850 at 1428.
 20205: 5KM, Bogota Navrad, Colombia w/RYSG at 1900, 75R.
 20420.2: MFA Havana, Cuba w/encrypted tfc to Cuban embassy at Luanda, Angola, 75N at 1804.
 20632.2: RFVI, French naval facility at Reunion sends only ID in TDM 96/850 at 1433. Mostly idling.

AR-3300 10 meter transceiver 2 Models — 30 and 100 watts



The AR-3300 is an HF all-mode transceiver incorporating the latest microprocessor technology. The transceiver operates continuously from 28.0000-29.9999 MHz. The transceiver operates on 13.6VDC either mobile or base operation with proper power supply. Frequency selection is entered through either the momentary

switches located below the frequency display or by automatic scanning. The scanner will stop whenever a signal appears that is strong enough to open the squelch. Frequency resolution is selectable in 100Hz, 1000Hz, 10,000Hz, or 100,000Hz steps. Up to five preset frequencies may be stored in the computer's memory.

The AR-3300 can be programmed to split transceive. Transmit on one frequency and receive on another. This is accomplished by programming the shift controls. Any two frequencies within its operating frequency range may be used. The frequency display will automatically show both frequencies.



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BROADCAST TOPIK

BY MARK MANUCY, W3GMG

DX, NEWS AND VIEWS OF AM AND FM BROADCASTING

As most of my readers know, I am always pushing for a better sounding medium, both AM and FM. Back in February of this year I got very upset with the status of AM radio and wrote sixteen letters to people of power in broadcasting in the United States and Canada. What started the whole thing was a discussion I had with my 14-year-old daughter while driving back from an appointment one cold night. We were listening to one of the new low power AM stations to see how far it could be heard. Of course, it was not one of the top Baltimore FM stations she enjoyed. One thing led to another and she informed me, "Dad, no one listens to AM!"

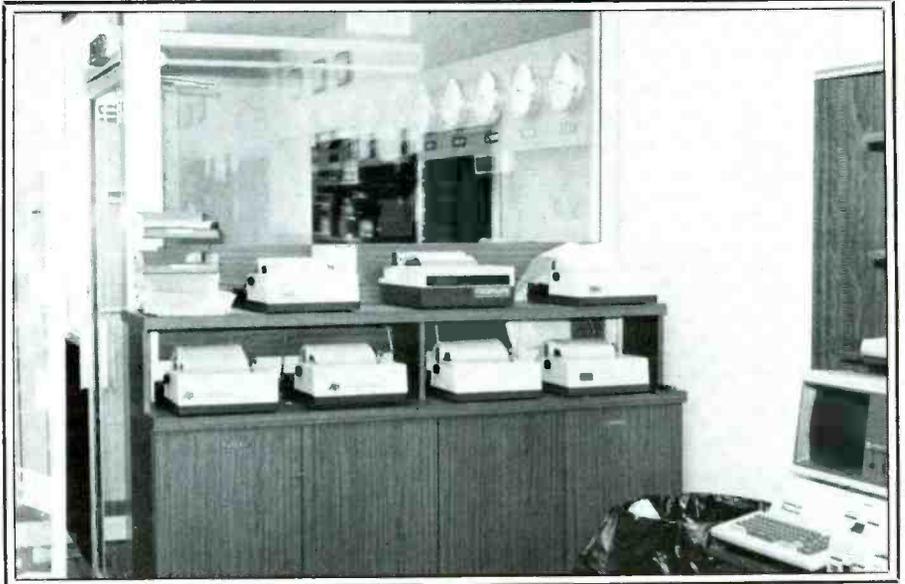
Well, needless to say, that got my dander up and I responded by asking, "What's wrong with AM?" She proceeded to tell me. Then we used the auto-search on my Fijutsi-Ten to talk about each AM station we heard. Most teenagers prefer rock, and it has to be "good" rock, whatever that is! There is not much, if any, rock left on AM; however, the auto-search finally stopped on WLS (AM) and the stereo light came on and she exclaimed, "Now that's good rock and it's stereo, too!"

A word of explanation is necessary here. My daughter says that most radios owned by girls her age do not reproduce music in such a way that the stereo aspect of the radio is important. What she is saying is that if an AM station sounded good in her radio and played the music she liked, she would, in fact, listen.

This caused me to ponder the large exodus of listeners from AM and why it doesn't seem to be stopping. In some parts of the country less than ten percent of the audience may be split among a dozen AM stations . . . talk about starving radio stations!

Anyway, my conclusion involved the receiver. The AM receiver has not been improved in over 30 years . . . actually, it may have gotten worse. I can remember some car radios of the late fifties (AM only, vibrator and all) that really sounded good. On the other hand, FM radios continue to improve today. Well then, how can an AM broadcaster compete if the end product, the radio, is his limiting factor? Obviously, the answer is that he can't. The number of people listening to FM radio proves my point. The best programming in the world will not save AM radio. Stereo will not save AM radio.

So, the answer to the salvation of AM radio comes back to the receiver, and although sets like the Sony SRF-A100 are a start, it is a weak start at best. Twenty years ago the FCC required all TV sets to have UHF tuning as well as VHF tuning. That did not solve the second-sister nature of UHF,



A few months ago the other half of WBAL's newsroom was pictured. Looking the other way we see the news wires, however, since this picture was taken two more high-speed teletype computer printers have been added on the top shelf. Behind the news wires is the broadcast booth from which all news broadcasts are presented. The four clocks represent different times around the world. Note the elaborate use of soundproofing inside the "glass" booth.

however, because the TV set manufacturers only added a second tuning knob for UHF that no one ever bothered to use. Only recently with electronic tuning has UHF been brought on par with VHF.

So what about AM which was so long the VHF of radio? As some of my readers have pointed out in the past, we need to do away with the names AM and FM. We need one digital dial that will switch from 1700 to 88.1 and from 107.9 to 530. Auto-selecting stereo, noise rejection, and other innovations are needed also.

That is part of what my letter to the people in-the-know said, among other things. One encouraging reply came from Pierre Nadeau, Senior Vice-President (Radio) of the Canadian Association of Broadcasters in Ottawa. The CAB is just as active as the NAB (in the U.S.) in promoting better AM. Some of the enclosures he sent spell out

what they are doing, specifically in Canada, to keep the AM business from dying.

In July of 1986, the CAB and NAB had a joint meeting in California to discuss this very problem and the most important factors coming out of the meeting were two: 1. The public perception, especially among younger audiences, is that AM is a "talk" medium, not suited for quality transmission of music; 2. that there is a greater availability of FM receivers, especially in cars. The committee went on to say that if AM audience levels were to be stabilized it would be necessary to overcome the first factor by demonstrating to the public that the quality of transmission on AM has improved greatly.

As I travel around this part of the country, it is difficult to find good sounding AM stations. For example, of the dozen AM signals in the Baltimore market during the daytime, less than half sound good. Of the half-dozen

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5 kW and over stations, only one or two sound good consistently. The talk stations sound the worst, with distortion and poor fidelity and I'm not talking about telephone programming. These are matters that could be easily repaired but that go on for years with the same poor quality and distortion . . . maybe it's no wonder the audience has departed to the FM band.

Here are some tips for summertime AM listening while you're on vacation. First and most importantly, it is difficult at best to be serious about DX'ing unknown stations if your portable radio does not have a smooth and large tuning dial or is digital. For example, even though the Sony SRF-A100 is a pretty decent radio, I would not consider using it for unknown DX'ing because the dial is too inaccurate and sloppy. With an analog dial the scale should be long enough to guesstimate the frequencies between the markings of the dial. Also, the tuning has to be smooth enough to retain the pointer without slippage as the knob is turned. Of course, today's digital radios are not very expensive and offer the best solution to knowing where you are tuned.

Step two: Time . . . it takes time to comb the AM band especially since it is easy to get several stations on many frequencies. Also, there are two AM bands . . . ahhhh, didn't know that? The second AM band appears at night! So, it takes probably four to six times longer to DX the AM band(s) as it does the FM band.

I have used many methods of portable DX'ing and the best I've found so far is to have a comfortable location outside far from the city and other noise; a good spot is a picnic table. Next, I like to be familiar with the graphics of the area so I like to have an area map beside me to locate the different cities. One can DX blindly, but I find it more interesting to know the stations I'm after. There are always a few surprises due to power increases or unusually good ground conductivity. Aside from the map, a relatively up-to-date small log book saves time by showing the call letters of hunted stations. Be alert to the possibility of catching a weather

Call Letter Changes

Location

AM Stations

Tuscaloosa, AL
Hot Springs, AK
Banning, CA
Temple Terrace, FL
Jacksonville, FL
Meridian, MS
Buffalo, NY
New Hope, NC
Sanford, NC
Winston-Salem, NC
Ontario, OH
Hughesville, PA
Big Springs, TX
Kerrville, TX
San Antonio, TX
Sonora, TX
Chesapeake, VA
Yakima, WA

FM Stations

Jasper, AL
Orlando, FL
Madison, IN
Onawa, IA
North Newton, KS
Meridian, MS
Branson, MO
Hamilton, MT
Hazlet, NJ
Oswego, NY
Ravenet, SC
Franklin, TN
Odessa, TX
Big Springs, TX
Sonora, TX
San Antonio, TX
Chesapeake, VA
Racine, WI

Old

WJRD
KXOW
KGUD
WTYM
WPDQ
WYAM
WHTT
New
WSBL
WAIR
New
WTPS
KKIK
New
KAPE
KVRN
WCPK
KZTA

New

WZBQ
KIXT
KMET
WQBM
WRQT
WJDQ
WTKS
WAUG
WXKL
WMQX
WRGM
WJOK
KWKI
KXXT
KCHL
KHOS
WJQI
KAJR

WZBQ
WHOO-FM
WCJC
KBAO
New
WJDQ
New
KLYQ-FM
WVRM
WQWT
XR
WLRQ-FM
New
KWKI
KHOS
KESI
WJQI
WRKR-FM

WZBQ-FM
WHTQ
WORX-FM
KOOO
KBCU
WJDQ-FM
KLFC
KBMG
WCNJ
WQXT
WMGL
WWRB
KMLM
KWKI-FM
KHOS-FM
KMMX
WJQI-FM
WHBT

report or spot announcement that would give you a clue about the station.

The next time-saving item is paper that has been previously marked with frequencies. Last summer, a computer program was published in this column for the C-64 which printed four pages listing the AM frequencies in order, and four more pages for the FM band. Across the top are numbers (1-10) which could be different DX'ing locations or different times of the day, making it easier to compare the summer's work. If you have a C-64 and a printer and would like a copy of the program send me a disk and a dollar to cover return postage and I'll give you a copy of the program. By the way, someone sent a disk last summer without return information . . . I still have the disk! A portion of the page is reproduced here as a sample of how to draw it up if you don't have a computer.

Down to business—I find the lower ends of the AM and FM bands take longer. The AM band coverage is much better on the low end and there are usually two stations

on each frequency and they must be separated by using the loop in the radio (or an external loop). The low end of the FM band has the educational stations which give ID's and clues to ID's infrequently. Start up the bands from the bottom one channel at a time until you reach the top. With the radio and/or loop on a lazy susan, turn the set through 180 degrees at each channel, peaking and nulling for best reception of each station. The AM band will take at least an hour if you are experienced and move very quickly from channel to channel. Plan on several hours if you're new to the game for each pass of the AM band.

Nighttime can take forever! For example, if you have a station on every frequency that would be 107 stations. Many frequencies will have at least two stations and if you spent only one minute on each station ID (not likely) that's almost two hours right there. If you hit a snag on ID'ing a particular station lock it into a memory position (if the radio has one, if not use yours) and come back to it on the hour. Write the call letters

next to the frequency on the paper and maybe a one or two number signal strength report for later comparison with night or another location. If you plan to request a QSL or bumper stickers later, then use another column for brief program notes using small print and short words. This will greatly increase the time spent and people will begin wondering why you're sitting at a picnic table wearing headphones for days (and nights) on end! Just give them a polite smile and wave and keep a close watch for men dressed in white coats! This of course gets most distracting when a station is just about to give an ID that you've been listening to for 20 minutes.

Boy, if you could have seen my bicycle when I was a kid—with a bamboo pole on the back, spirally wrapped with enamel copper to provide an antenna for my crystal set. Took a lot of signal back then since transistors were expensive and headphones were much less efficient. That diode had to work hard for me to hear our local station! Don't see that today because everyone has a walkman and IC's cost less than that 1N34 diode back in the late 1940s! Didn't have a portable Sony 2010 back then to DX with, in fact anything portable short of the Zenith Transoceanic wasn't very good. Not many kids could afford the Zenith much less pay for the batteries!

One guy that has been very busy with QSL requests lately is William McDougall, the CE at CJFT, Fort Erie Radio. I've gotten

Station Update

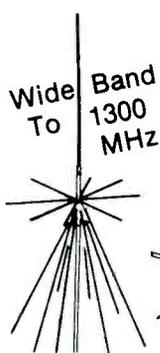
Call AM	Location	Freq	Pwr	Ant
KVIP	Redding, CA	540	5/0	NDA
WHOF	Wildwood, FL	640	.826/.979	NDA
WMOP	Ocala, FL	900	3.2/0	NDA
WBQN	Manati, PR	1160	5/5	NDA
WRMG	Red Bay, AL	1430	3/0	NDA
WNEL	Caguas, PR	1430	.25/5	NDA
KANO	Brooklyn Park, MN	1470	5/5	DA-N
WPLW	Carnegie, PA	1590	5/0	DA-D
FM				
WGNV	Milladore, WI	88.5	23	584'
KJZZ	Phoenix, AZ	91.5	100	1594'
WYNU	Milan, TN	92.3	100	990'
WCRQ-FM	Arab, AL	92.7	.7	671'
WBOX-FM	Varnado, LA	92.7	3.0	321'
KPSA-FM	La Luz, NM	92.7	100	-215'
KWNE	Ukiah, CA	94.5	2.35	1899'
WSSX-FM	Charleston, SC	95.1	100	985'
WNCX	Cleveland, OH	98.5	16	960'
WRCM	Jacksonville, NC	98.7	12.1	220'
WOJY	High Point, NC	100.3	100	1036'
WFNX	Lynn, MA	101.7	1.66	441'
KPXR	Anchorage, AK	102.1	100	174'
WZAT	Savannah, GA	102.1	100	1321'
WGUS-FM	Augusta, GA	102.3	3.0	328'
KCRR	Bullhead City, AZ	102.7	53	2398'
WLOQ	Winter Park, FL	103.1	2.63	351'
KESY-FM	Omaha, NE	104.5	100	299'

Key: D = Daytime, N = Nighttime, DA = Directional Antenna, DA1 = Same Pattern Day and Night, DA2 = Different Pattern/Power Day/Night, NDA = Omni Antenna Day and/or Night, * = Special Operation or Critical Hours, N/C = No Change.

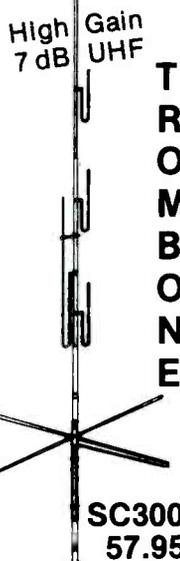
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Please send all reader inquiries directly.

several letters lately with a copy of his handwritten QSL. Doug Turner out in Missouri heard them as did Bernard Hassemmer. Doug says WBZ still dominates 1030 out there but wishes the FCC would cut the foolishness out.

Each month requests come in for information about portable radios as well as table receivers. The only ones I can speak of are those I have personally owned and that is limited. To judge the quality of a radio I do a lot of reading of ads and, of course, today the ads seem to be the same month after month. I look for reviews, some you see in POP'COMM and always check the *World Radio TV Handbook*.

Today, as much as ever, you get what you pay for, so first decide how much money you have to spend on the item and that will narrow the selection to some degree. Then collect the ads in that price range and call several businesses that sell the models in which you're interested and ask their advice. Take notes and compare them after you have made the calls and see who the winner is.

Always be on the lookout for a sale on a particular unit as that will allow extra coins for something else. If you do your homework and are able to make a decision based on facts, I think you will be pleased with the purchase for many years. This has worked

well for me and, although it may take me a couple of months to reach a decision, the long-lived enjoyment is worth the initial wait. One other thought, don't be afraid to look at used receivers as a way to get more for your money. A percentage of DX'ers want all the latest bells and whistles and will trade a perfectly fine receiver for the newest model.

I have heard a couple of complaints about the way some dealers treat BCL/SWL's compared to Hams and I would only point out that the BCL's money is just as green as anyone else's. If you are not happy with the service, then spend your green with someone who will appreciate the color green a little more! When I buy I never mention whether or not I have a Ham ticket.

In closing this month let me remind you of my need for pictures and if you have any questions about my column you can always send them to me with a SASE and I'll answer. I'm also the one with antenna plans for loops: Box loop plans are \$5.50 and ferrite plans are \$7.50 including a preamp. R-70/71 mods are \$2.50 and stereo AM station lists are also \$2.50. A paper, "More About Loops," is free with an SASE as is BCL/SWL computer (C-64/128) program info. The address is P.O. Box 5624, Baltimore, MD 21210.

PC

Tow-Truck Driver Helps Save Baby

Shernetta Herion was driving on Interstate 80 one cold winter morning when the engine of her 12-year-old car stopped. Herion, who was on her way to drop off her six-month-old daughter, Shannon, at her cousin's home in West Paterson, New Jersey, had to leave the car in the right lane of the busy interstate because there was snow piled on the shoulder.

SCAN PUBLIC SERVICE AWARD

Herion waited in the car for about 15 minutes, but then left the car and tried to flag down help in the eight-degree cold, leaving Shannon in the back seat of the stalled car.

According to an account of the incident in

an Associated Press story carried by the *Fayetteville (N.C.) Times*, Herion said that motorists just looked and kept on going. "I yelled and screamed and nobody stopped," the 26-year-old bank employee said. "One lady waved at me and hunched over her shoulders as if to say, 'What can I do?'"

Tom Meyer, 33, didn't offer any excuses as he drove past. The independent tow-truck driver made a U-turn and expected an ordinary towing job. Meyer said that Herion was "a ball of tears" when he arrived. Herion asked Meyer if her baby could sit in the tow-truck cab to get warm.

When Herion removed her daughter from the back seat, Meyer said that he noticed that the baby wasn't breathing. Because of the infant's size, Meyer said that he rushed her to a nearby police station instead of attempting mouth-to-mouth resuscitation himself.

As he stopped at the police station in Elmwood Park, New Jersey, three police officers also arrived. At that time, the baby was "out and cold," according to Patrolman

John Rutkowski. "We gave her oxygen and she opened her eyes," he said. "If it wasn't for (Meyer), I don't know what would have happened."

After a brief trip to the hospital, Shannon and her mother were taken back to the police station. Meyer then delivered mother and daughter, along with the disabled car, to Herion's cousin's home in West Paterson.

According to the state police who patrol Interstate 80, it usually takes less than an hour for a state trooper to spot a disabled vehicle. It was reported that the four patrol cars cruising that 30-mile stretch of road at that time may have been on other calls.

Meyer's efforts helped keep a relatively minor inconvenience from becoming a tragedy. For his actions, Tom Meyer will receive the SCAN Public Service Award, which consists of a special commendation plaque and a \$100 cash prize. For making the nomination, Barbara Parker of Fayetteville (who also happens to be a tow-track operator) will also receive a commendation plaque.

Congratulations to both of you.

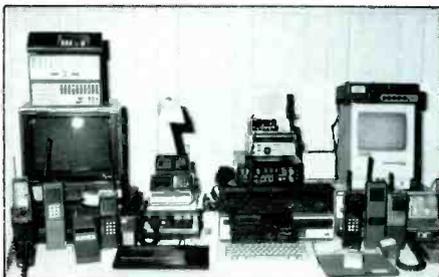
Best Equipped

Tom Abraham of Houston, Texas has combined all of his mobile equipment with his regular set-up to create the impressive array of listening equipment shown here.

Tom runs a television production company which is a licensed two-way operation under the Motion Picture Radio Service. He also holds a license in the General Mobile Radio Service.

The base station for Tom's production company uses a G.E. Custom MVP into a TPL 250-watt power amplifier and then into a Cushcraft-Signals eight-bay exposed dipole that is 40 feet long with 20 feet rising above the 80-foot Rohn 25G tower. Tom also runs his GMRS repeater from the same tower using a Motorola Micor 50-watt repeater.

The equipment shown here includes Regency MX5000 and M400 scanners, Uniden-Bearcat 210 scanner, Yaesu FRG-9600 scanner used with an Apple Macintosh computer, Motorola transceiver and 12-channel UHF portable. Tom also uses a Fujitsu 16-channel PLL receiver and Fujitsu UHF portable, G.E. UHF portable for use on mobile telephone frequencies and G.E. MPR VHF portable with mobile charger converter. A Dixicom two-channel VHF



SCAN PHOTO CONTEST WINNERS

miniportable, NEC transportable cellular telephone, Decatur "hunter" moving-stationary X-band radar, Marantz PMD 221 cassette recorder and Heathkit IM-2400 portable frequency counter round out the equipment list.

Do you make a lot of television programs about scanners, Tom?

Best Appearing

Mark Stampfl of Glendale, Wisconsin must have noticed that we have a weakness for wall maps, especially if they are festooned with pins and markers. The maps here are used for locating stations, units and fires in Milwaukee and Chicago.

Mark uses a Bearcat III to monitor local police departments and a Realistic Patrolman Pro-9 eight-channel set to listen to sheriff's departments in the area. A 20-channel Regency ACT-R206 is used as a backup unit for monitoring nearby fire de-

partments; a Regency R1040 10-channel monitors medical frequencies and a Regency MX3000 is used to monitor all fire frequencies within an 85-mile radius. Another MX3000 is used for low-band fire frequencies and medical channel mobile units. A six-channel VHF marine radio completes the radio shack.

Outside the shack, a Regency HX1000 is used for monitoring away from home. A Regency Z60 and Hygain eight-channel unit can also be employed if needed.

All of these radios (except the last three) are arranged on an old Motorola dispatch desk, along with a good supply of Popular Communications magazines and frequency guides. Mark writes that he bought the desk along with another desk and a lighted map board for one dollar at a sheriff's sale.

Mark's entire house is wired for extension speakers for his fire monitor and the MX3000 scanners. He reports that he just finished EMT school and is a paid-on-call firefighter.



Winners of the SCAN Photo Contest receive the BMI "NiteLogger" tape recorder activator. Plugged into a cassette recorder and a scanner, it provides a complete record of all communications with no "dead time" on the tape. To enter the photo contest, send a sharp back and white print to SCAN Photo Contest, P.O. Box 414, Western Springs, Illinois 60558. Don't forget to provide a complete description of the equipment in your photo and some information about your scanning interests.

ANTENNAS AND SIGNAL IMPROVING ACCESSORIES

Full Wavelength Horizontal Antenna

The two most common forms of a full wavelength horizontal antenna are the linear full wave, Fig. 1, and the full wave closed loop, Fig. 2. Basically, they are single band antennas that are popular among radio Hams because they do well and can be matched easily. For receiver use only, they offer great single SWB band reception. In addition, they are longwires and on other bands, results are similar to those of a conventional longwire antenna. On the band for which the linear full wave antenna is designed, it is fed one quarter wavelength from one end. Consequently, the other segment of the antenna has an electrical length of $3/4$ wavelengths. As a result, each side reflects a low impedance to the feed point and there is suitable matching to a 50-70 ohm coaxial line.

The practical dimensions for such an antenna are given in Table 1 and include the tropical bands 60 through 120 meters as well as the 31, 41 and 49 meter bands. Higher frequency versions of the antenna type are not recommended because of the decline of its pickup on some of the tropical bands. The antenna also does rather well on the BCB band, especially those cut for one of the tropical bands.

The feed point at the quarter wave position from one end often makes it possible to locate this site near the house. Consequently, there can be a short length of transmission line between the antenna and the radio room. It can be quite a practical antenna for many locations.

The conventional equal-sided vertical quad with its quad reflector has been long accepted as a top-performing antenna in radio Amateur and other radio communication services. It is too massive an antenna for low frequency operations. However, in recent years, the horizontal quad and other full wave configurations have become popular for low frequency use. They provide good results often at very low heights. Some of the variations are diamond, delta, triangle, rectangle and bow tie along with various degrees of slope.

The warm weather permits us to continue our testing of full wave antennas. In Table 1 you will also find a starter length for most of the full wave closed loops. Hold on to this table for future use because, from time to time, over the next year, we plan to detail a variety of full wavers for various BCB bands and other radio services.

A good starter is the very simple linear full wave antenna cut for the 31 meter band, Fig. 3. Overall length is about 100'. Notice

Table 1
Full Wave Antenna Dimensions

Band	$\lambda/4$	$3/4\lambda$	Full Wave
120	98'	302'	410'
90	71'	220'	298'
75	59'	184'	249'
60	48'	148'	201'
49	39'	121'	164'
41	32'6"	101'	137'
31	24'1"	75'	101'5"

these lengths have been taken directly from Table 1. The antenna was erected between two 20' PVC pipes with two 120°-spaced guy ropes to the rear of the point of antenna attachment, Fig. 3. A 20' length of coaxial cable was attached to the dipole-to-coax

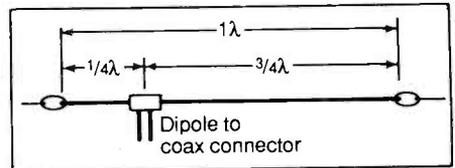


Figure 1: Full wave linear antenna.

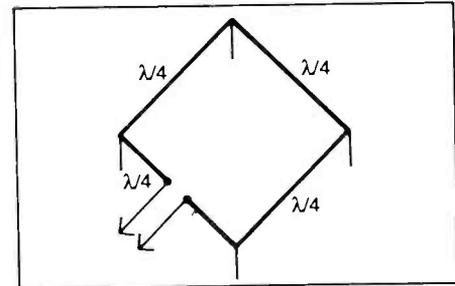


Figure 2: Full wave horizontal quad.

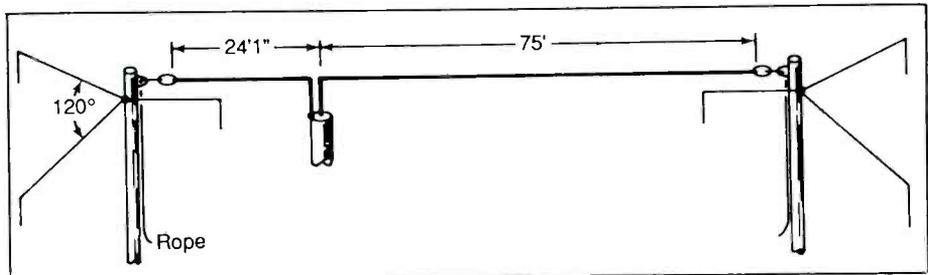


Figure 3: 31M full wave antenna.

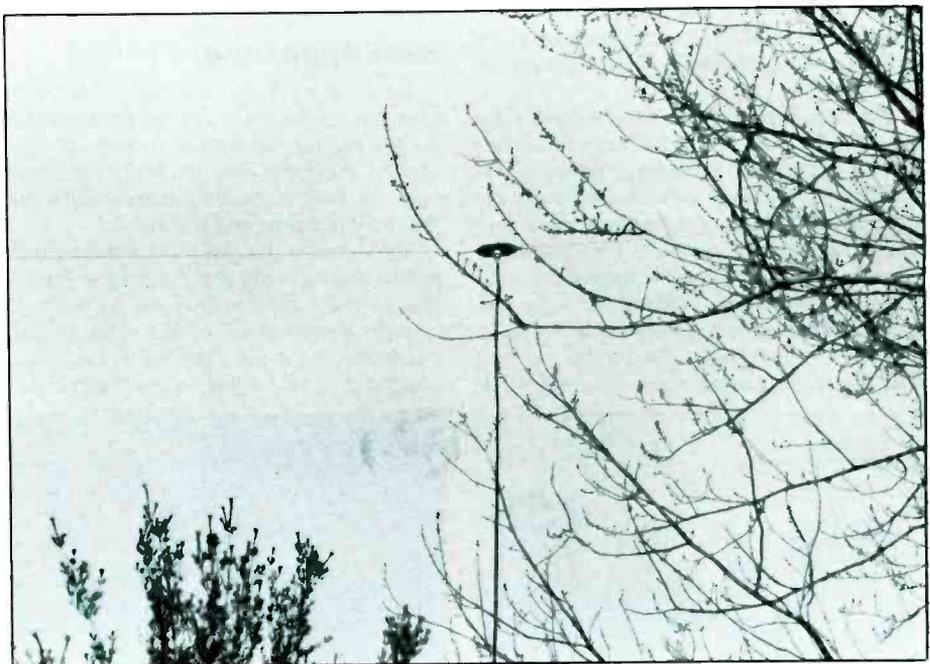


Figure 4: Feed point of full wave wire showing wire to coax connector.

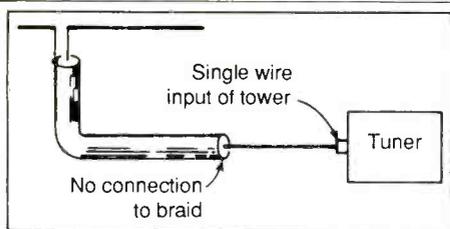


Figure 5: Changeover to single-wire feed.

connector, Fig. 4, so the resonant frequency could be checked easily with an antenna meter at ground level. If you want, you can attach lanyard ropes to the antenna ends which permits you to drop the antenna down if you would like to do some antenna trimming to position the resonant frequency at the band center.

The antenna did especially well on 31 meters and results were good on 41 and 49 meters. There was some decline on the tropical bands but not as drastic as that which occurs with the use of a 31 meter dipole. On the higher frequency bands, the performance varied up and down as one would expect with the use of an untuned longwire. On these higher frequencies, even the length of the transmission line influences band-by-band signal delivery to the receiver input. In general, the pickup was acceptable and the antenna offers that 31M boost along with better operation on the tropical bands than the usual SWB receiving antenna. Furthermore, you can improve tropical band results and even extend operations into the BCB and LW bands as well. Read the tips that follow.

Multi-Band Operating Tips

A 31 meter full wavelength antenna is relatively short compared to a wavelength on the lower frequency tropical bands. Two helpful tips for improving results on the tropical and BCB bands involve the use of a tuner and/or a single-wire feed system.

A tuner can be very helpful in boosting

some of the tropical band signals. Also, it can be of help in IDing some of the weaker broadcast band signals and on up into the LW spectrum.

A second tip is to fabricate a short jumper that permits you to connect the inner conductor of the coaxial line from the antenna to the single-wire input of your receiver or tuner, Fig. 5. When using this plan, be certain to erect your antenna in such a manner so that the inner conductor of the coaxial line is connected to the longer leg of the antenna as shown in Fig. 3. In making up the jumper connector, attach a banana plug to each end of a 3" or 4" conductor. One banana plug is inserted into the inner connector of a PL-258 coaxial coupler (Radio Shack 278-1369) that has already been screwed into the PL-259 plug at the end of the transmission line from the antenna, Fig. 6. The other banana plug is inserted into the inner conductor of the SO239 coaxial input receptacle of the tuner.

The above connection establishes an end-fed wire antenna in association with the longer leg of the full wave antenna. Also there is a low reactance feed from the short leg through the capacitive link supplied by the coaxial braid. In some respects the combination acts as a single-wire T antenna and tuner combination.

In summary, the single-wire feed capability was better than the direct connection of the coaxial line from the antenna to the receiver input on LW, BCB, 120, 60, 49 and 41 meters. On all of these bands except 41 meters a tuner provided additional help. The lower the frequency, the greater the improvement contributed by the tuner. On 41 meters and the bands higher in frequency the tuner was of no benefit with this antenna. Of course, on 31 meters the best results are obtained with the standard attachment of the line directly to the receiver and no tuner. The same applies to all bands higher in frequency. The single-wire feed and/or tuner are only appropriate for frequencies the same or lower than the 41 meter band.

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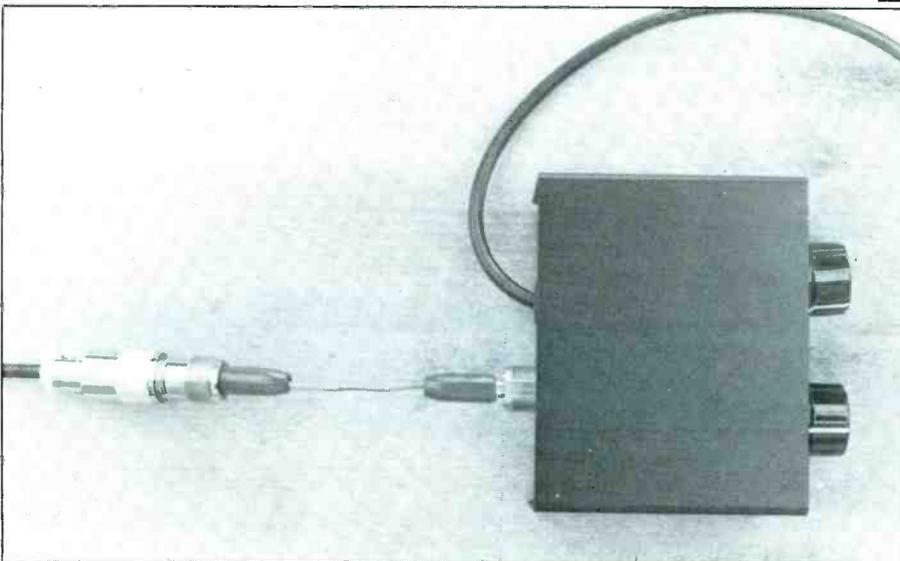


Figure 6: Changeover to single feed of Grove TUN-3 tuner.

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INSIDE THE WORLD OF SATELLITE COMMUNICATIONS

American Spy Satellites

If you are like most people, when you see the word "spy," you automatically think of the CIA. If, when you read the title of this column, you thought of the CIA, you were right again. For as long as the United States has been in the business of building and launching satellites, the CIA has been in the business of putting cameras on them. Many of those early satellite launches that carried animals into space were simply covers for their real missions of recovering spent film from CIA cameras.

In those early days, both the U.S. and U.S.S.R. had to retrieve the whole spacecraft to recover the film. Later, a system was developed by the U.S. in which the film was ejected from the spacecraft in a small capsule which would re-enter earth's atmosphere somewhere over the Pacific Ocean. A small parachute would deploy and the capsule would be intercepted in mid-air by a waiting C-119 aircraft. Today's high-tech spysats send still prints and real-time TV back to ground stations. New digital imaging equipment can provide extremely high resolution photos. It is believed that present U.S. spysats can identify an object as small as six inches across from an altitude of 150 miles.

As America's spy satellite business grew, the three main participants, the CIA, the Air Force and the National Security Agency (NSA), which is part of the Defense Department, began to have some problems. Each wanted to control the satellite missions. Each had its own priorities and targets. An acceptable compromise was reached with the formation of the National Reconnaissance Office (NRO). It's made up of members of the CIA, NSA and Air Force. It controls each mission and its targets. The Air Force provides the launch vehicle and some of the personnel required to operate the necessary ground stations. The CIA controls the spacecraft and distributes the information collected on each mission to various members of the intelligence community. The NSA oversees the military intelligence branches, which collect most of the Electronic Intelligence.

The NRO's satellite control facility is located in what is known as the Big Blue Cube in Sunnyvale, California. It's a nine-story block building without windows. It controls eleven distinct classes of satellites from eight ground stations. These stations are located in Guam, Hawaii, Seychelles Islands, England, New Hampshire and Vandenberg AFB.

The CIA handles all photo reconnais-

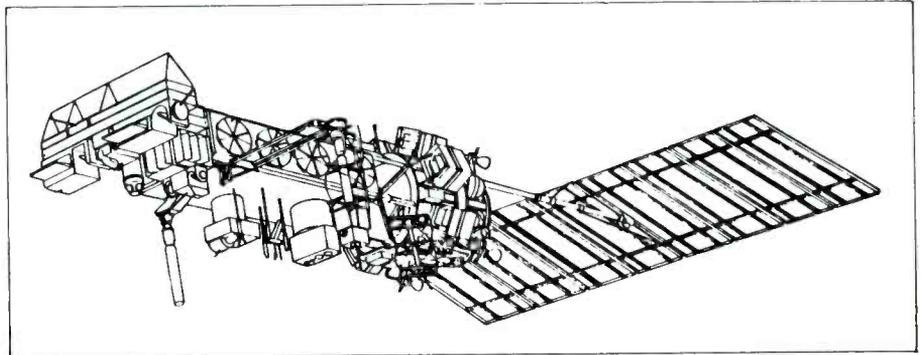


Figure 1: This NOAA weather satellite is the same RCA platform used by the KH-11 spy satellite. Only the onboard systems are different.

sance from spy satellites. The National Photographic Interpretation Center, located at the Washington Naval Yard, is responsible for analysis and distribution to other agencies.

The National Security Agency, the lesser known big brother of the CIA, is a much larger intelligence gathering organization and is responsible for both national and international surveillance. The NSA, with its thousands of employees and massive computer center, is responsible for ELINT (Electronic Intelligence) gathering and analysis. This includes intercepts of Signal Intelligence (SIGINT) and Radar Intelligence (RADINT), though the CIA also has a SIGINT section. ELINT intercepts are sent to Ft. Meade, Maryland for processing by the Defense Special Missile and Astronautics Center (DEFSMAC).

Most of today's spysats carry both photo recon equipment for the CIA and ELINT equipment for NSA. These satellites are capable of collecting electro-magnetic emissions in the radio, microwave, Gamma, X-

Ray and Infrared portions of the spectrum. Still photos, real-time TV and digital imaging capture information that is picked up by these spacecraft. Spysats often carry infrared sensors similar to those on the early warning satellites that can detect the launch of nuclear missiles.

Spacecraft

In 1971, the first high-tech spysat was launched. Known as Big Bird because of its size, it carried both photo and ELINT systems. It maintained an altitude of just over 100 miles and had a span of two years. It was the last satellite system to use film ejection capsules. It's also thought to be the first to use frequency hopping techniques for transmissions of intercepts to ground stations.

The next generation spysat was launched in 1973. Its name was Rhyolite. It was the first to carry a combination of SIGINT, microwave and infrared package. This series of spy satellites monitored Soviet ICBM telemetry and Soviet's manned space pro-

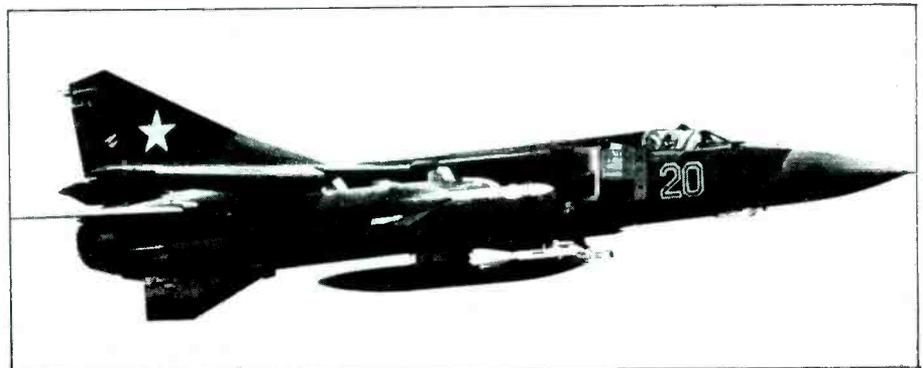
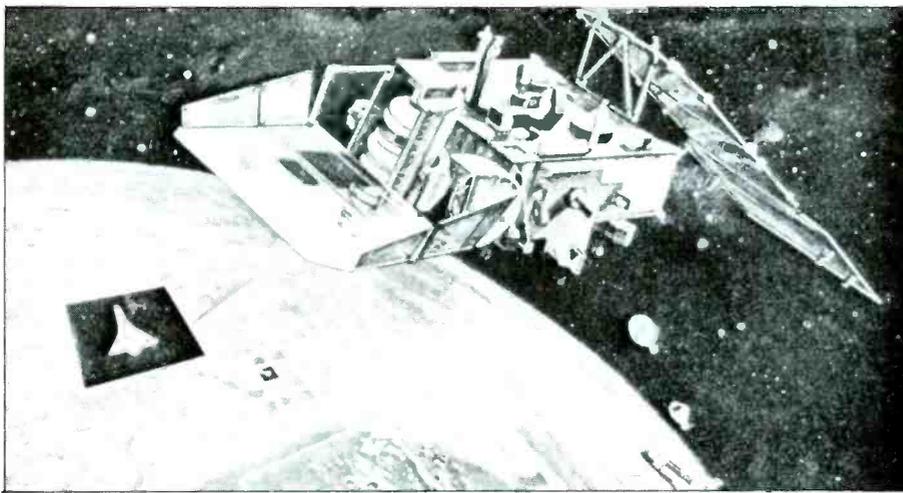


Figure 2: A new generation of air defense, all-weather interceptors, includes the highly capable FLOGGER G. (Courtesy USAF.)



Teal Ruby

gram. They were used to verify the SALT II arms agreement, more accurately, the Soviet's compliance with it.

One of our most valuable spysats is the KH-11. Built by RCA, it was first launched in 1976. It carries photo and ELINT equipment. The KH-11 uses the same RCA space platform as the NOAA Advanced Tiros-N weather satellite. Shown in Figure 1, the only difference in the satellites is in the systems that they carry into orbit. They are usually launched on a Titan 34 Air Force launch vehicle from Vandenberg AFB. As is the case with most spysats, the KH-11 uses a

polar orbit and maintains an altitude of 100 to 300 miles.

The Mission

Spying by satellite is not a passive endeavor. It is by its very nature, aggressive. In order to collect the most useful information, it is sometimes necessary to provoke the opposition into taking action. For this reason, spysat missions are often coordinated with reconnaissance or tactical air missions. Most often an SR-71, U-2, EC-130, EC-121 or an EC-47 aircraft is flown toward a target,

usually a restricted military installation, across a border or near naval exercises. This provokes the Soviets into scrambling jets, like the Flogger-G in Figure 2, aiming missiles and a host of other activities which require radio and radar communications. The waiting satellites simply absorb all this data for relay to an agency analyst. Other satellite targets include nuclear power plants, missile sites, radar installations and manufacturing plants.

These satellites can be maneuvered by ground stations. This allows them to keep the satellite over a particular target for several consecutive orbits. This method can provide a 15 to 40 minute view of a target every hour and a half for each satellite passing near the target.

It should be mentioned that there are also geo-stationary and deep space satellite systems in place. Speculation puts them at 40,000 and 70,000 miles out.

Ground targets are not the only things spysats take pictures of; they also take pictures of each other, and any other spacecraft or satellite anywhere near them. They try to intercept each other's radio transmissions to ground stations or to other spacecraft. For this reason, U.S. spysats use crosslinking. For example, information collected by a KH-11 satellite can be stored and later transmitted to a TDRS or DSCS III satellite in order to avoid detection. This process also simplifies the routing of intercepts to various ground stations.

The Next Generation

The U.S. Air Force is working on a new generation spy satellite. Its code name is Teal Ruby. It will have better photo resolution and infrared sensors than any previous satellite, including the KH-11. Of course, it will be our most expensive satellite. Teal Ruby is being developed by the Defense Advanced Research Project Agency (DARPA). They are in charge of all intelligence and space related research. It is they who have brought us the SDI program of which Teal Ruby may play a part. It will track aircraft and missiles.

There are, and always will be, satellites and systems operated by the spy agencies which we will never know anything about: that is as it should be, after all, these things are supposed to be secret. That leaves plenty of room for speculation. For example, it's possible that certain satellites, after reaching orbit, are capable of releasing several mini-satellites which are difficult to track. These mini-sats could collect intercepts and relay them back to the parent spacecraft or store the information for retransmission later. Whatever your imagination can come up with may not be too far out of line.

NASA

The Space Shuttle is, of course, our largest spy satellite. It carries cameras and ELINT equipment for the NSA and CIA. The government could ill afford to waste the reconnaissance opportunities that frequent



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shuttle launches provide. Most missions carry out passive electronic and photo reconnaissance. In addition, several missions have been overt spy missions for the CIA and Defense Department (NSA). STS 4, STS-6 and STS-51C launched classified satellites. These missions are conspicuous in that there was a lack of public information released regarding the flights. STS-8 and STS-51J may have carried classified payloads as well.

The Shuttle, the KH-11's and TDRS satellites are part of a complex web of cross-linked intercept platforms in space. This network could extend even further than we think. Who knows what type of electronic equipment was left on the Moon by all those Apollo missions?

Conclusions

There are two main divisions in the intelligence communities operations. The NSA coordinates military intelligence and has the manpower to operate a vast network of satellite and ground intercept stations. They, therefore, handle most of the ELINT. The CIA, on the other hand, is concerned with photo reconnaissance and HUMINT (Human Intelligence).

The military operates satellite systems which provide instant worldwide communications for voice and data. Small handheld units using burst techniques can transmit lengthy messages in micro-seconds to a waiting satellite for instant relay to tactical



headquarters or a center for ELINT analysis. The CIA uses similar handheld units for their field agents, though theirs will do a few more tricks and are disguised to look like common electronic calculators, among other things. These are generally used by agents in a position to pass valuable information who could be at high risk if they try to pass it any other way. A micro-burst of low-power RF can be difficult to locate and the waiting satellite provides instant communications. There are, as you may have already guessed, Soviet and American spy satellites in place to intercept just these kinds of low power transmissions. This certainly makes the game more interesting.

If you have any questions, comments or suggestions about *Satellite View* or space communications, drop me a line c/o POP'COMM, 76 N. Broadway, Hicksville, NY 11801. If you would like a personal response, be sure to include an SASE. See you next month. **PC**

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REVIEW OF NEW AND INTERESTING PRODUCTS



CB Radio Line

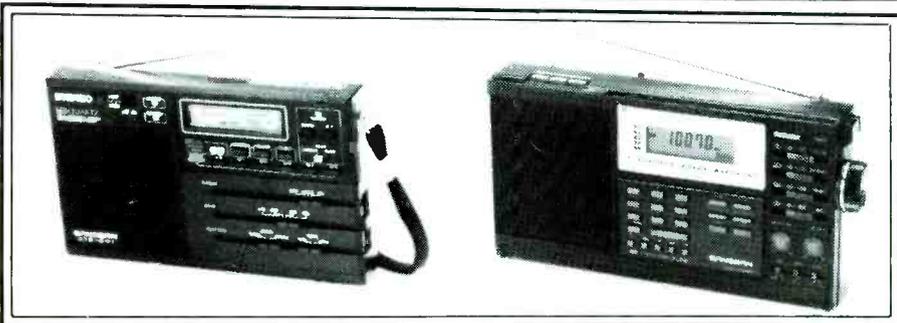
Fanon Courier recently announced its re-entry into the CB market.

Murray Trotiner, Director of Sales and Marketing, revealed that a full line of AM and single band CB transceivers are now available and are marketed under the "Courier" brand name. Courier CB radios have been on the market since the mid-sixties and have always been known for their high quality design and excellent performance.

The first model available is the Courier Classic IV, a sleek, deluxe AM CB mobile transceiver, designed for those who demand optimum performance and reliability.

Its Phase Lock Loop circuitry assures precision control of 40 channel frequencies and maximum power output with exceptional high-quality voice reproduction. Its many state-of-the-art features include a digital 40-channel LED indicator, and a large "S" meter for easy reading of Receive and RF Signal Strength. Convenience features are Channel 9 and 19 priority switches, squelch control, automatic noise limiter and P.A. capability. Cabinet colors are black with white appointments.

Suggested price is \$74.95. For more info contact Fanon Courier, 14281 Chambers Rd., Tustin, CA 92680 or circle number 103 on the reader service card.



Blaze Into NY

Blaze International is pleased to announce the arrival of Sangean America, Inc. to the United States shortwave market.

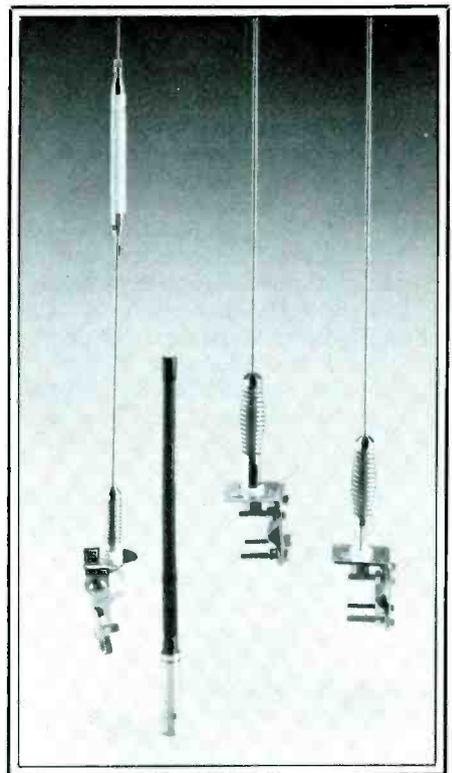
In the past, Sangean was imported into our country as OEM products only. Now Sangean has established Sangean America, Inc. in which all products will be fully covered and backed by manufacturer's U.S. warranty.

Blaze International will be the exclusive district representative of Sangean America, Inc. As you know, there has been a gap in the shortwave market for a low-cost, but

high-quality receiver. Sangean now expects to fill this gap. Their products range from a portable shortwave receiver which incorporates the ability to receive in lower and upper tuning, and many other features.

Sangean America features this full range of shortwave receivers so that they may fill all of the shortwave listener's needs from the Amateur Radio operator to the shortwave traveling listener.

Blaze International is located at 65 Oser Ave., Hauppauge, NY 11788. The executive District Manager is John Azzara, N2GYN. For more information, contact Blaze International directly.



New CB Antennas

Midland International has announced the addition of three specially designed CB antennas to its full line of portable, mobile, and base station CB radios and accessories.

Midland Model 18-245 is a new, high-performance, co-phased twin antenna that delivers extra range. Tough fiberglass radiators and deluxe aluminum mirror mounts make this antenna ideally suited for trucks and RVs. A pre-wired cable harness and connector are included. Suggested retail is \$49.95.

Model 18-275 is Midland's new gutter/luggage rack antenna that clamps firmly and quickly on vehicles with rain gutters or luggage rails. It includes a pre-wired cable and connector, and has a suggested retail price of \$24.95.

Midland's new "rubber duck" flexible antenna, Model 18-253, is intended for use with Midland portable Models 75-710B, 764B, and 790. The rubber duck mounts on the existing telescope antenna base and provides excellent performance, safety, and convenience. Suggested retail is \$19.95.

For more info on Midland's new CB antennas, contact Midland International, Consumer Products Division, 1690 N. Topping, Kansas City, MO 64120, or circle reader service card number 102.

PIRATES DEN

BY EDWARD TEACH

FOCUS ON FREE RADIO BROADCASTING

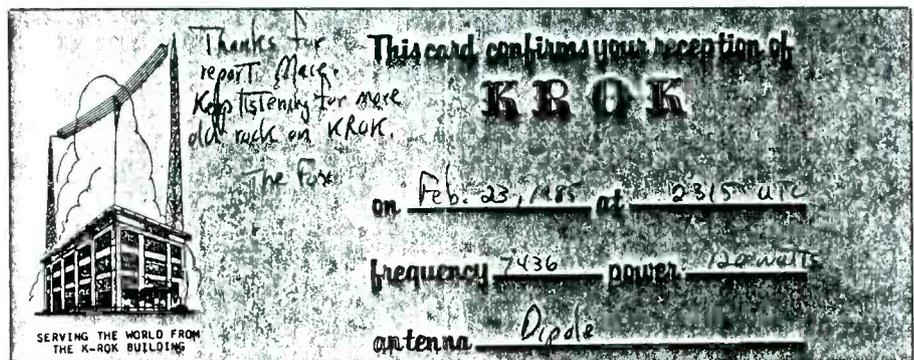
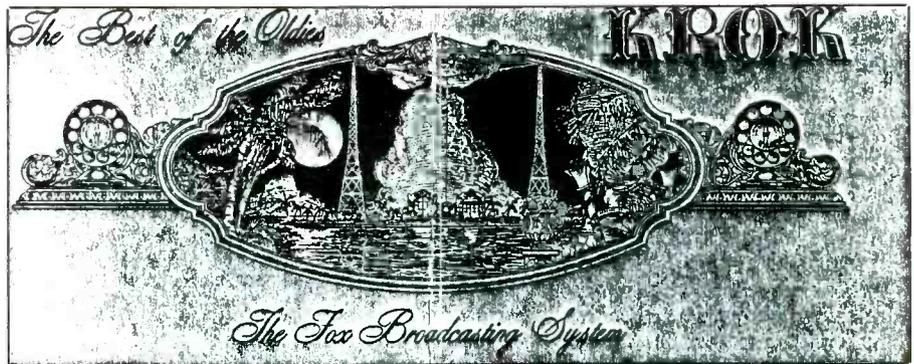
In last month's column there was some conflicting data as to the actual dial positions of the European mediumwave pirates **Laser 558** and **Radio Caroline**. This month there are letters from readers in Europe that clear things up. Vincent R. Havrilko, USAFE in England, notes that Laser 558 now uses the slogan "Laser Hot Hits" and is operating on 576 kHz. Radio Caroline is now on 558. But, Paul Herzog of London sends a clipping from the London entertainment Magazine *Time Out* which lists Caroline on 558 with hits and pop/rock classics but also indicates a Caroline "overdrive" format running rock and "psychedelic" programming from 9:30 p.m. to 4 a.m. local time on 963 kHz—where the main Caroline service used to be.

Ary Boender of the Netherlands sent in an extensive list of offshore radio and TV stations active between 1958 and 1987. Sorry, it is too long to include here. Regarding **Stereo 531**, mentioned in last December's column, Ary says the project is now run by a new group and that the station was expected to get on the air sometime in late winter or early spring. The station would operate on 801 kHz off the Dutch coast.

Vincent Havrilko sends a list of his European pirate logs on shortwave, mostly active only on Sunday mornings. He hears **Radio Sounds International** at 1050 UTC on 6260.5; **West Side Radio** (Ireland) on 6280 at 1105; 6310 has **Radio Nova International** at 1115. **Radio Delmare** in Belgium is on 6206.5 at 0850. Vince notes that this one is "by far the strongest in Europe" and ought to be loggable in the U.S. at times. Careful though, as the station carries a lot of other pirate relays, such as **Pogo 104** and **Free Radio Service Holland**. Also heard by Vince was **The Voice of Gurnsey** on board the *MV Sarnea* off the Channel Islands on 6260.6 at 0945. **Radio Dublin International**, Ireland was heard on 6909.8 at 0950 and **Radio Rainbow International** at 1102 on 6240. Looking forward to your regular reports, Vincent.

Mark Huff in Ohio makes note of the **Radio Free Magic** mentioned in the January column. He says he finds **WFMG** operating on 101.3 FM and using the slogan "Magic 101" so Mark thinks it's possible the pirate was simply rebroadcasting this. Could be. There was no indication as to the location of Radio Free Magic.

The operator of **Radio EXP**, reported by Mark Cooper in the February column, has written to say that it's possible Mark did hear the station as there was an "unofficial" broadcast on or about that date. Radio EXP



A QSL from "Oldies" format pirate KROK. Courtesy Mace Twiggs.

uses a Lafayette Phono broadcaster with a "whopping" 100 mW of power, perhaps even less. Reception reports for Radio EXP should go to Box 5074, Hilo, HI and should include the usual three first-class stamps.

If you could see the picture of the studio which accompanied the New York *Daily News* story, you would swear **WIBS-FM** was a legitimate station. Professional control board, built-in turntables, record shelves and so on. WIBS, owned by Gary Laraqe, a Haitian, specialized in serving the Caribbean community from its storefront location on Snyder Avenue in Brooklyn. Programming even included the translating into French of the New York papers, which were then read on the air. WIBS caused interference to Westport's **WEBE** (107.9). The station had a staff of some 20 volunteers and had already been closed down at least once. The station and the FCC are in disagreement over the amount of power that can be used before a broadcast license is required.

Don Snider in Maryland heard a station identifying as **Utopia Radio** on 7410 lower sideband on 4 January at 0100. Announcements said that regular broadcasts would begin soon.

John Dresser in California heard local Omaha, Nebraska pirate **KROK** on 107.9

while visiting there. The KROK ID's included the slogan "Rock 108." John says programs included out-of-date commercials for nationally advertised brands.

Minnesota's Mace Twiggs checks in with several pirate logs. He heard the **Voice of Communism** on 7490 at 2303 with a broadcast that had announcers "in Moscow" and "New York." Also featured a game show and Starwars interval signal.

KOLD was heard by Mace on 1630 kHz at 0642 with heavy QRM from a beacon station. Two disc jockeys played Fifties and Sixties music and there were several station ID's. No indication as to where to send reports, however.

Radio Northcoast International with Captain Willy was found at 2345 on 7447. Included was a special announcement about the station now using the Hilo address as they had had problems with the one previously used. They request three stamps with reports.

KNBS on 7445 was heard at 2303 giving the Battle Creek, MI address. Rock music, IDs for "Cannibus 41" with Phil Muzik as the DJ. Some nice logs there, Mace. Sorry I had to drop out some of the info due to illegibility.

Steven Sachs of Illinois took his first pirate logging in the form of **KROK** on 1622 kHz at 0415 on 1 March. The station played

oldies from the Fifties and Sixties with ID's such as "The real oldies on KROK..." and "The best of the oldies, KROK..." with the Hilo, HI address following each time.

Other recent pirate activity includes **Zepelin Radio Worldwide** on 7434, **Radio Deadman** on 7438, **WHOT** on 1627, **WDX** on 1620 and **KOLD** on 1630.

The kiwi is a wingless bird that can't fly. Give you two free guesses at what that has in common with a California pirate broadcaster who selected those same letters for the callsign of his station. Yup, station **KIWI**, late of Point Loma, got its wings clipped by the FCC. The FCC said that KIWI, which operated on 7473 kHz and used the slogan "Voice of The Pacific Southwest," was illegally operated in the early part of last year. The KIWI operator, the FCC claimed, was Jerry Gastil, holder of Amateur Extra Class license K6DYD. He was fined \$750 for the KIWI operation. Previously, the FCC had fined him \$50 for operating a San Diego repeater minus proper ID.

Please send in whatever pirate broadcast news you have, whether as a pirate station DX'er or even as a station operator. Station plans, formats, ID's, newsclippings, copies of QSL's, photos, skeds, freqs, startups, shut-downs, FCC busts, and loggings—they're all welcome here at the Pirate's Den. Thanks much for your letters and information. We'll be steering the old pirate schooner into this fair harbor again next month. See you then, me hearties! **PC**

Cordless Phone Monitor

Simple instructions show how to modify cheap battery operated AM radio to receive entire 1.7 Mhz cordless phone band. No parts needed, only a screwdriver. Also instructions how to monitor the new 46/49 Mhz frequencies. Only \$5.95 complete. **ADVANTAGE, INC.**, BOX 1086, EDGEWATER, FL 32032



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The FAX Machine Revolution

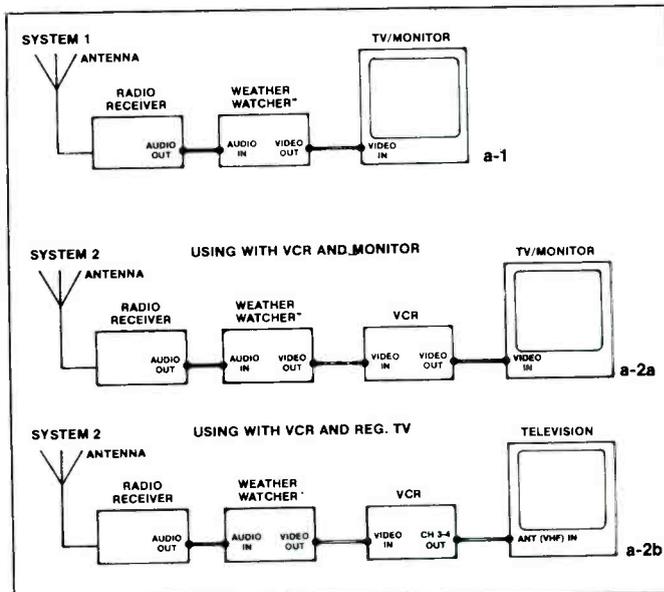
The ability to receive marine weather charts and radio facsimile picture broadcasts from worldwide news agencies was once available only to operators possessing very expensive radio facsimile receiving units. It was the marine electronics industry that first introduced low-cost, roller-drum radio facsimile receiving units. These sets hit the market at about \$5,000, and were quickly snapped up by owners of large yachts who wanted the latest in weather receiving equipment. One of the first companies to produce equipment that dipped below \$4,000 was Alden Electronics, Westborough, MA. This company still produces some of the most sophisticated weather facsimile equipment available. They also have weather FAX kits that are both fun and educational to construct and use.

These marine type weather facsimile receivers are developed for high frequency reception only. They are not capable of tuning in the 136 MHz polar-orbiting satellite signals, nor are they capable of tuning in the geostationary weather satellites stationed above the equator. Their reception band is specifically the high frequency region where weather facsimile transmissions take place, between 3 MHz and 30 MHz.

These weather facsimile transmissions are broadcast by more than 50 stations located in more than 20 countries that are located in six geographic areas of the world: Africa, Asia, Europe, North America, South America, and Southwest Pacific. These stations broadcast on shortwave frequencies between 3 and 30 MHz which allows for weather facsimile reception thousands of miles away from the transmitter. You simply tune into the specific station that broadcasts weather information pertaining to that specific area of interest.

Each broadcast station has its own format of area coverage and type of weather information transmitted. However, almost all stations offer the following eight weather maps:

- Satellite imagery with continent/state boundary overlays
- Surface weather and pressure system analysis
- Surface weather prognosis for 24 and 36 hours
- Extended surface prognosis up to 5 days
- Ocean wave analysis, including height and direction of waves



Different ways of hooking up the Weather Watcher Model 45.

- Ocean wave prognosis
- Iceberg analysis
- Water temperature zones

On the Pacific Coast, weather facsimile transmitting stations would probably use water temperature charts as opposed to icebergs. On the Atlantic Coast, you may get both.

In the United States, the handwritten weather charts are prepared by the Navy or the National Weather Service. The Navy charts are very complex, and may require a trained weather watcher to take full advantage of all of the information detailed out in the charts. The National Weather Service tends to generalize on their



Two FAX installations aboard two different ships.



You'll need a good communications receiver for FAX reception.

charts and make them as readable as possible for mariners who may not have an extensive background in weather science.

The stations that actually transmit the information are usually government supported—Coast Guard, Air Force, or Navy. We have recently seen several private organizations coming on the air with weather facsimile broadcasts, and whether they are privately operated or government subsidized, these high-powered transmissions are so strong that no fancy antenna or ground system is really

necessary. Try several different bands during the simultaneous transmission of the weather facsimile information; the band that yields the best signal strength is the one to keep tuned in to.

Weather Facsimile Equipment

The following organizations offer weather facsimile equipment to marine electronic dealers:

Manufacturer	Type of Paper	Suggested Retail Price
Alden Electronics Westborough, MA	Electro-sensitive and thermal	\$2,600-\$3,700
Furuno S. San Francisco, CA	Aluminized	\$2,000-\$6,000
Koden Norwell, MA	Aluminized	\$3,300
Nagrafax	Aluminized	\$1,500-\$4,000
Raytheon	Thermal	\$3,500
Stephens Eng. (Latitude) Mountlake Terrace, WA	Computer paper	\$850-\$3,000
Simrad-Taiyo Seattle, WA	Thermal	\$4,000
Sea-Lutions San Diego, CA	Video TV or computer	\$1,000
Southern Marine Research (SMR) Miami, FL	Wet	\$2,000-\$4,000
Universal Radio Reynoldsberg, Ohio	Computer	\$800

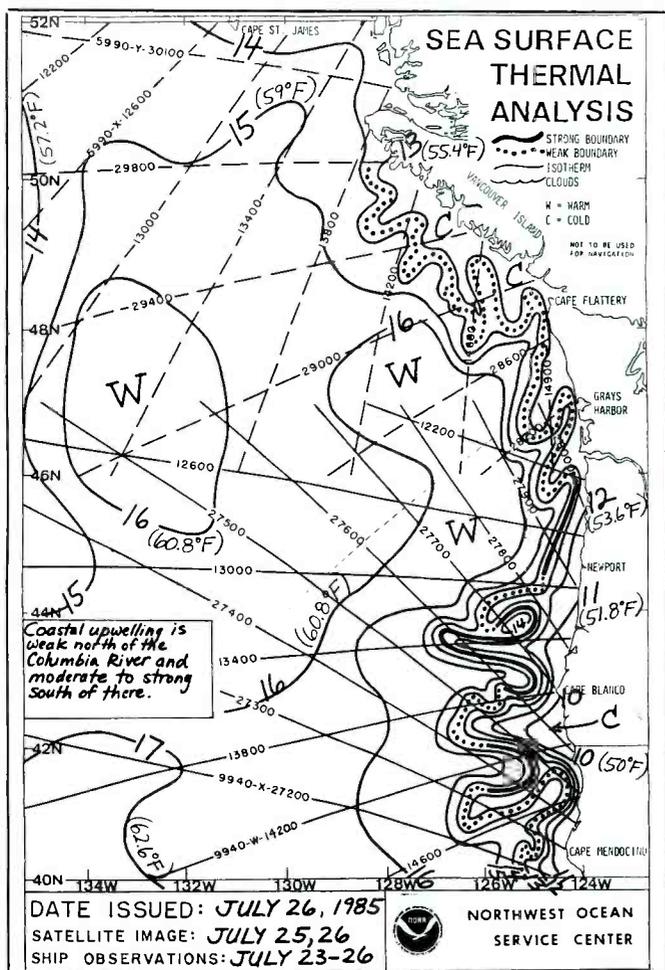
These manufacturers have dramatically changed their product lines in the last five years. The departure from damp paper to thermal and aluminized paper has dramatically increased the detail you will obtain in the weather charts. Now it's a battle between the manufacturers to see who can come up with the greatest number of shades of gray for best satellite imagery presentation.

Another breakthrough between manufacturers has been the race to see who can sell a complete weather facsimile recorder with built-in receiver at the lowest price to you. Furuno seems to be ahead here. But is a low price the big thing with you? Maybe not. Alden, one of the pioneers in weather facsimile equipment, has been marketing their Marine FAX VI quite successfully over the past few years. This set has dazzled the competition with a phenomenal programmable receiver with programmable memories that tell the machine when to turn on and off, what frequency, and to automatically select the best band for weather reception when radio conditions change. Its liquid crystal display even prompts the customer into better understanding all its features.

Alden also offers the amateur weather watcher a weather facsimile kit that they can put together in a few weekends on the workbench—and the retail price is around \$1,000.

Probably the biggest marine electronics industry shakers are two new companies that have introduced a new concept in weather facsimile equipment, and these companies both came out with their products at about the same time. Latitude (Madison, Wisconsin) introduced the industry's first digital weather facsimile decoder system that works with any type of quality single sideband shortwave receiver. The Latitude decoder takes the audio output of the shortwave receiver, processes it, and then commands an ink-jet printer to produce the weather charts. A Kodak printer is available for 12-volt operation, so it was a natural for shipboard use. Several models of Latitude decoders are available—Model 1000 for just weather facsimile charts and Model 2000 that adds start and stop time programmability as well as shortwave radio teleprinter reception and a memory full of radio frequencies for different types of weather FAX broadcasts. Their Model 3000 contains a complete shortwave receiver that was custom designed by Yaesu, the shortwave and Amateur Radio folks in California.

Skeptics doubted the resolution that this new type of computer-printer decoder might yield, but they were certainly surprised with a resolution of 240 dots per inch on 8-inch or 13-inch paper (depending on the printer). Latitude achieved eight levels of gray for



This FAX map was recorded on shortwave.

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Weather FAX (left) is ideal for Tropo checking and tracking.

crisp, clear satellite pictures, plus a superb signal enhancement digital processor that cancels out "snow" on noisy reception.

This Latitude product was such an overwhelming success, thanks to Scott Stewart, its designer, that the combination organization Stephens Engineering/DataMarine bought up their assets and other proprietary intellectual properties and took the product on for themselves. The Latitude unit is now called Sea FAX.

Another approach to giving you all of the weather was the industry's first weather facsimile decoder that didn't use any paper at all! The Sea-Lutions Products, Inc.'s "Weather Watcher" Model 45 ties in with any shortwave receiver and decodes the weather chart information onto any television set or computer video monitor. It will store up to four charts in memory, and with a computer monitor the resolution is very good. "We believe very strongly in the 'paperless notion' that we have brought to the facsimile market. We want to make this feature the central hub of a machine that is capable of satisfying the mariners' every need, without being a financial burden to the user in always having to buy more paper," comments Howard Bassuk, Vice President of Sea-Lutions.

If you absolutely must have a paper readout, you might consider the new Mitsubishi video printer that converts video signals to paper (to the tune of \$426). Also, for several years, Universal Shortwave Radio, Reynoldsburg, Ohio, has offered the shortwave enthusiast weather facsimile guides as well as their Model DES-M-800 facsimile converter that works with any shortwave set and with a high-quality printer. The only reason this was not immediately accepted by the marine industry (in my opinion) was that it didn't have a nautical name nor was it painted white! Also, this particular converter was so sophisticated it took some degree of operator skill to get everything tuned in just right.

Will these new computerized weather facsimile converters finally cause traditional roller-drum machines to throw in the towel? Absolutely not. When you compare the detail and shades of gray on a roller-drum machine to weather pictures printed from a computerized machine with a regular printer, there is absolutely no comparison. The traditional roller-drum weather FAX receiver will always continue to offer the highest degree of sharpness and detail for the weather watcher that wants a printout just like those of the Weather Bureau. However, if you presently own a good shortwave receiver with single sideband capability, and if you also own a high-resolution printer, it would make good sense to investigate the sets from Universal Radio, the Sea FAX, and the Sea-Lutions products that allow any shortwave set to pull weather facsimile pictures on a computer printer with surprising clarity. These same converters may also give you RTTY readout, so make the plunge and see how this equipment might work for your emergency communications stations!

PC

NEW AND EXCITING TELEPHONE TECHNOLOGY

Who's That Ringing On My Phone?

Most of the time we know who we are calling when we sit there listening to the ringing tone on a phone handset. The called party awakened from a deep sleep by a ringing phone has no idea who is at the other end. Until now, there has only been one way to find out who is calling—by picking up the phone, of course. In the future things will change, but for now someone or something has to pick up the phone and say hello to find out who or what is calling.

Ever since there have been phones, there has been the pompous butler or his equivalent. We have all had to suffer the stiff voice banging a phone down or punching it into hold while inquiries are made as to whether the called party is "in." The butler or secretary forms a buffer to "screen" calls. They ask you who you are; they ask "who you are with" and then want to know what the call is about. If you are suitable material for the "called party," you are connected. You must then, once again, go through the whole thing about who you are. All this is a massive waste of time and manpower. It fools no one and achieves little. The only thing that this boring rigmarole does besides annoy the caller is inform the called party as to who is calling. If you are hiding from creditors or angry spouses, this "screening" can be useful.

The electronic call screener and message taker is also known as the phone answering machine. No small businessperson or social single should be without a phone answering machine, or Telephone Answering Device (TAD) in phone company parlance. Besides being able to take messages when there is no one in the office or at home, it can also be used to screen calls. Most machines have a monitor by which the caller's message can be heard while it is being recorded. If the machine owner wants to talk to the caller, he or she picks up the phone. Older model answering machines have to be switched off if the call is to be responded to. Modern machines have a sense circuit that switches the machine off automatically if a phone is taken off hook.

There are systems out there that will screen calls automatically. What they do is pick up a ringing line and announce that the line is restricted and then invite the caller to punch in a three digit code with a Touch-Tone phone. If the number is correct, a buzzer will sound to announce to the called party that an "approved" call has come in. As yet, these devices have not sold as well as

would be expected.

The oldest and simplest way of keeping down the number of unwanted calls is to have an unlisted number. It will screen out some unwanted callers, but not those that already have the number or are soliciting by sequentially dialing every number in a group. One of the disadvantages of being unlisted is that the phone company charges for not storing the number on computer lists or printing it in directories. Another disadvantage is that friends who lose your number or want to call from a phone booth without their phone book will not be able to locate the number.

The solution to the above problems is to list under an alias or "Nom de Guerre." You may be listed as whatever you want. A nickname that friends and relations know you by can be used as a last name with your real first name. So only those in-the-know would have an inkling as to who the real "Charlie Pinkie" is. You may also, for no extra charge, have your name listed with no address. Famous names from history, literature and films can also be used—you could be the first Errol Flynn in your town. Minnie Mouse could be living on your street.

All of the systems of call screening mentioned so far involve having to pick up the phone somehow. Some of them, such as the butler, are surprisingly low-tech. What if there was a way of discovering who was calling while the phone was still ringing? What if there was a way to screen out unwanted callers without having to pick up?

Yes, such things are possible, and your phone company can give them to you. Using the spare computing power of a modern exchange, all sorts of things are possible. At present, these Custom Calling type enhancements are being tested in some Bell Operating Company areas. They're called LASS, Local Area Signalling Service.

In the future, more and more subscribers will be able to have LASS features, just as Touch-Tone and Custom Calling have become more available as local telephone exchanges are upgraded. Besides a display showing the number of the calling party, this service will also allow a subscriber to program in numbers from which he does not want to hear.

Most subscribers have little trouble thinking of people they don't want calls from. LASS subscribers don't even have to know the number of the call from which they don't want to hear again. All they have to do is

punch in a code after an unwanted call and that number is now *persona non grata*.

When the trial first started, an announcement came on the line saying that the caller had been denied. Obviously, this caused some unwanted friction; "You don't want your mother's calls? There must be some mistake." The service is now more diplomatic—the caller hears ringing and the called party's phone stays silent.

For the impatient caller, trying to connect to a windbag that does not have the Call Waiting Custom Calling feature can be frustrating. The LASS subscriber has a new weapon . . . Camp-on. This is a feature that can also be useful for radio call-in contests or frantic rock concert ticket purchasers. After getting a busy signal, the subscriber punches in a code and hangs up. The LASS system will check the called number every 40 seconds for 30 minutes. If during the half-hour the called line becomes free, LASS will ring the subscribers line. When the line is picked up, the original dialed number will start ringing. Should the subscriber fail to pick up when called back, the LASS system will try again in four minutes and do it again for half and hour if the phone is not picked up. As an added bonus, a subscriber can have several calls camped-on at once.

If a LASS subscriber misses a call by being out in the yard or in the shower, by picking up the phone and punching in a code, the last unanswered caller will be called back. This feature seriously threatens the answering machine market, probably to the relief of all those timid callers that hate talking to machines.

Custom Calling fans should be happy with a couple of enhancements to current features. The first is selective Call Forwarding. For example if a roommate if at work, calls from friends of that roommate can be forwarded to the work number. All other calls would be allowed through.

The other enhancement is selective Call Waiting. Only calls from pre-selected numbers will be allowed through. All other callers will get a busy signal if the LASS subscriber's phone is in use.

With LASS, answering the phone will never be the same again. The old "Hello?" will be replaced with "Hello Mom, sorry I haven't called." Hopefully, unwanted and obscene calls will become a thing of the past. As a final weapon, the lucky LASS subscriber can call back pushy salespeople and give them some of their own medicine. **PC**

LISTENING POST

BY GERRY L. DEXTER

WHAT'S HAPPENING: INTERNATIONAL SHORTWAVE BROADCASTING BANDS

They are moments of magic for those of us who DX the shortwave broadcasting bands. Fleeting times of high excitement when urgent phone calls flash across the continent, even the oceans, to pass along the news that a new country is on the air—completely unexpected surprises. Such times are as rare as they are exciting. We can recall the Galapagos Islands in 1970 and AFAN in Antarctica in 1974 and really nothing since.

Until now! In 1987 the telephone wires sizzle again with the news of another totally unexpected new country: The Marshall Islands. WSZO—Radio Marshalls—at Majuro, was first spotted by Australian DX'ers who alerted their U.S. contacts and the fun was on. WSZO is using a 10-kW transmitter so its strength is about equal to ABC-Brisbane on 4920, making it well and widely heard on its 4940 frequency. (6070 is used during our daytimes.)

The station is reported from as early as 0530 to as late as 1000, the time it usually leaves 4940. Programs are in Marshallese and English. Reception reports go to WSZO, Department of Interior and Outer Island Affairs, Majuro, Marshall Islands 96950. The Marshalls are in the process of becoming an independent republic after years of the U.S. administering the area under a United Nations trusteeship. At present, it is a case of a little of each situation since, for example, a U.S. zip code is still in use and a 22-cent stamp on your letter will get your report to the station via airmail. We hope to have more information about WSZO in a future column.

Also in the Pacific, the latest schedule for Adventist World Radio's KSDA on Guam



Mark Jackson Ryan in Sydney, Australia uses a Kenwood R600 as the centerpiece of his listening.



Here's well-known European DXpert, Peter Pompe of Belgium.

is: 0000-0500 on 17840, 0200-0300 on 17855, 0300-0800 on 21610, 0500-0900 on 17785, 0800-1600 on 9465, 1100-1200 on 15440, 1100-1500 on 7365, 1300-1400 on 11920, 1400-1600 on 9830, 1500-1600 on 7240, 1600-1700 on 7290, 2000-2300 on 7160, 2000-2100 on 5995, 2100-0000 on 9870 and 2300-0200 on 15300. Most of the programming is in various Asian languages but there are English station ID's. Reports go to P.O. Box 7500, Agat, Guam.

Herald Broadcasting's WCSM, the station of the *Christian Science Monitor* began testing its 500-kW transmitter; should be in regular use now. See last month's column for the schedule.

Some months ago there were reports that HCJB had plans to eventually move its operation to Hawaii due to what was seen as increasing political instability in Ecuador. HCJB's *Andex International* publication states that, while Hawaii is under consideration, there are no plans to move from Ecua-

dor. Hawaii is being studied as part of a coordinated effort by a number of large international religious broadcasters to increase their worldwide coverage.

David L. Gregory, manager and chief engineer of Adventist World Radio's Radio Lira in Costa Rica says the station is now operating on its regular schedule, though the transmitter is not yet at its full 5 kW. A second shortwave transmitter is still under construction but should be ready to test sometime in May between 11.800 and 12.000 (the outlet is listed on 11.870). Slow response to reception reports is due to a small staff and limited time and is not a case of disinterest in QSL'ing. (Gregory is also responsible for AWR's Union Radio in Guatemala.) Reports for Radio Lira go to Apartado 1177, 4050 Alajuela, Costa Rica. The station is on 15460 from 1600-0000.

If you haven't heard Aussie time station VNG in Lyndhurst (4500, 7500 and 12000) better hurry. Australia's Telecom intends to close it this October. There's a slight chance



Helio Soares in Sao Paulo, Brazil owns these classics—a National NC-183 (left) and Hallicrafters SX-62.

Current Transmission Schedule (effective as from March 29th 1987)

The guide below is arranged to cover one whole day of broadcasting. The 0530 UTC broadcast is, therefore, put at the end of the list since although the day has changed in The Netherlands, it is still the previous evening on the West Coast of North America. Confusing perhaps, but if you look at a globe you'll see the reason more clearly.

Time UTC	Main Area Served	Frequencies (kHz)	Length mins
0400	Middle East/E. Africa	F9895, F7175	25
0630	West Africa	F11930, F9895	25
0730	New Zealand	B9630, B9715	55
0830	New Zealand	B9630	25
0830	S.E. Asia	M21485, M17575	55
1030	Australia/Caribbean	B9650, B6020	55
1130	Middle East/Asia	F15560, M21480, M17575	55
1130	Europe	F17605, F9715, F5955	55
1430	S.W. Asia	M17575, F15560, F13770*, M11735, F5955	55
1630	Southern/East Africa	M9515, M6020	55
1830	South/Central Africa	B21685, B17605, M9540, M6020	55
1830	Europe	F6020 (Parallel to African Suce)	55
2030	West Africa	F11740, F9895, M9715, M9540	55
0230	Eastern N. America	B9590, F9895, B6165, F6020	55
0530	Western N. America	B9715, B6165	55

Please note: The letters before each frequency correspond to F - Flevoland, The Netherlands, B - Bonaire Relay Station, Caribbean, M - Madagascar, Africa.

A look at Radio Netherlands' transmission schedule shows which broadcasts come from where. Letters next to the frequencies indicate Flevoland in the Netherlands or relay sites in Madagascar and Bonaire, Netherlands Antilles.

some other organization could take over the service but don't hold your breath, or say you weren't warned.

MAIL CALL begins with a warm welcome to Helio Soares in Sao Paulo, Brazil who's a regular reader and who uses two classic receivers (see photos)—a National NC-183 and a Hallicrafters SX-62. Always wanted an SX-62 in our shack, Helio. In answer to your question, Radio Medi Un in Morocco uses 9575.

Dave Kammler is a radioman for the U.S. Navy and is stationed in Iceland. Dave says there are lots of people on the base who turn to shortwave as an escape from the programming of the AFRTS outlet on the base. Dave has an ICOM R71 and a Sony ICF-7600D.

John Miller in Thomasville, GA wants to know the scoop on the availability of back issues of POP'COMM. Not our department though most back issues are available. You should check with POP'COMM HQ in Hicksville, NY for prices and other info, or watch for our back issue ads.

Vincent A. Geraci of Waterbury, CT is a returnee to the shortwave bands and uses an Ambassador 2020 receiver. Vincent has been listening for 20 years on and off, has QSL'd over 130 countries and says he hopes to be a regular contributor now. Hope so! Hope your return to listening will be permanent this time.

Jim Ross, KA7URR, in Vancouver, WA has a new Sony 2010 and also hopes to contribute regularly. Jim wonders about his

reception of Radio Japan on 17820, a frequency Jim says is only listed for Radio Canada. Well, no one has exclusive use of a broadcast frequency, Jim, but in this case you probably had the RCI Sackville transmitters relaying Radio Japan.

Albert Adler in Lakewood, NJ says he finally got up the nerve to write in. He's using what he calls an "antique"—a Lafayette Explor-Air Mark V.

WILL, the Wisconsin Listener's League, is a club waiting to be born. A handful of DX'ers in the Badger State (ye editor among them) are trying to get a group organized and hope to hold one or two "mini-conventions" each year. If you live in Wisconsin and would like more information, send an SASE to Kevin Klein, 1204 West Packard, Appleton, WI 54914.

Your loggings are welcome and should be listed by country, with your last name and state abbreviations after each. Please leave us some cutting room in between. Beyond logs, we welcome photos of you and your shack (just your shack if you're bashful), good quality copies of QSL's or originals if you don't need them returned, comments, questions and what-have-you. Let's hear from you—regularly!

SWBC Loggings
(All Times UTC; All Programs EE
Unless Otherwise Noted)

Albania: R. Tirana, 2348 on 7065 (Johnson, AZ); at 0340 (Lingenfield, PA); 1840 on 9375 & at 1857 on 9480 (Moran, IL); 0116 in mid-east language (Ross, WA).

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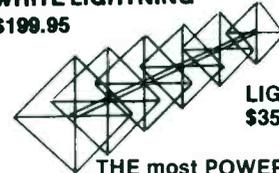


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CIRCLE 39 ON READER SERVICE CARD

Antarctica: LRA36 R. Nacional Arcangel San Gabriel on 15473.7 "about sundown" & weak (Mayo, ME). In SS-- Ed.

Antigua: DW Relay at 0500 on 6040 (Neff, OH).

BBC Relay on 6120 at 0516; at 2219 on 6175 (Moser, PA).

Argentina: RAE at 0055 on 9690 (Hartley, OH); 11710 at 0406 (Beard, AL).

Ascension Isl.: BBC Relay w/African Svc at 1738 on 15400 (Moser, PA).

Australia: R. Australia at 1450 on 5995; 1415 on 6060 (Northrup, MI); 6080 at 0922 in Pidgin (Hartley, OH); 1325 w/IS on 7135 (Northrup, MI); 1230 on 9580 (Adler, NJ); 15160 at 2102 (Ross, WA); //15240 at 0013; 15180 at 0205; 15395 at 0850; 17715 at 0211; 17750//17795 at 0217 (Lavallee, S. Korea).

VLMA, ABC Brisbane on 4920 w/nx, mx standards, 1000-1100 (Kline, CA).

Austria: R. Austria Int'l. on 7115 at 1555 (Gilbert, CA); 6155 at 0305 in GG (Bush, OH); 15320 w/nx at 1230 (Johns, TX).

Belgium: BRT at 0030 w/IS, ID on 5910 (Gilson, MD); 0800 on 9880, off 0825 (Gilbert, CA); 15590 at 1330 (Reynolds, MO).

Belize: R. Belize w/rx pgm at 1208 (Moran, IL).

Benin: ORTB from 2244 to s/off in FF at 2301 on 4870 (Eichenholtz, PA); 0558 in FF (Hartley, OH).

Botswana: R. Botswana, 4820 w/IS at 0356 followed by anthem, freqs, mx, partly EE (Moser, PA); EE & vernaculars 0408-0435 (Geraci, CT); 7255 at 0355 w/barnyard IS, EE & vernaculars (Reese, TN).

Brazil: R. Nacional, Brasilia, 9680 at 2250 in PP, 0256 on 11745 in EE (Reese, TN).

R. Globo, Rio, at 0130 on 11805 in PP (Hartley, OH).

R. Anhanguera, Goiania, in PP at 0053 on 4915 (Hartley, OH).

R. Goucha, Porto Alegre, 11915 at 0146 in PP (Hartley, OH).

R. Amazonas, Manaus, PP at 0004 on 4805 (Hartley, OH).

R. Nacional, Manaus, 4845 at 0221 w/s/off 0223, in PP (Johnson, AZ).

Bulgaria: R. Sofia at 0007 w/nx on 6070 (Kline, CA); 7115 at 0430 (Brooks, KY); 7125 at 0400 (Resse, TN); 11720 at 1945 (Adler, NJ).

Burkina Faso: R. Burkina, 4815 at 2248 in FF (Moser, PA); at 0601 (Hartley, OH).

Cameroon: R. Bertoua, 4750 w/nx at 0545 (Stephens, AL).

Canada: RCI, 0300 on 5960 (Neff, OH); 2200 to Africa, 2325 to Caribbean on 9755 (Reese, TN); 11710 at 2301, 11845 at 0152 in SS (Gilson, MO); 11955 at 1300 (Reynolds, MO); 15150 at 2145 to Africa (Beard, AL).

CBC N. Quebec Svc, 6195 at 0605 w/wx. Into FF at 0607, off 0610 (Johnson, AZ); 9625 at 1248; also 1750 on 11720 in FF (Gilson, MD); EE at 2224 (Moser, PA).

CFRX Toronto, 6070 w/commercials at 1432 (Moran, IL); 0039 w/unusual CFRB relay (Miller, GA).

CHNX, Halifax at 1315 w/mx, ID for "Music 96" (Northrup, MI); 1130-1200 w/ID as "96 CHNX" (Miller, GA). CHNX is 6130 kHz-- Ed.

CKZN St. John's, Nfld., 1305 w/telephone talk show (Northrup, MI).

CKZU Vancouver, 6160 at 0715 w/classical mx, nx, wx (Stephens, AL).

CHU Ottawa time station, 3330 at 0456 in FF/EE (Reese, TN).

CFXC Montreal, 6005 at 1450 (Hartley, OH).

Central African Republic: R. Centrafrique, 5034 in FF at 0514 (Lingenfield, PA).

Chile: R. Sistema Nacional in SS at 0152 on 15140 (Hartley, OH).

China, Peoples Rep.: R. Beijing, X'ian, at 1221 in CC on 6933 (Ross, Ont.).

BPM time station at 0029 on 10000 (Johns, TX). Nice going!-- Ed.

Colombia: R. Sutatenza, Bogota, 5095 in SS at 0027 (Hartley, OH).

Ondos del Darien, Turbo, 6085 in SS w/classical mx at 1435 (Moran, IL). Rather late in the day-- Ed.

La V. de los Centauros, Villavicencio on 5955 at 1157, ID's for station & Caracol network; w/Coco Cola ad. In SS (Ross, Ont.).

Caracol Neiva, 4945 w/nx in SS at 0330 (Northrup, MI).

R. Nacional, Bogota, 2100 w/talks in SS on 15335 (Stephens, AL).

Costa Rica: AWR/R. Lira, Alajuela, 15460 at 1655 w/"The Quiet Hour" & ID as "Radio Lira" by YL/SS (Miller, GA).

R. Impacto on 6150 at 0039 in SS (Eichenholtz, PA); 6140 to s/off at 0600 (Johnson, AZ). This one uses 6140, 6150 or 6160 selecting the freq by whim, or so it seems-- Ed.

TIFC, Faro del Caribe, 0340 on 5055 (Hartley).

Cuba: R. Havana, Cuba on 5965 at 0500 w/nx

Abbreviations Used in Listening Post

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

(Reese, TN); 0412 on 6090 (Neff, OH); 0232 on 6100//6150//9750 (Reese, TN); 0208 on 9740 Moser, PA); 0300 in SS (Hobbs, Ont.); 9745 w/IS at 2357 (Gilson, MD).

R. Rebelde, 5025 in SS at 0002 (Hartley)

Czechoslovakia: R. Prague, 5930 in EE at 0130 w/nx, Czech folk mx (Adler, NJ); 0355 on 7345 (Johnson, AZ); 9630 at 0356 w/nx (Reese)

Denmark: R. Denmark, 15165 w/EE ID at 1300 then into Danish (Johns, TX).

Dominican Republic: R. Clarin, 11700, as early as 1423, as late as 2259 (many reporters). V. del CID programming in SS at 2259 (Gilson). R. Discovery poor level in SS at 2000 on 15045 (Stephens, AL).

E. Germany: R. Berlin Int'l., on 6080 to s/off at 0400 (Gilson, MD); 6125 at 2200 (Adler, NJ); 9645 at 1116 in SS (Gilbert, CA); 9730 at 0001 w/nx (Resse, TN); 15240 at 1515 w/nx (Johns, TX).

Ecuador: HCJB on 3220 in SS at 0450 (Lingenfield, PA); 6230 at 0230 w/DX Party Line (Reynolds, MO); 0640 on 9870 (Ross, WA); 1240 on 11740 w/Happiness Is (Gilson, MD); 17790 at 2056 (Reese, TN).

R. Nacional (via HCJB xmtrs) on 15270 in SS at 2200 (Stephens, AL).

R. Quito, 4920 in SS at 2335 (Eichenholtz, PA). HD210A Guayaquil time station, 3810 w/time pips, OM announcer (Kline, CA). In SS-- Ed.

R. Centinela del Sur, Loja, 4890 at 0330 in SS (Northrup, MI).

Egypt: R. Cairo, 12050 in AA at 1903 (Bush, OH); 2310 w/drama, mx, tx pgm (Moran, IL).

England: BBC (including various relay sites-- Ed.) 5975 at 2200 (Moser, PA); 6005 at 0450 (Northrup, MI); 6015 at 0454 (Reese, TN); 6110 in SS at 0031; 6175 in EE at 0135 (Gilson, MD); 7325 at 2302 (Bush, OH); 9410 at 1847 (Moran, IL); 9515 at 0230 (Gilson, MD); 9530 at 1900 (Moran, IL); 1302 on 11775 (Gilson, MD); 15070 at 1843 (Beard, AL); 15105 at 2010 (Moran, IL); 15180 at 1425 in AA (Gilson, MD); 15400 at 1831 in EE (Eichenholtz, PA).

Ethiopia: V. of Revolutionary Ethiopia on 9560 at 1500 w/IS, ID in EE, nx headlines. Weak (Stephens, AL).

Falkland Isl.: FIBS on 3958 at 0030-0102 segued rock & big band mx, OM announcer (Weiss, IL).

Finland: R. Finland Int'l., 1400 on 15400 (Johns, TX); at 1500 (Adler, NJ).

France: R. France Int'l. at 1600 on 15315 (Johns, TX); 15365 at 1409 (Hartley, OH).

French Guiana: RFI Relay at 0430 on 6055 (Hobbs, Ont.); SS at 0000 on 9730 (Reese, TN); 0425 at 9790 (Beard, AL); 0350 on 9800 (Reese, TN). RFO Cayenne on 3385 in FF w/instrumental mx. Was //5055 (Ross, Ont.).

Gabon: Africa #1 on 4815 in FF at 2300 (Hobbs, Ont.); 4830 in FF around 0500 (Ross, WA; Gilbert, CA; Geraci, CT); 9630 w/Advertiser World R. "Ivory Coast" (??-- Ed.) at 1700 in FF (Stephens, AL); 9645 w/R. Japan Relay at 2315 (Ross, Ont.); 1319 on 15200 in FF (Johnson, AZ); to 1657 s/off (Eichenholtz, PA); 15475 at 1735 (Hartley, OH).

Ghana: GBC at 0600 in EE on 4915 w/ID (Hobbs, Ont.).

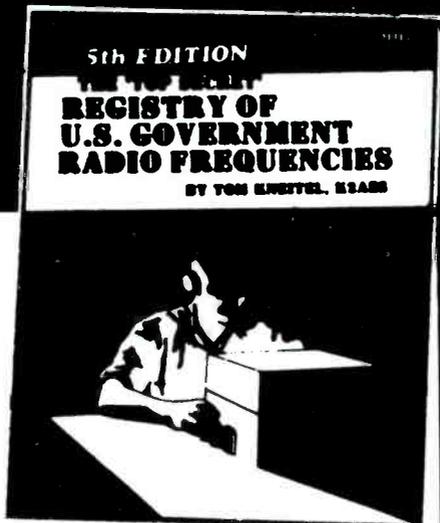
Greece: V. of Greece, 7430 at 0340 w/nx (Reynolds, MO); 0117 on 9420 (Ross, Ont.); 9855 at 1400 in Greek (Hartley, OH); 11645 at 1216 in Greek & EE (Gilson, MD).

Guam: KTWR at 1330 w/rx pgm on 9870 (Miller, GA); 15115 at 0857 w/DX Log (Lavallee, S. Korea).

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CIRCLE 37 ON READER SERVICE CARD

Guatemala: TGNA R. Cultural, 3299 at 1210 in SS (Moran, IL); 0320 in EE on 3300 (Brooks, KY); 0403 in EE (Moser, PA).

R. Tezulutlan, Coban, 4835 w/xylophone, mentions of Coban (Stephens, AL). Time not given-- Ed.

R. Mam, Cobrican, 4825 w/lively mx, ID's as "Mam," QRM from Africa #1 (Stephens, AL). Time not stated-- Ed.

Honduras: R. Luz y Vida, San Luis, in EE & SS at 0252 on 3249.6 (Ross, Ont.).

HRR1, Sani R., Puerto Lempira at 0030 in SS on 4755 (Hartley, OH).

Hungary: R. Budapest, 9530 at 0200 (Adler, NJ); 9835 at 0217 (Gilbert, CA); 11910 at 1708 (Gilson, MD); at 2124 (Lingenfield, PA).

India: AIR at 1340 w/mx on 7140 (Northrup, MI); 7215 at 2249, QRM from WRNO (Gilson, MD); 15135 at 1430 w/mx, Hindi (Northrup, MI).

Indonesia: V. of Indonesia at 1500 on 11790 w/nx, mx, comment (Johnson, AZ).

Iran: VOIRI on 15084 in AA at 1711 (Hartley, OH). Suspect the language is Farsi, not AA-- Ed.

Iraq: R. Baghdad, 0222 in EE on 11750 (Kammler, Iceland).

Israel: V. of Israel, 5885//7465 at 0022 w/mx, DX Corner (Gilson, MD); 7410 at 0025 (Beard, AL); 7465 at 0100 (Johnson, AZ); 9385 at 1845; 9390 listed as alternate but not heard (Moran, IL); 9435 at 2230 (Adler, NJ).

Italy: RAI on 5990 at 0100, nx by YL, into FF at 0120 (Eichenholtz, PA); 9575 in Italian at 2304 (Johnson, AZ); at 0102 (Gilbert, CA); 11905 at 1943 in Italian (Johnson, AZ).

Japan: R. Japan on 5990 (via Canada) w/ID at 1425 (Moran, IL); 9645 (via Gabon) at 2315 (Adler, NJ); 9675 at 1126 w/DX pgm (Beard, AL); 1155 on 9695; 0545 on 15235//17810 (Lavallee, S. Korea).

Far East Network, 11750 at 0130 (Lavallee, S. Korea).

NSB at 0315 on 9595 in JJ (Johnson, AZ); 6115 at 0045 (Lavallee, S. Korea).

Kuwait: R. Kuwait, 11675 at 1800 w/rx pgm (Johns, TX); 1900 w/wx, rx & other pgms (Adler, NJ); 15505 at 1622 in AA (Hartley, OH).

Liberia: ELWA at 0730 on 4760 w/rx pgm (Moser, PA).

ELBC, 3255 at 2320 (Lingenfield, PA).

Libya: R. Jamahiriya, 2130-2225 on 7245 but announcing 11815 only, commentary, "Saturday Night Country" (Geraci, CT); 2230 w/"Reflections" (Johns, TX); 15415 at 1610 (Bush, OH) Presume in AA-- Ed.; 1408 in AA (Hartley, OH).

Latvian SSR: R. Vilnius, 2200-2230 on 11790. Announced 7165 & 13645 but not heard (Weiss, IL); at 2318 (Kammler, Iceland).

Luxembourg: R. Luxembourg, 6090 at 2300 in GG w/60's mx (Johns, TX); 15350 in FF at 1630 (Hartley, OH).

Madagascar: R. Netherlands Relay on 9540 at 2041 (Resse, TN); 2125 s/off (Moser, PA).

Malaysia (Sarawak): R. Malaysia, Kuching, 4950 at 1429 w/economic nx, stock market, "Concert Classics" (Kline, CA).

Mali: RTV Malienne, Bamako, 4783 at 2239 in FF (Moser, PA); at 0602 (Hartley, OH); 4834 at 2327 in FF (Hartley, OH); 7285 at 0810 was much better than 4783 (Stephens, AL).

Malta: R. Mediterranean at 2230 on 6110 w/nx & pops (Johns, TX).

Mauritania: RTVM at 2353 in FF on 4845 (Hartley, OH).

Mexico: XEQK "La Hora Exacta" on 9555 at 1555 in SS. Needless to say, they offer frequent time checks (Stephens, AL).

Morocco: RTM in AA at 1627 on 15360 (Hartley, OH).

Netherlands: R. Netherlands, 9895 at 2124 w/announcements (Moser, PA); 1432 on 15560 (Reynolds, MO); 2112 in Dutch (Ross, WA).

Netherlands Antilles: R. Netherlands Relay, 6020 at 2345 in Dutch (Gilson, MD); 6165 at 0230 (Hobbs, Ont.); 21685 at 1924 (Resse, TN).

TWR on 9535 at 0300 (Hobbs, Ont.); 0505 w/Caribbean Night Call (Beard, AL); 1330 on 11815 w/nx, Focus on The Family (Gilson, MD).

New Zealand: R. New Zealand on 15150 w/current affairs discussion at 1820 (Ross, WA); 1958 w/nx & mx (Johnson, AZ).

Nicaragua: V. of Nicaragua, 6015 at 0001 w/mx (Eichenholtz, PA).

Nigeria: V. of Nigeria, 7255 at 0545 w/"News About Nigeria" (Gilbert, CA); 0826 w/sports (Moser, PA); 11770 at 1739 having tech problems (Johnson, AZ).

Rima R., Sokoto, 6175 at 0810 w/local mx. Poor sigs (Stephens, AL).

R. Nigeria, Kaduna, 4770 at 0618 (Hartley, OH).

North Korea: R. Pyongyang in Korean at 0750 on 2300//2350//2400//2850//3220//3250//3320 320//6250 (Lavallee, S. Korea); 9345 at 1330 ID & off (Kammler, Iceland); 9960 at 1530 in EE (Gilbert, CA); 9715 at 1200 (Kline, CA); at 2325 on 11735//13650 (Lingenfield, PA); 15140 at 0012 (Johnson, AZ).

Northern Marianas: KY01 Saipan, 15190 at 0418 in JJ & EE (Johnson, AZ); 15405 at 0253; 11900 on 1200 (Lavallee, S. Korea).

Norway: RNI on 15310 in Norwegian at 1507 (Gilson, MD); 1400 Sunday w/EE (Johns, TX);

15315 at 1458, IS + duo-language ID then into Norwegian (Gilbert, CA).

Oman: R. Oman, 9735 at 2014 in AA, weak w/QRM from Paraguay, DW & others (Eichenholtz)

Pakistan: R. Pakistan on 15115 at 0232 w/nx (Lavallee, S. Korea).

Papua New Guinea: NBC Pt. Moresby w/pops at 1335 on 4890 (Moran, IL); 1315 w/EZ listening mx (Northrup, MI).

Peru: R. Central, Bellevista, 4920 at 0325 w/mx & ID (Northrup, MI) Not R. Quito-- Ed.

R. del Pacifico, 9675 in SS at 2240 w/rx pgm, clear ID on the hour (Stephens, AL).

Philippines: VOA Relay at 0132 on 15155//15210; at 0216 on 17735 (Lavallee, S. Korea).

R. Veritas, 9570 w/IS in EE at 1500 (Johns, TX); 0145 on 15135; 0151 on 15360 (Lavallee, S. Korea).

FEBC, 11860 at 0930-1000 in presumed Indonesian, ID/IS at 1000 (Gilbert, CA); 11850 at 0532 (Lavallee, S. Korea).

Poland: R. Polonia, 6135 at 1600 w/nx (Kammler, Iceland); 2230 on 7270 (Miller, GA); at 0200 (Johns, TX).

Portugal: R. Portugal, 9680 at 0030 w/nx, ID, feature (Neff, OH); 0024 w/nx, "Sand & Sea" tourism pgm (Kline, CA); 15265/better 15285 at 1402 in PP (Gilson, MD).

Romania: R. Bucharest, 5990 at 0234 (Hartley, OH); 7195 to Europe at 2124 (Lingenfield, PA); 15250 w/nx at 1300 (Johns, TX).

Rwanda: DW Relay, Kigali, 7225 at 0400 (Moser, PA).

Saudi Arabia: BSKSA on 9720 to southern Africa (Lingenfield, PA) Time?-- Ed.; 15060 at 1400 in AA (Geraci, CT).

Singapore: BBC Relay on 15380 at 0204 (Lavallee, S. Korea).

South Africa, Rep. of: R. RSA, 6010 at 0218 w/interview (Moser, PA); 6185 at 0206 w/nx (Eichenholtz, PA); 0200 on 9615 w/nx (Reynolds, MO); 0256 EE s/off (Resse, TN); 11900 at 2100 w/Africa Today (Miller, GA).

SABC, 3320 at 2315 (Lingenfield, PA).

Capital R., Transkei on 3927.3 at 0215 w/pops and a male dj, time checks for UTC+2, address in Johannesburg (Ross, Ont.).

Radio 5, 4880 at 0330, "Rock Diary," nx at 0400 (Miller, GA); 0404 w/top 40 mx, commercials (Geraci, CT).

R. Orion, 3320 at 0056 w/pop, country, time checks, ID's in EE & Afrikaans (Ross, Ont.); 0200 on 3955 (Johns, TX).

South Korea: R. Korea, 5975 at 0228 in JJ; EE at 0230 on 9275//15575 (Lavallee, S. Korea); 9750 at 1400-1459 w/ID, target area info, nx (Kline, CA); 15575 at 2354 (Beard, AL).

KBS Home Svc, 3930 at 0800; 0603 on 6015 (Lavallee, S. Korea).

Spain: Spanish Foreign R., 6125 w/IS from 2355 s/on (Moser, PA); 0145 w/SS lessons (Adler, NJ); 7450 in SS to Europe at 2118 (Lingenfield, PA); 6055 at 0500 in SS (Hobbs, Ont.); 9630 w/"Sports Roundup" at 0013 (Resse, TN); 9745 in SS to South America at 2300 (Lingenfield, PA); 15370 at 1846 in EE (Ross, WA).

Surinam: R. Surinam Int'l., via Radiobros (Brazil) on 17755 at 1755 in Dutch, EE nx at 1735 (Stephens, AL).

Swaziland: TWR, 5955 at 0359 /IS/ID into GG (Gilbert, CA); 7200 at 0430 w/rx pgm (Johns, TX); 7295 at 0259 w/ID & IS, into un-ID language (Johnson, AZ); 0300 in Swahili (Geraci, CT).

Sweden: R. Sweden Int'l., 11735 at 1246 w/nx. Multi-lingual ID at 1258 (Gilson, MD); 15345 at 1400 (Johns, TX; Reynolds, MO).

Switzerland: SRI, 5965 in FF at 0117, also 0110 in EE on 6135//9625//9725//9885 (Gilson, MD); 6185 at 0400 (Brooks, KY); 9885 at 0202 (Resse, TN); 11955 at 2100-2130 (Neff, OH); 12035 at 1857 in GG (Bush, OH); 1515 on 15430 (Johns, TX).

Syria: R. Damascus, 7455 at 2105 w/nx, mx, request pgm (Geraci, CT); 9950 at 2110 (Miller, GA); 12085 at 1945 in FF (Weiss, IL); 1900 in GG (Bush, OH); 2000 in EE (Johns, TX).

Taiwan: VOFC at 0200 on 9765//11745//15345 w/DX sked (Lavallee, S. Korea).

Tahiti: R. Tahiti, 11826 at 0020 on FF; 15170 at 0139 in un-ID language (Hartley, OH). If it wasn't FF then it was probably Tahitian-- Ed.

Thailand: R. Thailand on 9655//11905 at 1205 w/nx, mx, times, freqs (Kline, CA); 11905 at 0120 w/ID (Lavallee, S. Korea).

Togo: RTT, Lome at 0526 on 5047 w/6-note chime IS, s/on, ID's as "Ici Lome, Radiodiffusion Television Togolaise" (Moser, PA); at 2348 (Hartley, OH).

Turkey: V. of Turkey, 9560 at 2300, nx, review of Turkish press, Turkish mx (Adler, NJ); at 0401 (Beard, AL).

Uganda: R. Uganda, 4975 at 0406 (Hartley, OH).

Ukrainian SSR: R. Kiev, 0300 on 6200 (Hartley, OH); 7165 at 0325 ending in EE, into IS (Gilbert, OH).

Unidentified: 9635 w/Stevie Wonder & US Country mx, un-ID language, strong sigs (Ross, WA). Sounds like you logged the new WSZO in the Marshall Islands-- Ed.

United Arab Emirates: UAE R. Dubai, 11955//15435 at 1615 (Kammler, Iceland); 15320 at 1330 w/nx (Johns, TX).

Uruguay: R. El Espectador, 11835 at 2305 in SS w/pops (Moran, IL).

United States: WYFR on 5985 w/VOFC relay (Hobbs, Ont.); 9510 w/sermon at 1859 (Moran, IL); 9660 at 2344 & 0039 (Gilson, MD); 9852.5 at 2330 (Faulkner, NV); 11830 SS at 2235 (Moran, IL); EE at 2150 (Neff, OH); 11875 at 1230 (Gilson, MD); 15170 at 1440 s/on (Northrup, MI).

R. Marti (via VOA-- Ed.) 9525 at 2345 in SS (Weiss, IL).

VOA, 5995 at 0100 (Northrup, MI); 6000 at 0520 (Resse, TN); 6190 at 0131 in SS; 7465//9815 at 0100; 11760 at 1808; 11865 at 1650 in Estonian, into Lithuanian at 1700; 15205 at 0158 (Gilson, MD); 15410//15445 at 2020 (Northrup, MI); 21560 at 1814 (Lingenfield, PA).

WHRI, 7400 w/Radio Earth pgm at 0302 (Beard, MI).

WMLK on 9455 at 1729 (Brooks, KY).

AFRTS on 6125 at 1442; 9700 at 1905 (Moran, IL); 11730 at 0330 (Lavallee, S. Korea); 15330 at 1427 (Gilson, MD); 15345 at 0210 (Lavallee, S. Korea); 15430 at 2020 (Northrup, MI).

KVOH on 9505 at 0135 (Gilson, MD); 17775 at 1855 w/talk show featuring George Otis (Lingenfield, PA).

WRNO, 7215 at 2249 (Gilson, MD) Odd, they don't belong in this portion of the band-- Ed.; 7355 at 0250 (Northrup, MI); 9855 at 2326 w/CBS nx; 15420 at 1704 (Moser, PA).

USSR: R. Moscow, 5915 at 0509 (Resse, TN); 5930//5950 at 1420 (Moran, IL); 6000 (via Havana-- Ed.) at 0100 (Northrup, MI); 6070 at 0708 (Kline, CA); 6130 at 0437 (Beard, AL); 7115 at 0138 (Gilson, MD); 7310 at 2345 (Resse, TN); 9450 at 1415 (Northrup, MI); 9470 in RR at 1855; 9710 in FF at 1905 (Moran, IL); 9755//9820 at 1308 (Gilson, MD); 9820 in FF at 0500 (Johnson, AZ); 9870 at 1511 (Moser, PA); 9895 at 0555 (Johnson, AZ); 12010//15290 at 0141 (Lavallee, S. Korea); 13790//15225 at 1351 (Gilson, MD); 17825//17880 at 0219 (Lavallee, S. Korea).

R. Magallanes svc to Chile in SS on 7400 at 0330 (Stephens, AL).

Radiostansiya Atlantika in RR at 1301 on 11770 (Gilson, MD).

Vatican City: Vatican R., 9605 in EE at 0109 closing (Hartley, OH); 15120 at 1945 in Latin (Northrup, MI).

Venezuela: R. Rumbos in SS at 0405 on 4970 (Hartley, OH); 0039 on 9660 (Gilson, MD).

Ecos del Torbes, San Cristobal w/mx, commercials, ID's in SS at 1100 on 4980 (Geraci, CT); 0145 in SS (Gilson, MD).

R. Nacional, 5020 in SS at 0025 (Hartley, OH).

West Germany: DW (including various sites & relays) 6010 at 0300 (Reynolds, MO); 6040 at 0300 (Adler, NJ); 0140 to 0150 s/off on 6085 (Gilson, MD); 6120 at 0510 (Ross, WA); 6135 at 0526 (Resse, TN); 7150 at 0439 (Moser, PA); 9545 at 1900 s/on in GG, then into AA (Moran, IL); 0209 in SS on 9605 (Gilson, MD); 9690 at 2303 (Bush, OH); 15245 in GG at 1351 (Eichenholtz)

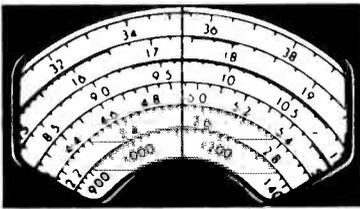
R. Liberty, RR w/jamming at 2305 (Moran) Sudwestfunk, Baden-Baden, 7265 in GG at 0739 w/heavy QRM from Hams (Stephens, AL).

Yemen (Dem. Rep.): RYBS, 7190 in AA at 0415, long talks, chanting (Stephens, AL).

Yugoslavia: R. Yugoslavia, 7240 w/nx at 2215 (Johns, TX).

That's the lot--and a lot of thanks to: Albert M. Adler, Lakewood, NJ; Jim Ross, KA7URR, Vancouver, WA; James Kline, Santa Monica, CA; Robert S. Ross, VE3JFC, London, ONT; Mark Northrup, Ann Arbor, MI; Cliff J. Reynolds, Hazelwood, MO; James E. Brooks, Jr., Bardstonsville, KY; Ted Moran, Chicago, IL; John Faulkner, Reno, NV; Vincent A. Geraci, Waterbury, CT; K.J. Hobbs, Hamilton, ONT; Robert Eichenholtz, Coraopolis, PA; Stanley D. Mayo, Westbrook, ME; John Miller, Thomasville, GA; J.D. Stephens, Huntsville, AL; Joseph Beard, Albertville, AL; Andy Johns, Tyler, TX; Tom Hartley, Chillicothe, OH; Jason Reese, Hendersonville, TN; William Moser, Pittsburgh, PA; Warren Gilbert, Sherman Oaks, CA; Dave Kammler, Keflavik, Iceland; Bruce R. Gilson, Silver Spring, MD; Darrell Lingenfield III, St. Thomas, PA; George Neff, Niles, OH; David Bush, Sebring, OH; Vern A. Weiss, Kankakee, IL; and G. Lavallee, South Korea.

PC



COMMUNICATIONS CONFIDENTIAL

BY DON SCHIMMEL

YOUR GUIDE TO SHORTWAVE "UTILITY" STATIONS

Loggings of Voyager communications continued to trickle in and the last batch also included some reception verifications. The monitoring reports were submitted by Messrs. Slaughter, OH; Hughes, MI; Smith, AL; Buescher, OH; and Obenberger, IL. We'll show you the veri sent in by Paul Buescher, OH. James Hughes, MI (morning newsmen at WCEN AM/FM) made a tape of one of the contacts and submitted it to the Voyager folks along with his request for a QSL. He stated the reply he received indicated that the tape would be filed along with the other Voyager records.

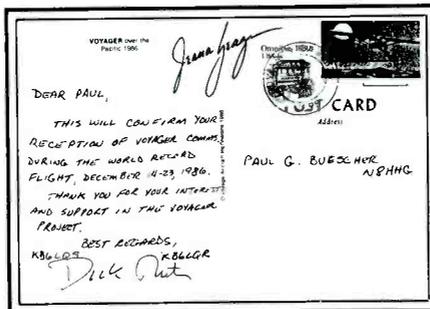
Patrick O'Connor, NH offered some corrections to loggings in the February column. TBO2 on 8188.7 kHz is believed to be the Turkish Navy at Izmir, Turkey. Patrick also advised that the 16450 kHz logging was of the USS San Francisco, callsign NRPU. The vessel is a nuclear powered attack submarine, SSN 711, which is based in Pearl Harbor.

Patrick included this comment: "I would also like to take issue with the unidentified Florida reader who closed his remarks on Radio Reloj with the comment, 'I've never found the average mentality of those BCB types to be very high.' I know several of the BCB types, and BCB listening can sometimes be much harder than ute listening. BCB DX'ing is a whole world unto itself—requiring a different approach from ute or SWBC DX."

From across the Atlantic comes a letter from Simon Mason, UK who tells us "I find your magazine very informative and entertaining—nothing like it in the UK. My interest in SWL is mainly numbers stations and here are a few from my log:"

3215 Five minutes before hour a four-note rising scale tune is sent. On the hour a YL/GG sends a 5F group followed by a 2F group. The 5F group is the heading for the actual message and the 2F groups are the group count. At 05m past the hour 'Achtung,' the heading group and then the text. The same message is rebroadcast on 3820 kHz 2 hours later. Heard at 1800/1900/2000/2100.

5015 YL/GG at 00-0005 sends 'Papa November' with random musical notes in background. At five past the hour, 3F group followed by 'Gruepen' (group count) and into text of 5F groups. This type of broadcast also appears at other times on 3230, 3260, 5180, 4590, 5285 kHz. In addition to 'Papa November' there are ST, AM, YS, PJ, EL, UL, PG, CT, ER, UI, ZB, IT, FS, ZT, JB,



Paul Buescher, OH showed us his copy of the Voyager QSL card.



PL, ZO, PZ, KR and YB all spelled out phonetically.

5410 YL/EE counts 1-0, 714 repeated. At 1910 ten pips followed by 'Type' (group count) and then the text of 5F groups. Also appears at different times on 4770, 6875, 6840 and others. Heard 1900-1910.

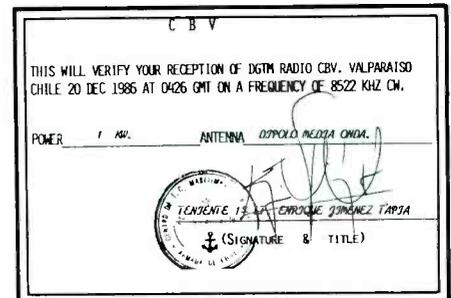
6675 Trumpet tune 'last post' type from 2200-2220. Military drums and trumpets from 2225-2235. Then YL/Czech with 5F groups. Also appears on 5500 and 8070 with same numbers in simultaneous broadcast. Incidentally, Czech stations sometimes send Morse for 5 min, e.g., A7A 798 67 then into 5F Morse groups.

6900 Musical box plays old Radio Sweden introduction 'Midsummer Vigil' from 1900-1905. Then YL/GG sends 5F groups. Also on 4790. Quite sporadic, only heard twice.

Simon explained, "My method of tracking these stations is to scan likely bands for open carriers before the hour and half-hour, then put these frequencies in memory (of the receiver). After the hour I then recall the frequencies and quite often there is a number station on at least one."

Mark Starin, NH is a first-time contributor and he said in part: "This is my first submission to your column although I have been a regular reader of POP'COMM for some time. Recently, I obtained an AN/FRR-21 receiver (aka AN/SRR-11 onboard ship) that covers 14 kHz to 600 kHz AM/CW. I jury-rigged a connection to the 25-foot whip antenna on the back of my house and copied a number of stations in the 200-400 kHz band."

Bob Lewen, APO NY sent in a report on a monitoring session he had recently concerning a ship disaster. "The January '87 POP'COMM article on 'Deep Sea Ship



Patrick O'Connor, NH provides copies of two QSL cards from his collection.

Communications' by Jerry Cody prompted me to spend some time on 2182 kHz which appears to be the prime International Calling and Distress frequency around the U.K. and European coasts . . . The following, I think, will interest POP'COMM readers."

(All times UTC.)

2215 MAYDAY from fishing vessel *Guide Onward*, GDWZ, ON FIRE REQUEST IMMEDIATE ASSISTANCE.

2218 Warship *Invincible* relays MAYDAY to Wick Radio, Scotland.

2221 Wick Radio broadcasts the MAYDAY, giving location of the *Guide Onward* and advises ships in the area that immediate assistance is required.

2227 Aberdeen Coast Guard to Warship *Alderney* for assistance. Vessel *Inch*, GXXT to Wick, estimating 20 miles from disaster, ETA two hours.

2228 Aberdeen advising that Lossiemouth, Scotland helicopter on the way.

2234 Wick to *Guide Onward*—No response!

2248 Wick rebroadcasts the MAYDAY and advised of following: Vessels *Maersk Cutter* ETA on scene at 0000 hours; Vessel *Beeding* GPEP, ETA on scene three hrs; Vessel *Mark Inch* GXXT, ETA on scene



DEPARTMENT OF THE AIR FORCE
HEADQUARTERS STRATEGIC AIR COMMAND
OFFUTT AIR FORCE BASE, NEBRASKA 68113

REPLY TO
ATTN OF: DCOR

18 NOV 1982

SUBJECT: Reception Of HF Radio Communications

TO: Mr. Tim Tyler

1. In response to your letter, 9 Nov 82, you were copying SAC's HF station located at Barksdale AFB, LA.
2. The name of the SAC HF Network is GIANT TALK. There are 13 stations worldwide operating on common frequencies between 3 and 30 MHz. Power output ranges from 500 watts to 45KW.
3. The meaning of the term "SKYKING" is for all SAC aircrews to copy the following transmission. We are unable to provide you with the purpose of the SKYKING and DO NOT ANSWER BROADCAST.
4. We appreciated your comments concerning your monitoring of the SAC GIANT TALK Network.

Justin E Loucks

JUSTIN E. LOUCKS, Lt Col, USAF
Chief Airborne & C² Comm Division
Dir of Ops, DCS/Comm-Electronics

COPY



Tim Tyler, MI sent in copies of some QSL letters he received in the past from the U.S. Air Force and U.S. Marine Corps.



UNITED STATES MARINE CORPS
MARINE CORPS AIR STATION
EL TORO (SANTA ANA), CALIFORNIA 92709

IN REPLY REFER TO
11A:DWZ:k1w
2796
6 Feb 1984

Mr Tim TYLER

Dear Tim:

Thank you for your letter of 12 January 1984, in which you told us of your HF reception of some of our transmissions on that date. My staff and I were impressed with the format and professionalism of your report. As a matter of fact, I shared your letter with the Commanding Officer of the aircraft squadron whose operational transmissions you heard. He gave me the enclosed patches for you -- VMFT-3 is our Corps' photo reconnaissance squadron, which fly the F-4 Phantom jets. I have also enclosed a copy of their unclassified ANNEX K (Communications-Electronics), with its APPENDIX I (Telecommunications Circuit Requirements) which establish the communications guidelines for the particular operation you monitored.

The HF radio which was used by VMFT-3 on 12 January 1984, was the AN/TSC-15 van (see the enclosed equipment identification sheet). That day, they used the 15-foot whip antenna on top of the AN/TSC-15 van while transmitting with 1000 watts output.

The Marine Corps, as I am sure you know, provides many opportunities for travel and adventure. Communications and communications intelligence are exciting fields -- especially for sharp, innovative young men like yourself. In your letter you mentioned that you are somewhat interested in joining the Marine Corps and asked for suggestions about career fields in the Marine Corps. As graduation nears, you will face one of life's bigger decisions -- what to do now? -- work, continue your education or join the service. A personal "game plan" for your future is in order. Don't be surprised if a Marine recruiter calls or stops by to talk to you and your parents about the programs we have to offer. He will also be able to answer most of your questions about life in the Marine Corps.

Tim, thank you again for your letter. Please drop me a line again sometime to let me know of your activities. In the meantime, take care and may all your endeavors be successful.

Semper Fidelis,

D. W. Zimmerman

D. W. ZIMMERMAN
Lieutenant Colonel, U. S. Marine Corps
Communications-Electronics Officer

two hrs; Vessel *Seaboard Illustrious* from Beatrice Oil Field fully equipped for fire fighting, ETA 0100.

2253-2309 Wick receives ETA info from Warship *Aldernay* ETA 0140; *Maersk Cutter* ETA 0045; Vessel *Saint Claire* GUBE, ETA 0130; Vessel *Beeding* max speed of 9 knots, ETA 0130; *Mark Inch* reports her ETA and *Beeding* reports that she spotted a Red Flag dead ahead on her track. Wick advising *Saint Claire* she's not required due to her distance; also Lossie-mouth helicopter is on scene.

2325 Wick rebroadcasting MAYDAY, advising ETA's of assisting vessels and on-scene arrival of chopper.

2328 Wick asks *Mark Inch* re number people onboard stricken vessel. Reply states "approximately eight people."

2334 Wick advising three liferafts adrift -- chopper picking up. *Guide Onward* well on fire!! MAYDAY cancelled at this time.

2338 Previously mentioned vessels report to Wick that they are proceeding with their scheduled voyages if they are no longer required -- Wick confirms.

2341 Frequency 2182 kHz back to normal.

A very nice letter was received from Roberto Ciappi, a 19-year-old ute listener in Italy. Roberto just recently joined the Italian

Navy and is scheduled to enter a Radio Operator class. He described the increasing popularity of utility monitoring in Italy.

Several months ago I included an abbreviation, "PABs," in the material which accompanied the report by Roland Pop concerning the "Mad Violin" intercept by Mr. Bartok, UK. I neglected to define the abbreviation at that time so here it is. "PAB" is used to indicate Phonetic Alphabet Stations. You may sometimes see "PAS" used for the same meaning but the most often used one is "PAB."

This month Roland supplied some interesting notes regarding the use of a personal computer for demodulating FAX signals and printing them out on the computer printer. The subject was also covered in the October 1986 *73 Amateur Radio* magazine and in that issue the one-chip circuit was described plus information on ordering the inexpensive (\$10) diskette which contains the programs for use with the Commodore 64 computer. An earlier article in the same magazine, December 1985, was for Atari owners. The heart of the circuit is the XR-2211 tone detector. By the way, this chip used to be available from Radio Shack but it is no longer listed in their catalog. It is obtainable from such mail order parts suppliers as JDR Microdevices, Jameco, Digi-

Key and perhaps some others. To see the results of the use of the circuit and computer, take a look at the FAX charts sent along by Roland.

An anonymous reader in Indiana sent us the following information which was titled "Tips to Identify Russian and German Morse and Voice Spy Stations."

Russian Morse

Usually call from five to ten minutes before the hour. 581 581 581 581 581 (sent over and over until the hour or half-hour). Then the call is repeated several times followed by BT 011 011 (means one message upcoming, 012 means two messages upcoming, etc). When three, five, or ten zeros are transmitted after the callup, this means no traffic. Most Russians cut zero as the letter "T". Some operators will send each group twice. Here are some different headings: 581 123 123 25 25 BT BT (msg nr msg nr group count group count); 581 BT 125 25 BT (msg nr group count); 581 581 581 BT 123 BT (group count). Traffic is completed with a repetition of the msg nr and group count followed by three, five, or ten zeros. Some operators will repeat the message more than one time.

Russian Voice

Voice callup is similar to Morse callup, however, they will use almost any language

Table 1

Freq	Times	Dialect
10382	0200	Shanghainese
11169	0005-0343	Mandarin
11172	0008-0156	Mandarin
11182	0110	Mandarin
11290	2022, 1540	Mandarin
		Cantonese
11295	1908	Mandarin
11315	1942	Mandarin

Note: Shanghainese is a dialect spoken on the Central Coast according to Steve. Other possible frequencies mentioned in the communications: 6983, 11182, 11277, 13040, 14990, 6550, 6560 and 6570 kHz.

(English, Spanish, Czech, German and Russian) for transmission. If broadcast is in Russian, the voice is always a male announcer, but for the other languages it can be either a male or female announcer.

East German Morse

Will send callup for about five minutes before the hour or half-hour. 585 585 585 585 etc etc; or 585 585 585 BT 123/10 BT 562/15 BT 275/10 (msg nr and gr count); or TTTT TTTT 585 15715/05 16282/06 19899/08 13299/10; (these indicate msg nrs and time after hour msg will sent). Most German operators send each group twice (QSZ).

East German Voice

Can "mark" frequency with music or tones from five to ten minutes before traffic. This is how some East Germans will start traffic: (Music or tones) ACHTUNG 55178/10 55178/10 (YL then starts traffic, each group sent twice); or ACHTUNG 55178/05 99123/06 23498/08 55123/12 (msg nr and time after hour message will be sent); or ACHTUNG 55178/11 99123/11 (msg nrs and group counts). German voice can end messages with "ENDE" or just stop after completion of message.

This anonymous contributor closed off his letter by saying, "Hope this helps with identification of some of these stations."

Numerous Chinese transmissions were

Table 2

Standard spoken	#	Special spoken*
yi	1	yao
er	2	liang
san	3	san
si	4	si
wu	5	wu
liu	6	liu
qi	7	quai
ba	8	ba
jiu	9	jiu
ling	0	dong

*Used for clarity in passing numbers in voice transmissions.

Iden Time Freq
AUS SAT 0200 5100



FAX chart sent in by Roland Pop.

monitored by Steven Jones, NY who outlined his findings in an excellent report. The traffic he noted included plain text conversations (in several dialects) of a personal nature concerning family matters and two types of cipher traffic, number groups and letter groups. Transmission modes have been AM, reduced carrier AM, USB and in a couple of instances (on 11315 & 11295 kHz) hand sent CW was also observed. The data has been extracted from his letter and appears in Table 1. Steven also prepared some information showing how the spoken Chinese numbers sound, see Table 2.

**Intercepts
(All Times Are UTC)**

- 123: CKN, Vancouver, BC in CW at 0837 w/VVV marker (Szalony, CA).
- 216: Beacon CO, Muni Apt. (Epsam), Concord, NH at 0401 (Starin, NH).
- 259: Beacon PBY, Kayenta, AZ at 1328 (Szalony)
- 260: Beacon ESG, Muni Apt., Rollinsford, NH at 0400 (Starin, NH).
- 326: Beacon MCY, Mercury, AZ at 0828 (Szalony)
- 329: Beacon TAD, Trinidad, CO at 1320 (Szalony).
- 332: Beacon BE, Hanscom Fld., Bedford, MA at 0403 (Starin, NH).
- 347: Beacon LFA, Klamath Falls, OR at 1415 (Szalony, CA).
- 350: Beacon NY, Enderby BC at 1414 (Szalony).
- 354: Beacon ZES, Cape Scott, BC at 1405 (Szalony, CA).
- 359: Beacon YAZ, Tofino, BC at 1405 (Szalony); Beacon BO, Boise ID at 1406 (Szalony, CA).
- 367: Beacon HA, Tuamotu Isl., Hao Atoll, French Polynesia at 1305 (Szalony, CA). Congrats on this great catch!-- Ed.
- 368: Beacon SIR, Rawlings, WY at 1408 (Szalony).
- 371: Beacon GT, Great Falls, WY at 1355 (Szalony, CA).
- 375: Beacon HPL, Nucla, CO at 1351 (Szalony).
- 390: Beacon JT, Stephenville, Nfld., at 0402 (Starin, NH).
- 391: Beacon DDP, San Juan, PR at 0144 (Tom Kneitel, NY).
- 407: Beacon LAB at 0404 (Starin, NH). This is probably LAB E beacon thought to be located on Swan Island near Honduras, per info in the LWCA newsletter Lowdown, 1/87-- Ed.
- 524: Beacon HEH, Heath Apt., Heath, OH at 0435. QSL address is Aviation Works, Inc., Newark-Heath Airport, 530 Heath Rd., Heath OH 43056 ("JM," KY).
- 1672: GKR, Wick, Scotland w/GKR1 marker in CW at 0336 (Pat O'Connor, NH). Nice one, Pat!
- 2182: PZN, Paramaribo, Surinam at 0013 calling ship PACIFICO in USB (O'Connor, NH).

Abbreviations Used For Intercepts

- AM Amplitude Modulation mode
- BC Broadcast
- CW Morse Code mode
- EE English
- GG German
- ID Identifier/led/location
- LSB Lower Sideband mode
- OM Male operator
- PP Portuguese
- SS Spanish
- t/c Traffic
- USB Upper Sideband mode
- w/ with
- wx Weather report/forecast
- YL Female operator
- 4F 4-figure coded groups (i.e. 5739)
- 5F 5-figure coded groups
- 5L 5-letter coded groups (i.e. IGRXJ)

- 2291: IDQ/2/3/6, Rome Navrad, Italy in CW w/CW marker at 0103 (Kneitel, NY).
- 2832: GNK1 (U.K. allocation) in CW at 0055 sent call then into RTTY (Ross, Ont.).
- 2899: Shannon Aeradio in USB at 0500 to numerous flights; Gander also heard here (Thomas, MI).
- 2901: American 54 to VFG, Gander ATC w./flight & wx info in USB at 0750 (Scalzo, Quebec).
- 2932: Northwest 18 in USB at 0921 to Tokyo w/position report (Lavallee, S. Korea).
- 3088.5: Almost daily here a CW station sends a marker tape with an ID that changes daily. Heard various times 0200-0530 with ID's such as 31VN, MAF5, VL6O, MEHO, 8KK3, 6QUA, many others. Around 2300 5L gps noted here too. All sigs are weak (Kneitel, NY).
- 3129: S4R, DBX, W2M tactical calls, probably US mil in USB around 0400 making reference to "Alligator Playground" ("JM," KY).
- 3167.2: Beacon P in CW at 0125 (Kneitel)
- 3176: FUG, La Regine Navrad, France in CW at 2302 w/call marker (Kneitel, NY).
- 3256: FUG, Toulon Navrad, France in CW at 2313 w/call marker (Kneitel, NY).
- 3435: GYA, Royal Navy, London, England in CW at 0820 w/marker (Thomas, MI); same at 2321 (Kneitel, NY).
- 3485: New York Radio in LSB, OM gives aviation WX (Ellison, AZ). Time not given-- Ed.
- 3810: HD210A, Guayaquil, Ecuador time station heard 0735-0757 (Ellison, AZ).
- 4125: WYJ4022, WRV2125 in comms w/WRV, all un-ID, at 2042. Also WYP2212, the PEGGY S., at 2030 enroute Piney Pt., MD. All USB (Lingenfield, PA).
- 4241.4: 4XZ, Haifa, Israel in CW at 0052 w/VVV marker (Ross, Ont.).
- 4422.4: High Seas service to Nordic France

(??) at 0400 in USB. Lovers spat-- boyfriend went on the cruise with another girlfriend (Frame, WV).

4448: Beacon U in CW at 0337; actually double U beacons as these were 2 separate sigs w/different sig levels & tones (Vendetti, NJ).

4500: VNG, Lyndhurst, Australia in AM at 1330 w/time sigs (Szalony, CA).

4674.5: ERJ (Soviet allocation) in CW w/kg numerous flights including some USA allocations. CW had very strange "swings" & sent at about 40 wpm (Thomas, MI).

4742: Architekt, RAF Upavon, England in USB at 0155 w/coded aviation wx (Ross, Ont.).

4781: WGY912, FEMA Mt. Weather, Berryville, VA in CW at 0508 w/5L grps ("JM," KY).

4880: YL/EE at 0500 in AM-mode repeating 3 phonetics. All that I could copy was XRAY ONE due to SWBC GRM. Off at 0505 (Lingenfield)

4965: KKN39, US Dept. of State, location unknown, in CW w/QRA tape at 0220 (Thomas, MI). Kneitel's Guide to Embassy & Espionage Communications lists it at Washington, DC (Warrenton, VA)-- Ed.

5000: WWVH (also 10 MHz), Kekaha, Kuai, HI w/time sigs. Surprisingly (for Flagstaff, AZ) nearby WWV was not heard at all on 5/10 MHz! Also weakly heard on 5 MHz, CW & Japanese YL announcer, probably station JJY. Heard 0657-0800 (Ellison, AZ).

5013.5: US Army Corps of Engineers stations in Jefferson City & Gasconade, MO plus others in MO in net regarding dam release quantities & river states at MO locations. In LSB at 1710 (A. Nonymous, MO); WUB4, Army Engineers at Baltimore, MD with LSB net callup for reports and check-ins on a Friday at 1310. Net stations included WUB's -46, -47, -48, -49, -403, -436 (Kneitel, NY).

5090: EE/YL with 3/2F grps in AM at 2327. Powerhouse signal was running 40+ over 59! (Kneitel, NY).

5135: 5L grps in CW at 0204 (Kneitel, NY).

5180: 5L grps in CW at 2241, no ID. Each 5F grp contained the numeral 6 (Vendetti, NJ).

5286: D4H working G9R in USB at 0445 (Kneitel).

5306: MARS station "Uniform Sierra Charlie" handling phone patches from "Hotel 44" in USB at 1822. "Hotel 44" located in the back of a truck parked in the woods at Ft. Jackson, SC. Another unrelated station here at the same time ID'd as "Red Leader" & kept thinking that "Hotel 44" was calling him-- was thoroughly annoyed about the whole thing since "Red Leader" apparently not a MARS station (Kneitel, NY).

5307: Beacon D in CW at 0515 (Kneitel, NY).

5320: Navy Hovercraft 007, USCGC POINT THATCHER, A-21, Delta Sierra & other units contacting USCG Comsta New Orleans, LA in USB at 1414 (Kneitel, NY).

5403: Chinese ftc net at 0019 in USB. No ID's or locations (Vendetti, NJ).

5440: GG/YL with 3/2F in AM at 0220 (Kneitel).

5442.5: KWL90, US Embassy, Tokyo, Japan in CW (Szalony, CA). No time or xmsn details given-- Ed.

5532: KLM Flight 772 in USB at 2245 w/kg KLM Amsterdam, in EE & Dutch (Vendetti)

5536: Eastern Flight 2929 w/kg Bermuda in USB a 0326 requesting special landing because a passenger had taken seriously ill (Oberberger, IL).

5550: Cubana 1491 w/kg Boyeros (Havana) in USB at 0627 asking for an ambulance upon arrival in 2 hours (Halstead, WV).

5574: San Francisco R. in LSB 2250-2325 w/kg many flights such as Western 565, Delta 25, American 1, Northwest 7, Singapore 11, etc., etc. (Ellison, AZ).

5598: Air France 202 w/kg Santa Maria in USB at 0411. Was a Boeing 747 enroute Paris from Cayenne (Halstead, WV).

5628.5: Air France 273 in USB at 1425 to Honolulu; United 808 at 0737 to Tokyo (Lavallee).

5640: EIP, Shannon Aeradia, Ireland in USB at 0540 w/aera wx ("JM," KY).

5750: GG/YL repeating 1-to-0 count, recorded. In USB at 2005 (Kneitel, NY).

5918.3: 5L grps in CW at 0235 (Kneitel, NY).

6218: KMY, un-ID sta, in comms w/Y4IP, the POWHATAN, & PIWR, un-ID, at 2047 in USB. Also heard WJL, un-ID, w/comms to un-ID ship at 2051 (Lingenfield, PA).

6444: VIS, Sydney R., Australia in CW at 1315 w/call marker (Kneitel, NY).

6507: USCG Comsta Portsmouth, VA in comms w/"Michelle Dag" (??) in USB at 0125. Vessel was reporting distress flare sighting (Slaughter, OH).

6627.2: Keyboard w/kg Conical Alfa w/ftc for Kingstar, USB at 0830 (Lavallee, S. Korea).

6755: Un-ID sta in LSB at 0721 w/aviation WX for Canadian locations (Ellison, AZ).

6761.1: USAF xmsn re near miss mid-air collision. Aircraft "31" called Skybird at 0044 & asked for Safety Officer to meet them upon landing concerning the incident (Fram, WV).

6773: "IGG M" in CW at 0102, changed to "AUW M" marker at 0103 then went into 5L grps (Kneitel, NY).

6784: "714 714 714" followed by 1-to-0 count repeating tape marker by EE/YL in USB at 2110 (Kneitel, NY).

6835: YL/SS w/SF grps at 0340 but heavy QRM from CW & oscillating tone (Scalzo, Que.) Time not given-- Ed.

6870: Q3V, G4T, & UIC, all un-ID, in USB at 1835 w/coded grps ("JM," KY).

6900: EE/YL in USB at 2112 sending 3/2F grps (Kneitel, NY).

6911: 5L grps in CW at 1325 (Kneitel, NY).

6962: YL/EE in AM at 0240 with 3/2F grps (Morton, FL).

6977: Un-ID stations in USB at 1520 w/WX observations ("JM," KY).

7520: Un-ID sta in USB at 0559 asking for an RTTY test ("JM," KY).

7613: Un-ID SS station in LSB at 0010 w/msg for the political front to JIBAU (spelled out phonetically) (Vendetti, NJ).

8056: Un-ID sta in CW at 0040 w/5L grps ("JM," KY).

8101: Incubate (probable Airborne Command Post) in USB at 1726 trying to contact Pine Rose on SAC Alfa Papa freq. Same station w/different operator trying to raise Pine Rose simultaneously on UHF approx. 265 MHz "Advent" freq. ("JM," KY).

8137: Beacon U in CW at 1339 (Szalony, CA). There are about 18 freqs reported for beacons w/the U ID's. POP'COMM for 12/84 ran an excellent article on these by Bill Orr. He said that the suspected location for them is in the Murmansk area of the USSR-- Ed.

8207.4: NNTR, the USS THEODORE ROOSEVELT, CVN-71, w/patch ftc via WOM, Miami. In USB at 2241 (O'Connor, NH).

8222: LITA, vessel NORWAY in USB at 0023 in Contact w/WOO New York. Said they were near the Dominican Republic (Slaughter, OH).

8241: GCDG, HMS ARK ROYAL at 1914 w/patch ftc thru GKU46 in USB (O'Connor)

8390: C4GS, Cypriot vessel EASTERN NAVIGATOR wkg WLO in CW at 0646 (Halstead, WV).

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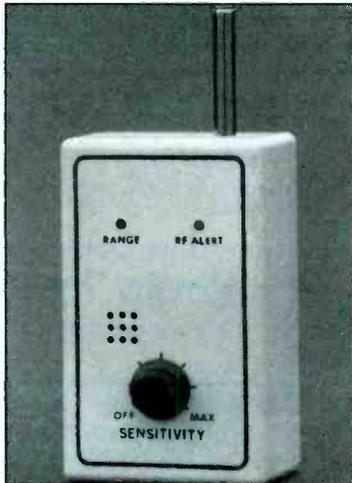
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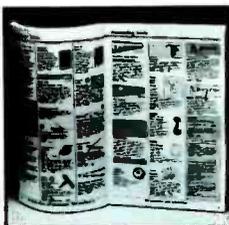


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CIRCLE 21 ON READER SERVICE CARD

8393: ONEL, a Belgian vessel w/kg HEB w/position report in CW at 0747 (Halstead, WV).
8522: CTP, Oeiras Navrad, Portugal in CW at 0350 ("JM," KY).
8569: JNA, Tokyo Navrad, Japan in CW at 1750 sending CQ QTC DUTG DUTG DE JNA. Seems to be a new freq for JNA (Hall, WA).
8609.2: CLJ, Caibarien, Cuba w/kg Soviet vessel w/callsign UNDA in CW at 2134. After contact established, CLJ sent pre-taped tfc in high-speed CW (Halstead, WV).
8648: DHJ59 in CW at 1557 w/CW marker for FRG NATO/Navrad, Sengwarden (Hall, WA).
8665: KLC, Galveston R., TX in CW at 2305 calling CQ (Szalony, CA).
8645.5: Beacon F in CW at 1415 (Szalony, CA). In his 1/85 POP'COMM story, Bill Orr places the F beacons in the area of Vladivostok, USSR-- Ed/
8686: PKF, Makassar (Ujung Pandong), Indonesia at 1226 in CW calling CQ (O'Connor, NH). There's one you don't hear every day!-- Ed.
8759: Mil net w/YL Net Controller "Charlie" w/kg Candeleyber & Bravo. 3L phonetic code grps, sig checks, 2L authenticator codes. Heard in USB at 1755, w/QRM (Moran, IL).
8765: National Weather Svc., Miami, FL in USB w/marine WX for regional waters, at 1013 (Ellison, AZ).
8771: Raspberry Corpus Christi (NAS Corpus Christi, TX) at 2048 in USB to Spartan (USS Lexington) w/msg for Midway Isl. (O'Connor)
8795: Paris, France radiotelephone ID marker w/voice ID & mx at 2019. At 2022 stn commenced w/commercial aircraft in FF/EE in USB (Scalzo).
8842: Aeroflot 352 w/kg COL in Havana via CW at 0015 reporting over Dakar at 2330 enroute Budapest. Cubana 492 w/kg COL on CW at 1804 w/position report & ETA Cape Verde at 2240. Aeroflot 339 w/kg COL in CW at 1401 enroute Managua from Havana (Halstead, WV).
8865: Dakar ATC, Senegal in USB during 0258-0300 in contact w/Nigerian 850 (Slaughter).
8903: 9GC, Accra Aeradio, Ghana at 2115 w/kg Luanda, Angola (O'Connor, NH).
8903.6: Naval 313 in USB at 0718 to Manila w/comms check (Lavallee, S. Korea).
8905: Various African ATC's such as Kano, Nigeria; Khartoum, Sudan; Brazzaville, Congo, w/kg aircraft. All ground stations heard OK but aircraft very weak level in USB 2100-2125 (Scalzo).
8943: Johannesburg ATC, RSA in USB from 0156-0202 (Slaughter, OH).

8967.1: Airevac 22583 in USB at 0955 to Yokota Monitor w/patch to 19th AES (Lavallee)
8972: SHA38, Stockholm, Sweden in USB at 2132 w/Swedish language tfc (Vendetti, NJ).
8976.6: Sonar-like sound at 1514 (Anonymous, MO).
9117.5: PCW2, Netherlands embassy, Tel Aviv, Israel at 2206 w/CW marker followed by 4 data bursts (Kneitel, NY).
9212: 5F grps in CW at 2114, at 2117 went into lengthy string of ungrouped #'s (Kneitel, NY).
9322: Beacon X, in CW at 1906. Extremely strong signal (Kneitel, NY).
9865: Z84, National Guard Army, Big Spring, TX wkg stations 016, Z35, 018, Z43 in USB at 1505. When asked his location, Z84, said he was atop a mountain deep in the heart of Texas. This was followed by a long pause. When asked to explain, Z84 replied he was still at the National Guard Army in Big Spring. After another pause, the inquiring station merely replied, "OK." So much for using a tactical ID for security purposes! (A. Nonymous, MO).
10075: Air Inc., Houston, TX in USB at 2241 to Continental 005. Later ID'd as American Trans Air 775. QSY'd to 17940 kHz (Thomas, MI).
10141: 5BC46, Cyprus Radiotelephone Service, Nicosia, Cyprus w/USB voice marker at 1932. OM in EE & Greek asking for stations to reply on 8247.7 kHz (Kneitel, NY).
10213.5: Beacon U in CW at 1311 (Kneitel).
10888: 1-side only of phone patches from a mil base somewhere. Accents sounded Australian. In LSB at 1326 (Kneitel, NY).
11076: US anti-smuggler aps, Caribbean area in USB at 1254 (Kneitel, NY).
11176: ASCOT 1148 (RAF VC-10 transport) at 2213 w/kg Ascension Isl. USAF stn. (O'Connor, NH).
12185.5: Beacon K in CW at 1256 (Kneitel, NY).
12301: CME302, Polish Embassy, Havana in CW at 2200 w/lengthy msg in Polish. Heavy QRM from TIM in Costa Rica (Hall, WA).
12432.3: KFPM, tanker EXXON BAYTOWN at 1520 in USB w/kg KHT Cedar Rapids, IA (O'Connor, NH).
12569.5: ABKL, OLYMPIC SUN II in CW at 1911 w/kg GKD (Margolis, IL).
12714: CBV3, Valparaiso R., Chile in CW at 2359 w/AMVER tfc (Moran, IL).
12741: CBV, Valparaiso R., Chile in CW w/marker at 0014 (Vendetti, NJ).
13244: MacDill AFB calling Airevac 96016 in USB at 1738 (A. Nonymous, MO).
13382: GFT, Bracknell Meteo, England w/CW marker at 1301 (Kneitel, NY).
13403.4: Beacon CT in CW at 2051 (Kneitel).
13468: Odd musical control(?) tones intercepted at 2053 sounded like chimes or music box. 4 deep tones sent simultaneously w/complex pattern of higher tones (Kneitel, NY).
13917: 5F gps w/cut 0's in CW at 1407 (Kneitel).
14509: RIW, Soviet Navrad, Khiva, Uzbek, USSR w/tfc in CW at 1317 (Kneitel, NY).
14766: EE/YL w/5F grps, each grp repeated in AM at 1849 (Kneitel, NY).
14805: 1-side of phone patches from a British mil base somewhere, LSB at 1317 (Kneitel, NY).
14813: Mixed grps of encrypted CW at 1515 (Kneitel, NY).
15035: VX4, Edmonton Military, Alta., in USB at 1922 w/aviation wx (Lingenfield, PA).
15048: AF48, Andrews AFB, MD w/phone patches from un-ID aircraft in USB at 2220 (Lingenfield, PA).
15130: Jammer AS, presumed Soviet, at 1400 going after RFE (Kneitel, NY).
15280: Jammers HF, XN, SU, presumed Soviet, at 1323, working on VOA (Kneitel, NY).
15290: Jammer R9, presumed Soviet, at 1826 having a run at RFE (Kneitel, NY).
15738: AYA26, Interpol Buenos Aires, Argentina in CW at 2350 w/SS tfc. Sent long list of names & an extradition notice. Also heard YVZ32, IP Caracas, Venezuela & 2 un-ID stns, SPQ2 & OKP5 (Hall, WA).
15687.1: WFGV, OVERSEAS WASHINGTON in USB at 1721 w/kg KHT, Cedar Rapids, IA for patch to office. Also heard KGPG, tanker SEABULK MAGNACHEM in USB at 1405 w/patch via KHT (Symington, OH).
16590.2: KADC, Research vessel ATLANTIS II in USB at 2040 w/kg KXC713, Woods Hole Oceanographic Institute, MA. This is the ship that located the TITANIC! (Symington, OH).
16634: JPA62, Interpol Nagoya, Japan in CW at 0036 w/long bulletin to Korea giving list of names. Nice "fist" but sends 5L grps (Hall, WA).
16790: JFAB, Japanese ore carrier SHINYU MARU in CW at 2005 w/Telexes to GKD (Margolis).
16791: HQLR, Honduran Cargo ship CONDATA in CW at 1925 w/Telexes to un-ID sta (Margolis).
16942.8: YURR, Rijeka R., Yugoslavia w/VVV tape in CW at 1535 (Kneitel, NY).
17146.4: 4X0, Haifa R., Israel calling CQ in CW at 1308 (O'Connor, NH).
17189.6: D3E71, Luanda R., Angola calling CQ in CW at 1502 (Kneitel, NY).
17218: PCH, Scheveningen, Netherlands in CW at 1650 w/ID marker ("JM," KY).

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CLANDESTINE COMMUNIQUE

WHAT'S NEW WITH THE CLANDESTINES

BY GERRY L. DEXTER

In February's column we discussed the mysterious anti-Castro clandestine Radio Caiman and questioned whether the reported backers of this station, a group calling itself Pro Libertad de Cuba, really existed and invited them to respond. Well, they did, or at least somebody did.

We received an envelope which had been addressed by a cutout of our byline and a cutout of the POP'COMM name and address from a subscription card. Both cutouts were pasted to the front of an envelope. Inside was a small folded card, the inside of which contained the words "Comite Pro Libertad de Cuba" and "Cuba 1987." In the center was a drawing of an alligator ("caiman" means "alligator" or "clever man") with the word "caiman" underneath. The left side of the card contained a sticker Cuban flag and another sticker bearing the word "Cuba" with a section of barbed wire underneath. The front and back of the card were blank. The envelope had no return address and was postmarked both in Providence, RI and Bryon, TX.

The only other person we know of who has had contact with this group is Dr. John Santosuosso. He received a letter from this group in late 1985 in which Pro Libertad claimed to operate Radio Caiman. Santosuosso reported that he had been in contact with a Pro Libertad office but that the group would say nothing more. A month or two later he received a mailing somewhat similar to the one we received, though his was mailed from Canada.

So, what is going on here? Is this group, if it is a group, for real or is someone putting us on? A few questions may help decide which

way to lean on the matter. Are we to believe this group runs the powerful, smoothly and professionally programmed and technically superior Radio Caiman, yet sends "cut and paste" letters? Why haven't other Cuban exile groups or the various freedom umbrella groups heard of Pro Libertad de Cuba? Other anti-Castro organizations who have operated illegal clandestine transmitters on U.S. soil have openly maintained offices, telephones, press spokesman. Radio Caiman is believed to be out of the FCC's reach, broadcasting from Central America, so why these cat and mouse games? Finally, does this exile group read POP'COMM?

Sorry guys. We'll need a bit more than this before we believe it's anything more than a ruse! Meantime, Caiman continues to be well heard in the evenings on 7470.

Radio Ba Yi (First of August), the anti-Beijing station believed to be operated by the U.S.S.R. from a transmitter near Vladivostok, has left the air. The station, which was loggable in the U.S. in the early mornings on 12120 does have, however, a long history of comings and goings, at one point even stating that it took a "vacation" each summer. Ba Yi, this time, may have been a victim of a slight thaw in Sino-Soviet relations. If those relations turn a little colder again at some future time, you can look for Radio Ba Yi to return.

Radio SPLA, the station of the Sudan People's Liberation Army/Movement has moved from its former frequency of 9600 and is now on 9550 and/or 11710. Overall broadcasting hours seem to have been expanded to include 1100-1200 as well as 1300-1400. English is aired at 1300. We

continue to seek an address for the Sudan People's Liberation Movement. It's hard to believe that no reader out there has access to this as we know we have readers who maintain some very interesting connections!

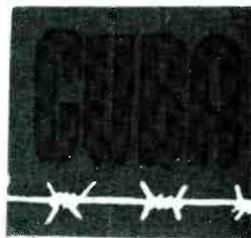
The same thing holds true for an address for G.U.N.T., the Libyan-backed political party in whose name Radio Bardai operates, via Libyan broadcasting facilities, of course. Letters to the address listed in some sources (P.O. Box 2615, Tripoli) are simply returned by Libyan postal authorities. Incidentally, reception of Radio Bardai is possible during the months of shorter daylight in the East and, less often, the Midwest. When the time is right, try 6009, in French, to sign-off at 2030.

It isn't often reported in the U.S. so it is good to have a fairly recent schedule for the South Korean-run, anti-Pyongyang station Echo of Hope. Best opportunities for U.S. listeners would be 0090-1200 and 1400-1700 on 3985.

Radio Nejat-e-Iran (Liberation of Iran) operates in Farsi 1630-1830 on 7085 and 9027 and 0330-0530 on 9027 and 15555 (sometimes 9400 instead). Radio Iran Toilers, a station of the Iranian Tudeh (communist) party is scheduled at 0230-0300 and 1530-1630 on 6230 and 10870. Tentatively heard at 1530 on 10870 by your editor, though very weak and through considerable interference.

WANTED: Information, background material, news clippings, pertinent illustrative material, address leads and loggings on clandestine stations and programs. If you feel it is necessary, we will be glad to protect your identity as a supplier of information.

PC



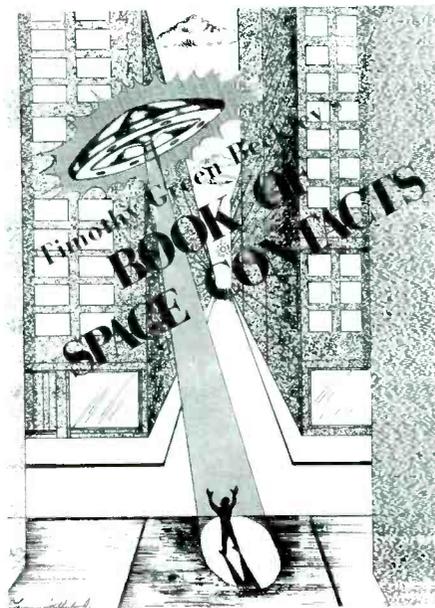
Pro Libertad de Cuba. Radio Caiman is real enough but what about this group?

Beaming In (from page 5)

the WOR studios into the dawn's early light, I saw that someone had bent my car's radio antenna into something that looked like a lightning bolt. A week later, when a stroke of real lightning hit my home antennas, I was convinced that these incidents were manifestations of Ming's wrath.

Since that time, I've tried very hard not to say or do anything that would bring me to any further untoward attention of cosmic beings who might be hovering around in this corner of the galaxy. Still, I was stirred to action when one of my readers recently sent me an ad he had come across. It suggested that people could be "part of an unusual experiment." This time, "leading experts" were going to tell "how to talk with space beings," an open invitation to "join the real space program and become a UFO contactee." All of this would be possible upon reading the information presented in the *Book of Space Contacts*, by Timothy Green Beckley. Despite my fears, I decided to obtain this book in the hopes of squaring myself with the good people on Neptune and other planets whom I had offended with my crass monologue on Randi's call-in program.

I figured that since I'd already communicated on a *Ouija Board* and by Cellular Mobile Telephone, I'd consigned myself to eternal perdition anyway. What I did I have



Front cover of "The Book of Space Contacts." Tesla is probably spinning in his grave at the thought of having become the pinup and hero of almost every far-out pseudo-scientific group in the world. This book claims Tesla was sent here from the planet Venus exactly 131 years ago this month. Happy Birthday, Nikola!

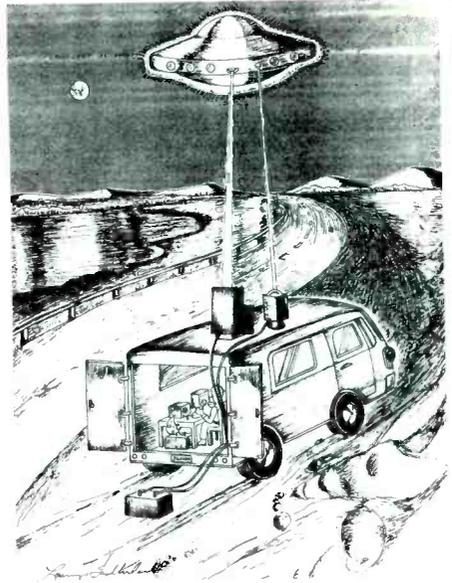
to lose? So, when Beckley's book arrived I quickly flipped through it for instructions on how to get on the cosmic band. I was instantly delighted by a full-page drawing of a guy in a communications van. A UFO was hovering over the van, and radiating between the van's odd antennas and the saucer were beams or rays that I presumed were intended to represent the exchange of communications. Yes, the text explained, that's just what was taking place. It was an artist's conception of "researcher John Otto (now deceased)" using a light-beam communicator from a van parked near Needles, CA. Maybe John Otto (now deceased) had said something the UFO didn't like and they zapped him—the book didn't say how he came to be deceased. Maybe the UFO was angry at him for being so stupid as to use radio when he could have more easily stood on the van's roof and shouted up to the saucer pilot when he stuck his head(s) out of the window.

There were many somber testimonials from persons who said that they had made saucer contacts; some descriptions were accompanied by child-like drawings purporting to show Martians and Venusians (none looked as ominous as the chap from Neptune on Randi's radio show). And there were plenty of words about cosmic brotherhood. But I was trying to skip over this fluff and get to the nitty-gritty that gave the frequencies, skeds, callsigns, transmission modes, antenna headings, the QSL managers' addresses and how much of a donation I had to send to get a QSL from one of these DXpeditions.

I thought it was especially interesting that the book said that John Otto (now deceased) had made his UFO radio contact from California. My first contacts on the 6 meter band took place when I lived in California. I came to believe that if anybody on Earth could actually contact UFO's, it surely would have been a wild 6-land 50 MHz operator who'd do it first.

Beckley's book didn't offer specific frequencies, but it did provide the nuts and bolts about the equipment required. That's where the author relates the story about "a friend of ours who lived in the Midwest in the mid-1950's who was receiving radio communications from space intelligences. This was all going along rather well when one day he went to his mailbox and found a large envelope without a return address. He opened it and was rather surprised to find that it contained a set of plans to build a . . . communications device. Since he was an electronics technician he went ahead and built it and used it and actually made contact." Sounds so simple, doesn't it?

Next, we learn how, later in the 1950's, two sisters, Helen and Betty Mitchell, had a "physical confrontation" with two aliens in a downtown St. Louis coffee shop. Instead of taking the ladies out for a night on the town, the crafty aliens presented them with information on building a UFO transceiver. After making contact using this equipment, one



An illustration from "The Book of Space Contacts" depicts an actual short haul two-way communication with a UFO. This contact took place in California, where else?

of the sisters was invited aboard a UFO for a personal tour of the facilities. Obviously, these aliens were sailors on a twelve-hour pass while their ship was in port.

One such transmitter shown by Beckley is a neon tube light beam operated by a simple audio amplifier and a microphone. The receiver is a photoelectric cell connected to an audio amplifier, a loudspeaker, and a tape recorder. Essentially, it was the one Carl and Jerry were using in *Popular Electronics* back in the late 1950's.

A better unit was described and credited to being designed by Nikola Tesla. Called the *Tesla Scope*, it was more or less an ESP type device shown in the pictorial to be a "Q" vacuum tube enclosed in a nine foot wooden box. Although no detailed construction plans were given, we are told that a *Tesla Scope* was built by Arthur H. Matthews of Sanford, Quebec. In 1967 he constructed a more modern version "adapting the new microminiature electronics and reducing its size to six feet long." Matthews had built many versions of the device starting in 1938 "under Tesla's guidance."

Matthews claimed that his *Tesla Scope* enabled him to contact a 300 by 700 foot UFO called the X-12 from Venus. Each of the many contacts he made with X-12 was pretty much the same. In a nutshell, the gist of the lengthy message is that Earth is filled wall-to-wall with people who are "sick, unhappy and full of bad habits." It's all "hate and misery" and none of us has any significant spirituality because we're always using "destructive machines" to dispatch one another into oblivion. Of course, the same basic message could be discerned by anybody who watched the nightly TV news on any of the networks. So, what else is new?

The high point of the cosmic message was that Nikola Tesla was a Venusian who, as an infant, landed on this planet July 9th, 1856 "in the hope that his higher mental power and inventive genius would enable him to build advanced machines for the benefit of humanity and the world."

The Venusian message bitterly complained that Tesla's gifts to the people of Earth were all misused and that when Tesla left in 1943, the whole place was still in the same mess as it was when he had arrived. The Venusians are thoroughly fed up with all of us and the book's author complains that "much research is needed in the area of constructing and utilizing such devices as the light-beam communicator and the *Tesla Scope*." He says that he knows of no scientist working with such equipment; thus proving scientists "have no interest in actually communicating with intelligent life in the universe." Mostly, he thinks, scientists "seem mainly interested in making money and prolonging the inevitable."

Isn't it sad that poor Tesla, genuine genius that he was, has been used as the pinup for so many fringe groups and causes? A pity. Still, this month marks the 131st anniversary of Tesla's arrival on the Earth plane from Venus and I, for one, am taking no chances in stepping on the toes of any additional intergalactic communications emissaries. The radio guy from Neptune is already angry with me. Come July 9th, I'm sending out a galactic message of peace,

cosmic brotherhood, and repentance. I'll be on all esoteric bands and in all known modes including *Ouija Borads*, Hieronymous machines, light-beam transmitters, and *Tesla Scopes*. Hopefully this will reach X-12 and anybody else who might be tuned in on the calling channel.

"Breaker, breaker! Calling that X-12 and the net. Gotcha ears on, goodbuddies? This be that old planet Earth calling for a radio check. What be yer twenty, guys? We want to tell ya to have a good day today and a better day tomorrow. Threes and eights and all of those good numbers upon ya. There be no smokies here and everything is clean and green, so we be seein' ya on the flip flop. Seventy through and over to you."

If you're hip, you'll get in on this July 9th thing with a transmission of your own. * Flying saucers are definitely on the move. The March issue of *OMNI* magazine, with straight face, reported that a UFO group has hired a prestigious public relations and ad agency to improve the public image of flying saucers. A large-scale magazine ad and TV commercial campaign is about to get under way, backed by direct mailings to 100,000 people from Carl Sagan to Shirley Maclaine.

Nikola, where are you now that we need you? Wherever you are, happy birthday!

PC

* For those who want to set up their own intergalactic communications station for the big July 9 cosmic broadcast, Beckley's *Book of Space Contacts* is distributed here on Earth by Inner Light Publications, Box 753, New Brunswick, NJ 08903. Check with them directly for further details.

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You get continuous worldwide coverage from 150 KHz to 30 MHz. And local coverage from 118 to 174 MHz with an optional VHF converter.

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Scan the airwaves with a number of programmable scanning functions.

Plus you get keyboard frequency entry. An LCD display for easy readout. A SINPO signal graph. Computer interface capability for advanced listening functions. Two 24 hour clocks. Recording functions. And much more to make your listening station complete.

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Prices and specifications subject to change without notice.
FRG-9600 SSB coverage: 60 to 460 MHz.

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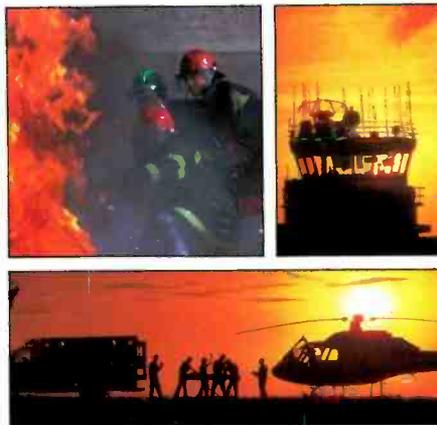


R-5000

High performance receiver

THE high performance receiver is here from the leader in communications technology—the Kenwood R-5000. This all-band, all mode receiver has superior interference reduction circuits, and has been designed with the highest performance standards in mind. Listen to foreign music, news, and commentary. Tune in local police, fire, aircraft, weather, and other public service channels with the VC-20 VHF converter. All this excitement and more is yours with a Kenwood R-5000 receiver!

- Covers 100 kHz-30 MHz in 30 bands, with additional coverage from 108-174 MHz (with VC-20 converter installed).
- Superior dynamic range. Exclusive Kenwood DynaMix™ system ensures an honest 102 dB dynamic range. (14 MHz, 500 Hz bandwidth, 50 kHz spacing.)



- 100 memory channels. Store mode, frequency, antenna selection.
- Voice synthesizer option.
- Computer control option.
- Extremely stable, dual digital VFOs. Accurate to ± 10 ppm over a wide temperature range.
- Kenwood's superb interference reduction. Optional filters further enhance selectivity. Dual noise blankers built-in.
- Direct keyboard frequency entry.

- Versatile programmable scanning, with center-stop tuning.
- Choice of either high or low impedance antenna connections.
- Kenwood non-volatile operating system. Lithium battery backs up memories; all functions remain intact even after lithium cell expires.
- Power supply built-in. Optional DCK-2 allows DC operation.
- Selectable AGC, RF attenuator, record and headphone jacks, dual 24-hour clocks with timer, muting terminals.

Optional Accessories:

- VC-20 VHF converter for 108-174 MHz operation
- YK-88A-1 6 kHz AM filter
- YK-88S 2.4 kHz SSB filter
- YK-88SN 1.8 kHz narrow SSB filter
- YK-88C 500 Hz CW filter
- YK-88CN 270 Hz narrow filter
- DCK-2 DC power cable
- HS-5, HS-6, HS-7 headphones
- MB-430 mobile bracket
- SP-430 external speaker
- VS-1 voice synthesizer
- IF-232C/IC-10 computer interface.

More information on the R-5000 and R-2000 is available from Authorized Kenwood Dealers.

R-2000

- 150 kHz-30 MHz in 30 bands
- All modes
 - Digital VFOs tune in 50 Hz, 500 Hz, or 5 kHz steps
 - 10 memory channels
 - Programmable scanning
 - Dual 24-hour digital clocks, with timer
 - 3 built-in IF filters (CW filter optional)
 - All mode squelch, noise blanker, RF attenuator, AGC switch, S meter
 - 100/120/220/240 VAC operation
 - Record, phone jacks
 - Muting terminals
 - VC-10 optional VHF converter (118-174 MHz)



Specifications and prices are subject to change without notice or obligation.

KENWOOD

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