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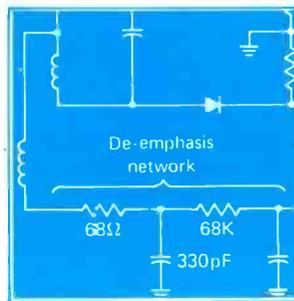
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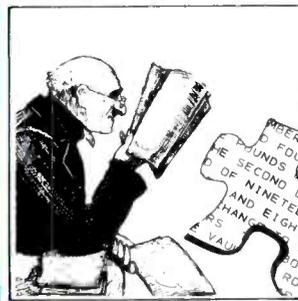
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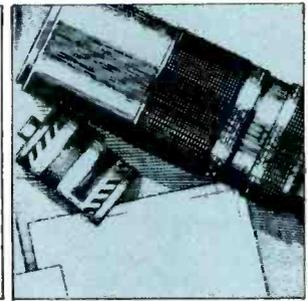
VOL. 2, NO.10



34



38



44

FEATURES

Monitoring The Civil Air Patrol 8

The USAF's Auxiliary offers plenty of listening opportunities. *by Mark W. Johnson*

They Call Her Auntie Beeb 14

The noble BBC is far more than you think. *by Gerry L. Dexter*

Equipment Review: The Regency MX-5000 Scanner 18

25 to 550 MHz in one shot. *by Dr. John Apella, K1L9JF*

Is ELF Able To Manipulate The Weather? 20

Has a technique devised by Tesla permitted the Soviets to alter the world's weather? *by Harry Caul, K1L9XL*

The Hindenburg And Its "Lost" Radio History 24

Rummaging through history we look at something investigators have ignored. *by Tom Kneitel, K2AES*

Scanning The Utah Highway Patrol 28

Frequencies and code signals make it easy!

An Intelligence Report: Iranian Naval Communications 32

Eavesdropping on the Ayatollah's sailors. *by Anton Kuchacevich ze Schluderpacheru*

Mobile Scanner Reception 34

Peculiar problems that affect monitoring. *by Joseph J. Carr*

World's Oldest "Number Code" Mystery – Still Unsolved! 38

If you solve it you could be rewarded with \$16-million in gold and silver! *by Tom Kneitel, K2AES, Editor*

DX-ploring With A Camera 44

Sometimes a camera is best when the transmitter's abandoned! *by Tom Kneitel, K2AES, Editor*

Armed Forces Radio-TV Stations 55

DX with an American flair. *by SFC Harold A. Ort, Jr.*

All The Time In The World 64

Exact time—one of life's greatest free gifts! Tune it in! *by Bill Tanaka, KAZ7KG*

This month's cover: 1st Lt. David Jones, CAP, is Communications Officer for his Georgia Wing ground search and rescue (SAR) team. Every CAP SAR team has at least one Communications Officer to ensure radio communications are maintained between field units and mission coordination staffs. Photo by SSgt. Rand McNatt, USAF.

DEPARTMENTS

Beaming In	4	POP'COMM Products	57
Mailbag	6	Satellite View	58
RTTY Monitoring	37	On The Line	62
Listening Post	40	Pirates Den	67
Survival	46	Radar Reflections	70
Scanner Scene	50	Washington Pulse	72
Communications Confidential	52	Communications Shop	75

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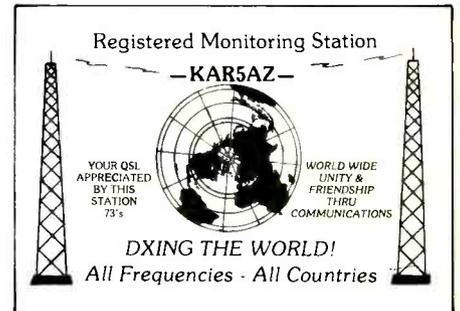
AN EDITORIAL

Semantics

The more time that passes in the listening-to-the-radio hobby, the more complex it seems to become to describe and define various things that relate to this activity. One example is the selection of the proper term or terms to describe a participant in the activity. Do you, for instance, see yourself as a "DXer," an "SWL" (shortwave listener), a "monitor," a "listener," a "communications enthusiast," a "radio nut," or what? I've been noticing these terms as they are used by *POP'COMM* readers and I also find that some readers object to a couple of the descriptive words used. Personally, I have tried to use all of these terms in the magazine since none of them especially bug me and I want to be as all-encompassing as I can and not leave anybody out in the cold. About the only term that I've really avoided is anything related to having an "Experimental International Shortwave Monitoring Station" or related terminology. I think it sounds a bit on the pompous side and things really haven't been very experimental since they stopped using *cats' whisker* detectors.

I can live with most of these terms and am pleased to acknowledge participants under whatever label they wish to wear, and I really think that they all mean pretty much the same thing anyway. In the old days, people used to be "BCL's" (broadcast listeners) "SWL's" or "DXers"; the other labels are more recent additions. It's almost a shame that there isn't a simple all-encompassing term that everybody can agree upon—like "ham" has become for Amateur Radio. It would make things a lot simpler.

Further specialization of some of these terms has brought up an interesting point, one that had never really occurred to me until I received a letter from reader Bob Zeisloft of Oldsmar, Florida. Bob mentioned that he has become increasingly uncomfortable with what he perceives as a listeners' caste system. He said that the upper layers seem to consist of self-proclaimed "serious listeners" who "among other things, disdain the use of certain receivers, dismissing them as appropriate only for the casual listener. Some other characteristics seem to set the serious listeners apart from those apparently untouchable casual class listeners: exotic QSL cards, a shelf full of the latest radio gadgetry, and mastery of the jargon of electrotechnicalese." Bob even suspects that within the serious listener caste there is even a super class strata referred to as the "serious DXer." This type is known by his/her listening with a vengeance and going to such extremes that participation within the hobby (if it can still be called a hobby in their case) has been sapped of any fun, enjoyment, or recreational spirit.



Ed Dye of Russellville, Arkansas uses this attractive design that pretty much says it all.



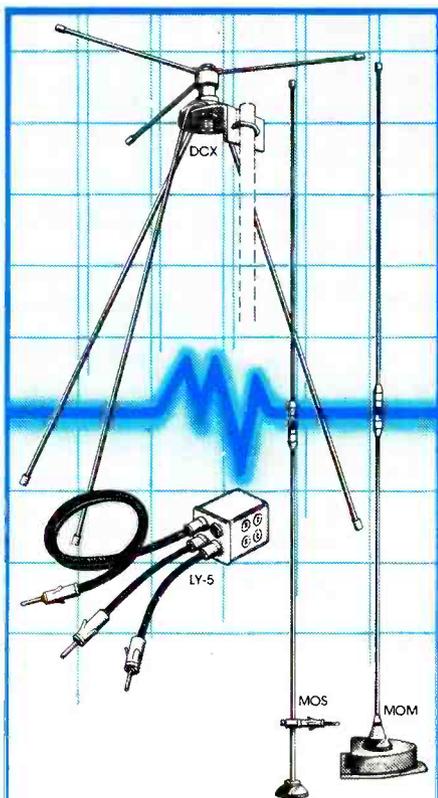
I don't know why this guy couldn't just say he was an SWL and be done with it.

In general, Bob says that there may be some tacit understanding among those who use the caste labels as to their meaning and use in an effort to subtly categorize themselves and others. He notes that all such caste terms are "defined" implicitly and have never been fully explained in the media. Nevertheless, the serious listener/DXer simply does/doesn't use certain equipment or tune in certain stations or types of stations, collect specific QSLs, etc.

After receiving Bob's letter I realized that much of the literature presented to communications hobbyists uses all of these terms rather freely. In *POP'COMM*'s case, I don't believe that they have ever been consciously used to carry any hidden messages relating to a caste system, although now that he has opened the can of peas on the topic I can see his point. Moreover, in discussing Bob's letter with other listeners, I find that many listening hobbyists do recognize the caste systems as real, although perhaps not quite as insidious as Bob presents those involved.

In examining our use of the terms serious and casual listeners here at *POP'COMM*, I'd have to say that a casual listener would be defined as a person who listens occasionally

(Continued on page 74)



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

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

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

1. Less work: an efficient and orderly layout will save me time and energy.
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LETTERS TO THE EDITOR

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

From WSL Operators

I enjoyed your March issue story on WSL. We key all WSL transmitters from our receiving site in Southampton, NY. All the WSL transmitters were originally located at the Amagansett (Napeague) site, but some years ago the HF transmitters were moved to Brentwood (Hauppauge), leaving only the low frequency ones at Amagansett (the towers and salt marsh ground were required for LF). We have two transmitters for 418, 442, 476, and 500 kHz, remotely switched from Southampton. There are two vertical "T" antennas suspended from the cable which runs between the towers. We have 20 operators at Southampton. We work sitor and CW, with about 95% of the traffic via CW. There was some talk of moving the SW transmitters back to Amagansett but those plans are now on hold pending the FCC's ruling on the application to close down WSL. The closure is by no means a certainty. We are fighting it through our union and many comments have been filed by ship operators and other individuals, shipping companies, unions and foreign communications administrations. There are important considerations of public service, safety of life at sea, etc. to be considered before the FCC makes a ruling. We hope to be in business for a while yet. The SW transmitter site has always been called Brentwood, an area which probably pre-dates the name Hauppauge and certainly sounds better. The Voice of America used to have some high power transmitters there, and of course ITT's point-to-point facilities. Now, besides the WSL transmitters, we have transmitters leased for RTTY press, AP fax broadcasts, etc. They gradually sold off the large land area which at one time held the huge antenna farm and it was turned into the industrial park, with the existing transmitting site left in only a small area. I have been a WSL CW operator for the past five years, and for many years before that I was an operator at the old RCA transmitting facilities at Rocky Point, NY.

Incidentally, the old WSC coastal station in New Jersey is being revived. A new company has been formed and a new building is going up on the original site. CW is still the best method of communications for marine traffic. Thanks for writing the WSL story.

Bob McGraw, W2LYH
Riverhead, NY

As a former WSL operator, your story in the March issue interested me. I worked

there for 15 years. The HF transmitters were originally located in Sayville at the present location of the FAA's overseas transmitters (station WSY). WSL's callsign was, in fact, derived from the Sayville location, although the LF transmitters were always located at Amagansett (Napeague). Sometime about 1934 the HF transmitters were moved to Napeague, with some point-to-point transmitters moved to Brentwood. About those two towers in Napeague. There were two other towers there but they blew down in the 1938 hurricane. They were replaced by two identical towers which looked like the west tower. During the big 1948 hurricane, the east tower blew down and for several years the station operated with only one tower. The company had a spare tower in Hawaii that they moved to the United States. This became the east tower. Both towers are 300 feet in height. About 1969 the HF transmitters were moved to Brentwood. The reason the station is known as Amagansett Radio is because there is no post office at Napeague and the nearest PO is Amagansett. For many years we used the following transmitters: 109 kHz (later changed to 113 kHz), 10 to 20 kW; 4 to 22 MHz, 15 to 20 kW; also two 3 kW transmitters for 8 and 13 MHz. On LF there is a 15 kW rig for 418/500 kHz and a 23 kW rig for 476/500 kHz. All except the 3 kW sets have water cooled finals. The control point for WSL is on top of the hill just to the north of Southampton, NY.

Charles R. Nevel, W3KSQ
Mt. Pocono, PA

The information on WSL from these two brasspounders is appreciated. The WSL saga continues as the station's staff makes great efforts to ward off its untimely demise. The final chapter will not be written for a long time to come. Those many listeners who like to copy maritime CW traffic look upon WSL as an old friend and we here at POP'COMM wish the station's staff luck in their efforts. — Editor

Information Appreciated

One of the things I like about POP'COMM is that the publication acknowledges that there are other sources of printed information available and generously provides the names and addresses of those sources, including frequency registries, clubs, and books on topics of interest to its readers. Most magazines (and many club publications) prefer to present themselves as being the only source of information around. You are to be applauded for this refreshing policy. For all you do, this Bud's for you.

Bill Flannagan, USN
San Diego, CA

Thanks for the kind words, and also for the full can of Budweiser which accompanied your letter! POP'COMM is always willing to direct readers to additional informa-

tion sources which we feel are worthwhile, interesting, and useful. — Editor.

Additional Information

The April POP'COMM contained an extremely perceptive feature discussing military aircraft conducting electronics surveillance. Although this feature contained "tail" numbers for U-2/TR-1 and RC-135 spy planes, it was stated that the numbers for the SR-71 were not available. Please note that the early versions of the SR-71 were built as YF-12A research interceptors and the first three were assigned numbers 60-6934 through 60-6936. Designated by the USAF as the A-11, about 15 were delivered and put into service starting in 1962. The SR-71A version went into service in 1966. Consecutive serial numbers commencing with 61-7950 are assigned to at least 29 SR-71A's. Two of these are SR-71B trainers. Let's have more of these stories!

Dean Detton
Biloxi, MS

Stamped Out QSLs?

In the May issue you had a story about reasons why people don't get QSLs in response to their reception reports. I'd like to add one thought—don't use fancy or showy commemorative postage stamps on outgoing mail. Some people have come to feel that by doing so the person who receives the letter will be happily appreciative for the little extra and will be more inclined to QSL. In theory this may be true. In actual practice, postal clerks in some countries (notably Argentina and Brazil) have been known to intercept such letters before they are delivered and either keep the stamps for their own collections or else sell them to dealers. The contents of the letters are thrown away! It's for this reason that Vatican City, for instance, known for its beautiful stamps, usually has a plain looking postage meter impression affixed to especially important mail going to certain nations.

Frank McQuire, KMA1HU
Medford, MA

Frank's observation is quite true according to several persons I spoke to who are knowledgeable in such matters. — Editor

Needs Information

I would like to correspond with anyone having any information on the Hellschreiber transmissions or printers. I understand that one or two of them are in operation in the United States. Also does anyone have any practical conversion information on transistoring a BC-453 Command Receiver. All letters will be answered.

Richard Hope, VK3DLJ
53 Seymour Road
Elsternwick, Vic. 3185
Australia



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CIRCLE 63 ON READER SERVICE CARD



CAP Lt. Col. Daniel Ritchie operates a "base" station, which was actually assembled on location during a training exercise. The station was used to establish contact with some 30 CAP units in eight states. (Photo by SSgt. Rand McNatt, USAF)

Monitoring The Civil Air Patrol

It's The USAF Auxiliary

BY MARK W. JOHNSON



CAP cadets receive extensive hands-on training in proper radio communications practice. During this school year the students themselves took control of the Great Lakes Region network. (Photo by SSgt. Rand McNatt, USAF)

In the early summer of 1942, a Grumman Widgeon crewed by Captain Johnny Haggins and Major Wynant Farr left Absecon, New Jersey on a routine coastal patrol. Shortly after takeoff, the crew was notified by another aircraft that contact had been made with a German submarine about 25 miles off the coast. The second plane was low on fuel so Haggins and Farr flew to the area to continue tracking the enemy vessel.

When they reached the area, the submarine was not in sight. However, as the pair circled the area, Major Farr spotted the outline of the German vessel as it glided along below the surface. Since they could not accurately estimate the sub's depth, they decided to follow it in hopes that it would surface to periscope depth. At that point they would attack it with the depth charges on board their aircraft.

Over three hours later and low on fuel, Haggins and Farr prepared to return to base. As they were about to turn back the sub came up to periscope depth. As Captain Haggins aligned his aircraft with the submarine, Major Farr released the first depth charge. The ensuing explosion blew the sub's bow out of the water and left a large oil slick on the surface. Moments later the second depth charge was released into the cen-



Mobile communications and command posts such as this allow Civil Air Patrol to extend radio service into remote areas. (Photo by SSgt. Rand McNatt, USAF)



SSgt. William Johnson (USAF) conducts a roll call of 35 selected stations throughout the U.S. From this central station at Civil Air Patrol Headquarters at Maxwell AFB, Alabama, two-way contact can be established and maintained with CAP units from Puerto Rico to Alaska and Hawaii. (Photo by SSgt. Rand McNatt, USAF)



Air-to-ground coordination is essential to search and rescue missions. Shown are members of the Georgia Wing Civil Air Patrol. (Photo by MSgt. Russ Brown, USAF)

CAP-USAF FREQUENCY DATA

CAP-USAF	FREQUENCY (CxF)	EMISSION
CAP-USAF/Rgns 5,4,5	7635.0 kHz	A3J (USB)
CAP-USAF/Rgns 1,2,6,7,8	14905.0 kHz	A3J (LSB)
<u>GREAT LAKES REGION (3)</u>		
GLR/CAP Wgs	7918.5 kHz	A3J (USB)
GLR/CAP-USAF	7635.0 kHz	A3J (USB)
<u>MIDDLE EAST REGION (2)</u>		
MER/CAP Wgs	7918.5 kHz	A3J (USB)
MER/CAP-USAF	14905.0 kHz	A3J (LSB)
<u>NORTH CENTRAL REGION (5)</u>		
NCR/CAP Wgs	7918.5 kHz	A3J (USB)
NCR/CAP-USAF	7635.0 kHz	A3J (USB)
<u>NORTHEAST REGION (1)</u>		
NER/CAP Wgs	7635.0 kHz	A3J (USB)
NER/CAP Wgs	7918.5 kHz	A3J (USB)
NER/CAP-USAF	14905.0 kHz	A3J (LSB)
<u>PACIFIC REGION (8)</u>		
PACR/CAP Wgs except AK & HI	7918.5 kHz	A3J (USB)
PACR/HI & AK	14905.0 kHz	A3J (LSB)
PACR/CAP-USAF	14905.0 kHz	A3J (LSB)
<u>ROCKY MOUNTAIN REGION (7)</u>		
RMR/CAP Wgs	7918.5 kHz	A3J (USB)
RMR/CAP-USAF	14905.0 kHz	A3J (LSB)
<u>SOUTHEAST REGION (4)</u>		
SER/CAP Wgs	7635.0 kHz	A3J (USB)
SER/PR	20873.0 kHz	A3J (USB)
SER/CAP-USAF	7635.0 kHz	A3J (USB)
<u>SOUTHWEST REGION (6)</u>		
SWR/CAP Wgs	7918.5 kHz	A3J (USB)
SWR/CAP-USAF	14905.0 kHz	A3J (LSB)



Official Civil Air Patrol seal. (Photo by SSgt. Rand McNatt, USAF)

ter of the slick. This time, pieces of debris floated to the surface. Captain Haggins and Major Farr, members of the newly-formed Civil Air Patrol, had the first confirmed "kill" for the CAP's Coastal Patrol.

Since its creation on 1 December 1941, the Civil Air Patrol has provided many valuable services to this country. During World War II the CAP flew virtually every day, performing many vital functions for an over-taxed military. Many CAP members, including Captain Haggins and Major Farr, flew spotting missions looking for German submarines, while others flew search and rescue missions, ferried cargo and passengers, and towed targets for gunnery practice for anti-aircraft batteries. Ground personnel guarded airfields and patrolled other installations and vital services in order to protect against saboteurs.

Immediately following the end of World War II, the future of the CAP was uncertain. However, in 1948 the continued existence of the organization was guaranteed when it was assigned permanent status as an auxiliary of the U.S. Air Force. From this point onward the Civil Air Patrol would provide benevolent and noncombatant services to the nation and the USAF.

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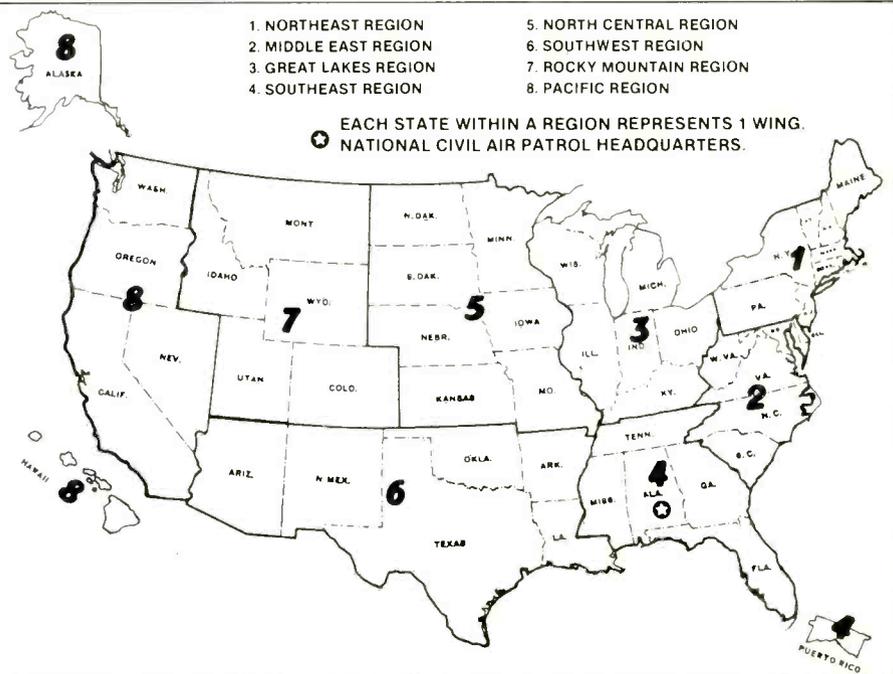
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Michigan	RED ROBIN	WHITE ROBIN	BLUE ROBIN
Ohio	BLACK HAWK	GRAY HAWK	WHITE HAWK
Wisconsin	BADGER	SCOOTER	BUZZARD
MIDDLE EAST	MIDDLE EAST	MIDDLE EAST MOBILE	MIDDLE EAST AIR
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S. Carolina	KIDDIE KAR	SIDE KAR	BOX KAR
Virginia	BLUE FLITE	GREEN FLITE	RED FLITE
West Virginia	LOWLAND	OVERLAND	HIGHLAND
NORTH CENTRAL	NORTH CENTRAL	NORTH CENTRAL MOBILE	NORTH CENTRAL AIR
Iowa	CORNSTATE	BULLDOG	CYCLONE
Kansas	JAYHAWK POST	JAYHAWK BUG	JAYHAWK BAT
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Missouri	BLUE BIRD	RED BIRD	BLACK BIRD
Nebraska	WIGWAM	BUFFALO	MEADOWLARK
N. Dakota	BLACKFOOT	SIoux	MOHAWK
S. Dakota	DACOTA	MANDAN	CHEYENNE
NORTHEAST	NORTHEAST	NORTHEAST MOBILE	NORTHEAST AIR
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Maine	PINETREE	PINEKARR	PINEAYR
Massachusetts	FREEDOM	PILGRIM	CLIPPER
New Hampshire	PROFILE	BOBCAT	SAUCER
New Jersey	ZIG ZAG	DOMINO	AIRCAP
New York	EMPIRE	TOMCAT	WILDCAT
Pennsylvania	KEYSTONE	ROLLING STONE	FLIGHT STONE
Rhode Island	RHODY	LITTLE RHODY	AIR RHODY
Vermont	KCC-595	MARBLE	MANSFIELD
PACIFIC	KMG-664	PACIFIC MOBILE	PACIFIC AIR
Alaska	KWA-677	MUKLUK	AURORA
California	KME-284	BLACK BEAR	BROWN BEAR
Hawaii	KUA-341	MOBILE	HIBOY
Nevada	KOP-335	YELLOW JACKET	RED SPIDER
Oregon	KOF-428	BEAVER MUSKRAT	BEAVER BIRD
Washington	KOF-430	MAPLE	ASH
ROCKY MOUNTAIN	KAI-562	ROCKY MOUNTAIN	ROCKY MOUNTAIN AIR
Colorado	KAF-357	PIKES PEAK	BLUE RIVER
Idaho	KOF-334	MAGPIE	HORNET
Montana	KOF-426	FATHER	ANGEL
Utah	KOF-429	UNCLE WILLIE	UNCLE ABLE
Wyoming	KOF-431	KING	JACK
SOUTHEAST	KIJ-960	SOUTHEAST	SOUTHEAST AIR
Alabama	KIG-442	GOLDEN ROD	RAM ROD
Florida	KIG-444	SPARROW	EAGLE
Georgia	KIG-443	RED STAR	BLUE STAR
Mississippi	KKI-721	MOCKINGBIRD	SNOW BIRD
Puerto Rico	WWA-353	PINEAPPLE	PAVA
Tennessee	KIG-448	BLUE CHIP	GOLD CHIP
SOUTHWEST	KKQ-226	SOUTHWEST	SOUTHWEST AIR
Arizona	KOF-424	THUNDERBIRD	TOMAHAWK
Arkansas	KKI-719	DOGWOOD	DIAMOND
Louisiana	KKI-720	MAGNOLIA	PILICAN
New Mexico	KKI-722	PUEBLO	NAVAJO
Oklahoma	KKI-723	SOONER	GASWELL
Texas	KKI-724	EAGLE NEST	BLUE EAGLE



PACIFIC REGION CAP DAILY SINGLE-SIDEBAND SCHEDULE 4585.0 kHz

ZULU	SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
0130-0200			CA		CA		CA
0200-0230	OR	OR	OR	OR	OR	OR	OR
0230-0300				CA		CA CDT	
0300-0330	OR	OR	OR	OR	OR	OR	OR
0330-0400	NV	NV	NV	NV	NV	NV	NV
0400-0430				PACR CDT		PACR CDT	
0430-0500			CA	CA	CA	CA	CA
0500-0530				PACR	PACR	PACR CDT	PACR
0515-0530	PACR CHAP						
0530-0600	HI	HI	HI	HI	HI	HI	HI
0600-0630	AK	AK	AK	AK	AK	AK	AK
1450-	NV	NV	NV	NV	NV	NV	NV
1630-1700		CA	CA	CA	CA	CA	CA
1700-1730							OR
1730-1800	WA	WA	WA	WA	WA	WA	WA

ROCKY MOUNTAIN REGION CAP DAILY SINGLE-SIDEBAND SCHEDULE 4599.5 kHz

ZULU	SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
0100-0130	CO	CO	CO	CO	CO	CO	CO
0130-0200	WY	WY	WY	WY	WY	WY	WY
0200-0230	ID	ID	ID	ID	ID	ID	ID
0230-0300	RMR	RMR	RMR	RMR	RMR	RMR	RMR
0300-0330	UT	UT	UT	UT	UT	UT	UT
0330-0400	MT	MT	MT	MT	MT	MT	MT
1345-1415	WY	WY	WY	WY	WY	WY	WY
1415-1500	CO	CO	CO	CO	CO	CO	CO
1500-1530	MT						
1600-1630	MT	WY	WY	WY	WY	WY	WY
1700-1730	WY						
1730-1800	ID	ID	ID	ID	ID	ID	ID
1800-1830	UT	UT	UT	UT	UT	UT	UT

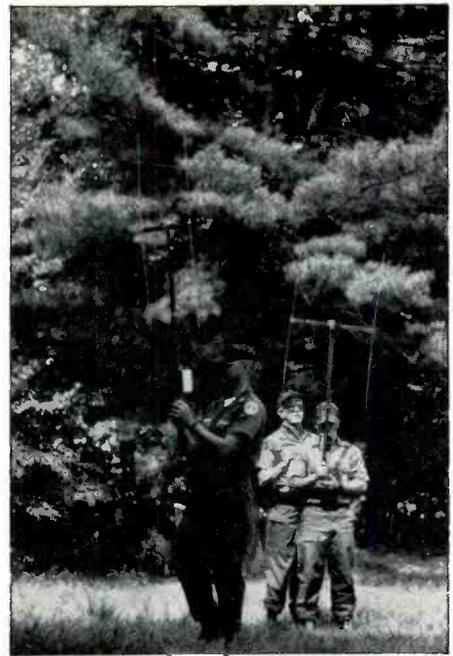
SOUTHWEST REGION CAP DAILY SINGLE-SIDEBAND SCHEDULE 4627.0 kHz

ZULU	SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
2400-0030		TX	TX	TX	TX	TX	TX
0030-0100		OK	OK	OK	OK	OK	OK
0100-0130		LA	LA	LA	LA	LA	LA
0130-0200		AR	AR	AR	AR	AR	AR
0200-0230		NM	NM	NM	NM	NM	NM
0230-0300		AZ	AZ	AZ	AZ	AZ	AZ
0300-0400		SWR		SWR		SWR	
1300-1330	AR	AR	AR	AR	AR	AR	AR
1330-1400	NM	NM	NM	NM	NM	NM	NM
1400-1430	AZ	AZ	AZ	AZ	AZ	AZ	AZ
2300-2400	OK	OK	OK	OK	OK	OK	OK

SOUTHEAST REGION CAP DAILY SINGLE-SIDEBAND SCHEDULE 4467.5 kHz

ZULU	SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
0000-0030	AL		AL	AL	AL	AL	AL
0030-0100	MS	MS	MS	MS	MS	MS	MS
0100-0130			SER		SER		SER
0130-0200	FL	FL	FL*	FL	FL*	FL	FL
0200-0230	TN	TN	TN	TN	TN	TN	TN
1230-1300	FL	FL	FL	FL	FL	FL	FL
1300-1330			SER		SER		TN
1330-1400							SER**
1430-1500*	AL						
2230-2300					MS*		
2300-2330	GA	GA	GA	GA*	GA	GA	GA
2330-2400	TN*	MS*	TN*	AL*	TN	GA*	

* Cadet Net
** SER Chaplain



Civil Air Patrol members receive extensive training in radio location and direction-finding. At the Hawk Mountain Search and Rescue School held each summer in the rugged highlands near Reading, PA, students practice RDF techniques under actual field conditions. Of the 27,471 radios operated by CAP members, 696 are maintained solely for search and rescue activities, and an additional 146 transmitters are used for testing emergency locator receivers. (Photo by SSgt. Rand McNatt, USAF)

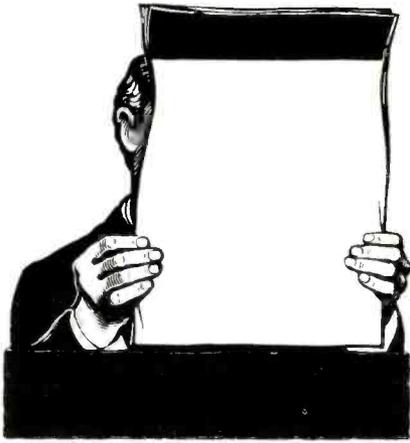
Today the most well-known service provided by the CAP is the many search and rescue missions flown each year by its personnel. However, CAP members are also available for mercy flights, disaster assistance, and civil defense missions.

In order to support its diverse mission and provide a means of training its communications personnel, the Civil Air Patrol maintains an extensive communications network. This network utilizes a number of frequencies in the HF and VHF bands.

To understand the organization of this network it is necessary to look briefly at how the CAP itself is organized. The United States is divided into eight Regions, each containing several states, which are called Wings. Puerto Rico and the District of Columbia are included as separate Wings, giving a total of 52. The Wings are then divided into Sectors, Groups, Squadrons and Flights, with Squadrons being the basic operational unit. Only the larger Wings have Sectors and Groups.

The CAP net organization is similar to the field organization. The six authorized nets are National, Region, Wing, Group, Squadron, and Emergency. Group nets, like Groups themselves, are optional.

For the various daily net operations the Civil Air Patrol relies heavily on frequencies in the 4 MHz band. Each Region is assigned a primary and an alternate frequency that is used by both Region and Wing stations during their regularly scheduled nets.



The Clandestine Confidential Newsletter

A new publication devoted to clandestine stations and programs, *The Clandestine Confidential Newsletter* is designed to keep you up to date on this intriguing aspect of shortwave listening and DXing.

C-C-N will be published six times a year, beginning with the February, 1984 issue. It will contain the latest frequency and schedule information, monitoring data, background information, addresses, and features on new and old stations.

C-C-N will serve as a continuing updater to the new book *Clandestine Confidential*, being published by Universal Electronics.

Subscriptions to C-C-N are \$10.00 per year in North America, \$13.00 overseas, payable in cash, check or money order.

To subscribe, send your remittance to:

**C-C-N,
Gerry L. Dexter,
RR4 Box 110,
Lake Geneva, WI 53147, U.S.A.**

GREAT LAKES REGION CAP DAILY SINGLE-SIDEBAND SCHEDULE 4602.5 kHz

ZCLU	SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
0000-0030	IN	IN	IN	IN	IN	IN	IN
0030-0100		IL	IL	IL	IL	IL	IL
0100-0130	GLR	GLR	GLR	GLR	GLR	GLR	GLR
0130-0200	KY	KY	KY	KY	KY	KY	KY
0200-0230	MI	MI	MI	MI	MI	MI	MI
1330-1400	GREAT	LAKES	REGION	WEATHER	NET	DAILY	
1400-1430	MI	MI	MI	MI	MI	MI	MI
1430-1500	GLR	GLR	GLR	GLR	GLR	GLR	GLR
1500-1530	IN	IN	IN	IN	IN	IN	IN
1530-1600	WI	WI	WI	WI	WI	WI	WI
2130-2200	OH	OH	OH	OH	OH	OH	OH
2200-2230	WI	WI	WI	WI	WI	WI	WI
2230-2300	IL	IL	IL	IL	IL	IL	IL
2300-2330	KY	KY	KY	KY	KY	KY	KY
2330-2400	OH	OH	OH	OH	OH	OH	OH

MIDDLE EAST REGION CAP DAILY SINGLE-SIDEBAND SCHEDULE 4585.0 kHz

ZULU	SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
0000-0030	DE	NAT CAP	DE	NAT CAP	NC (S)	DE	
0030-0100	MER*	MD	NAT CAP	MD	NAT CAP	MD	
0100-0130	SC	SC	SC	SC	SC	SC	SC
0130-0200	MER	MER	MER	MER	MER	MER	MER
1230-1300		VA**	NC**	VA**	NC (W)	VA**	
1300-1330	NC						NC
1330-1400	VA						VA
1400-1430	MER		MER		MER		MER
1430-1500	MER	DE		DE	DE		DE
1500-1530							NAT CAP
1530-1600	MER	MER	MER	MER	MER	MER	
2100-2130	SC	SC	SC	SC	SC	SC	SC
2130-2200	MER						
2200-2230	MER	VA*	MER	NC*		WV*	
2230-2300	WV	WV	WV	WV	WV	WV	WV
2300-2330	MD	NC	MD	NC	MD	NC	MD
2330-2400			VA		VA		

(W)=Winter (S)=Summer
 * Region and Wing Cadet Nets
 ** Net may be held 30-60 minutes later with MER/DCS permission

NORTHEAST REGION CAP DAILY SINGLE-SIDEBAND SCHEDULE 4464.5 kHz

ZULU	SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
0000-0030	NY	NY	NY	NER#	NY	NY	NY
0030-0100	NER***	MA	MA	MA	MA	MA	
0100-0130	VT	VT	VT	VT	VT	VT	VT
0130-0200	NH	NH	NH	NH	NH	NH	NH
0200-0230		CT	CT	NY	CT	CT	
1300-1330	PA	NER+					
1330-1400	PA	ME	ME	ME	ME	ME	MA
1400-1430							ME
1430-1500	ME						NER
1500-1530	MA						
1530-1600	NER*						
2130-2200			NER		NER		
2200-2230	ME***	PA	PA	PA	PA	PA	PA
2230-2300		PA	PA	PA	PA	PA	PA
2300-2330		NJ	NJ	NJ	NJ	NJ	NJ
2330-2400	NY	NY	NY	NY	NY	NY	NY

* Second and fourth Sunday, NERCC Net
 ** Cadets will operate under Senior control
 *** Cadet Net
 + Chaplain's Net
 # NER Special Activities Net

NORTH CENTRAL REGION CAP DAILY SINGLE-SIDEBAND SCHEDULE 4507.5 kHz							
ZULU	SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
0000-0030	MO	MO	MO	MO	MO	MO	MO
0030-0100	KS	KS	KS	KS	KS	KS	KS
0100-0130	MN	MN	MN	MN	MN	MN	MN
0130-0200	NE	NE	NE	NE	NE	NE	NE
0200-0230	SD	SD	SD	SD	SD	SD	SD
0230-0300	IA	IA	IA	IA	IA	IA	IA
0300-0330	ND	ND	ND	ND	ND	ND	ND
0330-0400		SD	SD		SD		
1200-1230	NCR						NCR
1230-1300	NCR						NCR
1300-1330	KS	KS	KS	KS	KS	KS	KS
1330-1400	MN	MN	MN	MN	MN	MN	MN
1400-1430	NE	NE	NE	NE	NE	NE	NE
1430-1500	IA	IA	IA	IA	IA	IA	IA
1500-1530	IA	ND	ND	ND	ND	ND	IA
1530-1600		SD	SD	SD	SD	SD	SD
1800-1830	MN	MN	MN	MN	MN	MN	MN



National Headquarters, Civil Air Patrol, located at Maxwell AFB, Alabama. The 0-1 "Bird Dog" aircraft on display in front of the building was dedicated on December 9, 1983, in memory of those CAP members who gave their lives in service to the nation. (Photo by SSgt. Rand McNatt, USAF)

Also found in the 4 MHz band is the CAP National Emergency Frequency. The frequency 4583.5 kHz is used primarily for emergency operations, but if no such operation is in progress it may be used for certain routine communications relating to official CAP business.

As an auxiliary of the U.S. Air Force, the CAP also utilizes a limited number of frequencies in the 7 and 14 MHz bands. These frequencies are used for communications between the various Regions and the USAF.

Two frequencies in the VHF aeronautical band are used by the CAP. Licensed Civil

Air Patrol search and rescue stations are authorized to use 123.1 MHz and 122.9 MHz. The former is used only during actual search and rescue missions and the latter only during rescue tests and training missions.

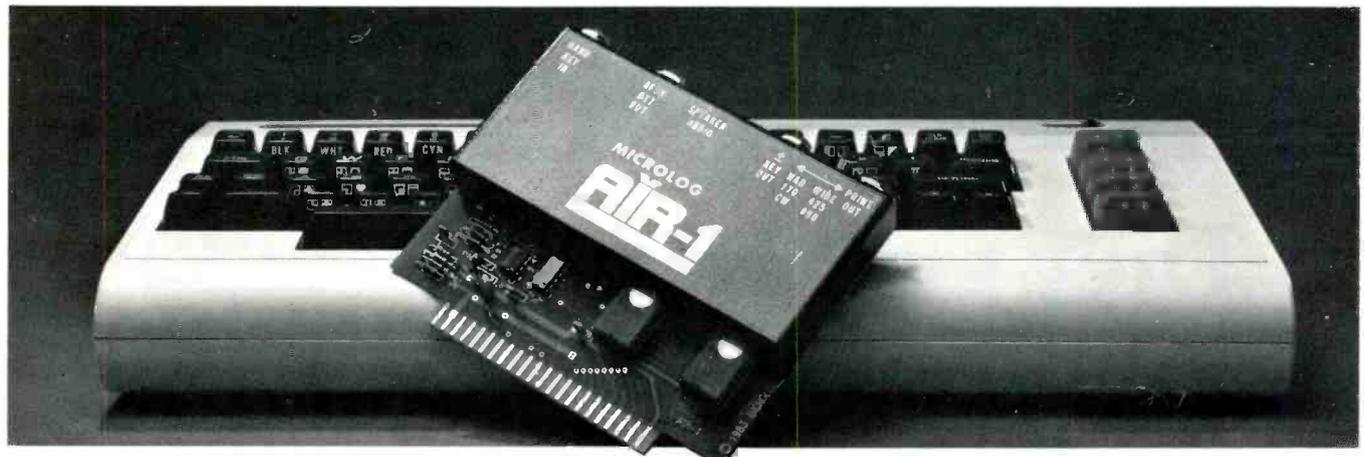
Two other VHF channels are also used for Civil Air Patrol communications. The first, 148.150 MHz, is used both as a repeater output and as the primary CAP simplex frequency. The second frequency, 149.925 MHz, is also used as a repeater output and simplex frequency. Of the two frequencies, the former is the most active since it is used on a national basis.

In order to provide training for its communications personnel and provide a means of passing routine traffic, the CAP operates daily nets in each of its eight Regions. Each net lasts about thirty minutes and generally consists of a roll call followed by the disposition of any traffic listed.

Most of the communications monitored on the Civil Air Patrol frequencies are routine. However, when the CAP is mobilized for a search and rescue mission, a civil defense operation, or a joint mission with the Air Force, these frequencies come alive with traffic.

Popular Communications would like to thank Major Donald F. Giglio for his assistance with this article. All Net schedules, call signs, CAP/USAF frequency data and maps are courtesy of the Civil Air Patrol.

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*Small is beautiful*

London Calling keeps worldwide listeners informed about BBC programs every month.

They Call Her Auntie Beeb

BY GERRY L. DEXTER

The BBC is so big and so well known that it is probably one of only two or three international broadcasters whose initials have meaning for the man in the street, for someone who has never turned on a shortwave radio or been to Great Britain. But neither our man in the street nor most shortwave listeners and DXers have any conception of the size and complexity of this monster broadcast organization.

One fact may provide a clue as to just how

vast the British Broadcasting Corporation really is. It takes a staff of some 2,700 people just to dust the desks, provide security, catering, building maintenance, and the like! The total staff of the BBC is larger than the population of Ithaca, New York!

When it began back in 1922 it was the British Broadcasting *Company*, formed by a group of radio receiver manufacturers who wanted a source of programming to help them sell their products.

From the beginning it was a monopoly. One of the reasons for that approach was to avoid the frequency pandemonium which was taking place on the medium wave band in the United States at that time.

The BBC's first director conceptualized the idea of a non-commercial broadcast service which would offer programming of the highest possible quality and be totally impartial in its news reports.

In 1927 the word "company" in the name was changed to "corporation" and broadcasting authority was given to the corporation under a Royal Charter. The BBC continued its non-commercial nature and was not made part of any government department. The charter grants very liberal privileges to the corporation.

The Charter requires that the BBC obtain a license from the Home Secretary (under whose department the responsibility for broadcasting falls). The license, again, is quite liberal, stating the terms and conditions under which the BBC operates. It requires the BBC to broadcast an impartial daily account of the proceedings in Parliament and to air government messages when so requested, both of which the BBC was doing when the first license was granted.

More direct control is vested in a 12-man Board of Governors—people who are from all walks of public life, appointed by the Queen for five year terms. These twelve are the trustees of the public interest in broadcasting. They are concerned with broader issues. The BBC Director General carries out policies through a Board of Management. In addition, there are some 57 other advisory bodies, creations of the BBC itself, which concern themselves with everything from agricultural programming to programs for Scotland.

Practically from the beginning it was felt there was a need for a foreign service. Shortwave was still an unexplored medium then and much experimenting needed doing. But, disagreements developed over whether this service should be financed by the government (which did not want to spend the money) or through license fees (as the domestic service was being financed). The BBC felt that since the public, by and large, would not enjoy the benefits of a foreign service, it should not be asked to pay for such a service. Eventually, though, it was the public that paid for start-up costs in 1931.

By late 1932 the first transmitter, at Daventry, took the air and a few days later, King George V made the first Christmas broadcast, a practice which the British Monarch continues to this day.

The growth of overseas broadcasting in other countries was an incentive for the BBC's Empire Service to continue its slow growth and expansion.

Turmoil in the Arab world led to the institution of an Arabic service in 1938. On the very first day of broadcasting in Arabic, the BBC proved again its determination to be impartial by broadcasting a news item highly detrimental to British interests in the Arab world, giving rise to neither the first nor the



General Charles deGaulle broadcast to the French people over the BBC in 1941.

Head man at the BBC External Service, Douglas Muggeridge.



last argument over who should have control of program contest.

The year 1938 also saw a very sudden need to expand the external service further.

Hitler had laid claim to parts of Czechoslovakia and in answer the British fleet was mobilized. The world might be at war at any moment. The British mobilization had not been reported in Germany and this news, contained in a Neville Chamberlain speech, had to be broadcast to the Axis powers. Unfortunately there was no one on the staff who could speak German. So a gentleman proficient in that language was called away from a cocktail party to make his broadcasting debut, translating the English text of the speech into German as he read the thing live on the air! Making matters still worse was a switching error which sent the German broadcast out over domestic transmitters, leading some British to believe the Germans had taken over!

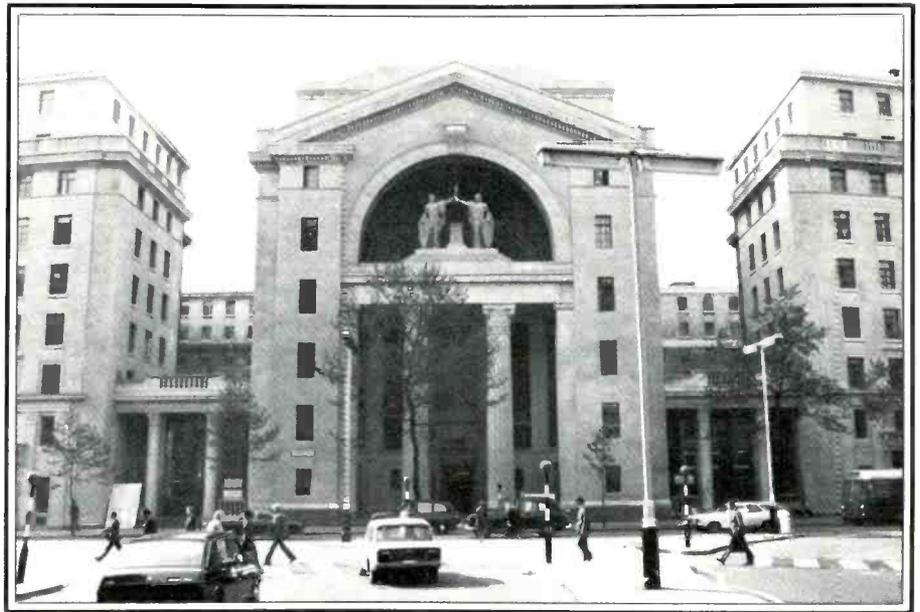
It's hardly surprising to learn that French, German, and Italian services were soon added!

By the start of World War II the BBC was on the air on shortwave in English and seven other languages. By war's end, the language total was 45!

Telling the truth throughout the war, no matter what the damage to British interests, was to assure belief in the BBC later when the Axis powers were suffering defeats.

The famous "V" (for Victory) campaign was launched by the Belgian program organizer, using the opening notes of Beethoven's Fifth Symphony which matched the Morse code for the letter "V". That tuning signal continued to be heard on the World Service until many years after the war ended.

Morse code transmissions were also included in many BBC programs during the war. News was sent out to underground



Bush House in London, home of the BBC's External Services.

newspapers in this fashion so as to allow for easier copy through German jamming.

Coded messages by voice—the "Pierre will be home soon" type of thing—were also broadcast to partisans on the continent. Program producers sometimes complained they had so many of these to include in their shows that the continuity of the programs was ruined.

What started out as the Empire Service, intended to draw the British Empire closer together, soon had a European Service and there followed a grand mix of these two plus an Overseas Forces Program, a General Forces Program, and regional services to North America, Africa, and so on

The BBC continued to grow after the end of the war, although over the years language services have been cut back somewhat. Occasionally they have been increased or altered as individual world crisis areas appeared and disappeared. Most recently the Falkland Islands affair saw the BBC "Calling the Falklands" program expanded from once per week to once a day.

Some years ago the General Overseas Service and many of the other program services in English were combined into the BBC World Service which now broadcasts 24-hours-a-day in English to all parts of the world. The BBC estimates it has one hundred million listeners who tune in at least

once per week. That doesn't include China. Some 240 hours of programming are aired in the World Service each week and there are nearly 500 additional hours in 34 languages ranging from Somali to Greek, Indonesian to German.

External service headquarters are at Bush House in London, a giant complex that features 54 studios! Programs are fed from Bush House to the various transmitter sites by a computerized switching system.

Programs are fed to 48 shortwave transmitters in the United Kingdom and to the BBC relay stations outside the country, including: The Atlantic Relay's four transmitters on Ascension Island; the Caribbean Relay's two transmitters on Montserrat and Antigua; the two transmitters of the Eastern Relay on Masirah Island, Oman; the eight units of the East Mediterranean relay on Cyprus; another eight at the Far Eastern Relay in Singapore; and a lone transmitter at Lesotho. The BBC announced recently plans for two additional relay bases—in Hong Kong and the Seychelles. These are scheduled for implementation in 1985-86.

Many of the program feeds to the relay stations are via satellite and, in another year or two, it's expected that all the relay stations will receive programming in this way.

Shortwave broadcasting is but a part of the BBC's overall operations.

BBC Local Radio comprises four separate networks. Radio One is a pop music service; Radio Two programs middle of the road and for minority musical interests; Radio Three carries serious music; and Radio Four is all talk, featuring everything from news and discussion to drama. These four services are aired over some 28 local "stations" such as Radio Brighton, Radio Cambridgeshire, Radio Devon, and so on. But to call them "stations" is misleading. If there were a "Radio New Jersey" in that state which encompassed all the network programming to all the transmitters in the Garden State, you might have the equivalent of a "Radio Leeds" in Britain!

Each of these local "stations" may have two or more transmitters on medium wave, longwave, and FM to carry the four networks to a local audience. It may also have a number of low power FM repeater stations which help fill in the gaps. There are some 175 of these low power stations throughout the country.

There are also more than two dozen high power FM stereo stations carrying Radios One, Two, Three or Four, plus localized services and more low power FM repeaters re-broadcasting the programs.

The BBC runs two separate television networks—BBC-1 and BBC-2—from a huge television production center in West London. These programs, which totalled nearly 13,000 hours in 1981-1982 are broadcast by over 50 BBC-TV stations all over the country. There are low power repeater stations numbering several times that figure.

And that's not the end of it!

The BBC Transcription Service offers



The newsroom at Bush House prepares newscasts and news programs for airing on the World Service and other services.

BBC programs to radio stations in over 110 countries and adds 500 new hours a year to its catalog of some 10,000 programs it now has available.

English language lessons, aired on shortwave, are backed by an impressive line-up of instructional aids. Sales of this material run into the millions of items each year. The BBC also conducts an English language school every summer.

BBC Enterprises sells its TV product abroad such as the programs you see on our Public Broadcasting System. The catalog runs into 10,000 hours of TV programs and more than 100 countries have used BBC-TV programming on their own networks.

BBC Educational Broadcasting for schools has been on the air since 1934 and includes "Open University" which, in conjunction with colleges, can lead to a college degree.

There is a teletext service, BBC Ceefax, which offers news, travel information, sports results, market reports, cooking recipes and so on through the use of special decoders on TV sets in Britain.

BBC Data provides research information for program planners and producers and has recently been made available to commercial users as well.

BBC Publications offers books and magazines for sale, produced by the BBC.

The Monitoring Service listens to the world's broadcasts. Its output goes to the BBC Newsroom, government officials. Information on world broadcasting is available commercially.

And there are audience research departments, publicity departments, overseas offices, offices and departments dealing with recruitment, training, personnel, research and development, correspondence and a dozen others.

Much of the BBC's operations are funded through license fees paid for by the public. In

1981 the owner of a color TV set was charged a license fee of 46 pound per year. Additional money comes in through government grants and the sale of BBC-TV programs and other materials and services.

Income from license fees totaled 564 million pounds in 1981-82, to which another nearly 63 million pound grant in aid was added. *Radio only* license fees were abolished in 1971.

"The News, read by . . ." is a product of one of the world's largest newsrooms. It operates 24-hours-a-day, 365 days a year, employing some 100 news people plus worldwide correspondents, clerical, and secretarial staffs.

Information comes into the newsroom from the major news services (Reuters, AP, UPI, and so on) plus stories from the BBC's own correspondents and the listening work of the monitoring service, which copies the radioteletype feeds of other news services.

One popular news program, "Radio Newsreel," was developed early in the war years. The program was geared to the format tastes of the U.S. audience with the ulterior motive of hoping to generate more interest by Americans in the British situation and the spreading conflict on the continent. While the motion picture newsreel features on which it was based are long gone, Radio Newsreel remains as a mainstay of World Service programming.

While news may be the bread and butter of the BBC program schedule, there are limitless other dishes. Regular programs range from "Science in Action" to "Jazz For The Asking," "New Ideas," "Nature Notebook," Alistair Cooke's "Letter from America," and a legion of others. Over and above the regular shows is an equally long list of special presentations or limited run series introduced each month.

For eight pounds per year the shortwave listener can stay up to date on BBC offerings

BBC World Service To North America

Time (GMT)	Frequency
0015-0230	11.835
0030-0330	9.515
0430-0915	9.510
1100-1330	21.550
1100-1330	15.215
1100-1745	15.070
1100-1330	11.775
1100-1330	9.510
1100-1330	9.695
1330-1615	11.750
1330-1615	9.740
1500-1700	15.260
1500-1745	9.515
1530-1745	21.710
2000-0730	6.175
2000-0230	15.260
2000-0230	15.070
2000-0230	11.750
2200-0030	15.420
2200-0230	9.915
2200-0030	9.590
2200-0030	6.120
2245-0545	5.975

by subscribing to *London Calling*, a monthly schedule of programs, times, and frequencies. It's available from the Public Relations Department, Bush House, P.O. Box 76, London, WC2B 4PH.

When it comes to confirming reception reports from shortwave listeners, the BBC stubs its toe. The BBC has long claimed that since its programs are broadcast on so many stations around the world it can do no better than send an acknowledgement card in response to reports. The card simply states that the report is in accordance with the BBC's published schedules. The listener who is not satisfied with that—who wants a specific verification or one with the transmitter site indicated—has to catch something unusual. This could include interference that the BBC was not aware of or a transmission that is in some way defective. Failing that, however, you have to know somebody!

All correct reports are answered and may be directed to the Bush House address.

The year 1982 saw the BBC celebrate 50 years of shortwave broadcasting to the world. And the BBC, generally, marked 60 years of service.

From "Monty Python's Flying Circus" to the "Merchant Navy Program", the BBC offers something for everyone, unless you just enjoy commercials! From earth-shaking events to the more mundane comings and goings of cabinet ministers and delegations, the BBC has reported it all. Hated by some, admired by millions, even loved by some, the BBC is respected by all.

The legendary British Empire may be a thing of the past, but the "empire" of the British Broadcasting Corporation—Auntie Beeb—continues to go on.

As a letter from a listener to the BBC's Arabic Service commented: "Britain is renowned for four things—her universities, her high quality products, her Queen, and the BBC."

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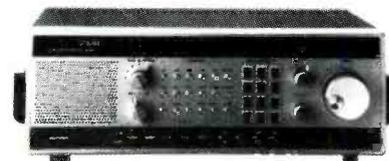


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SPECIFICATIONS

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- Band-pass filter (BAND PASS) 600-1500Hz fixed
- Narrow band attenuator (NOTCH) 600-3000Hz variable

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—30dB (RX 8 ohm SP terminal can be connected)
Output impedance and power supply 8 ohm 0.5W
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The Regency MX-5000 Scanner

25 To 550 MHz In One Shot

Those who have been following the evolution of scanner technology over the years have noted that every once in a while there is a quantum jump in the design specs. Just recently there has been an enthusiastic surge of new scanners bursting forth and it does appear that there have been some dramatic new technologies filtering through into these devices. These advances offer smaller units covering more frequencies with considerable ease of operation.

One of the new breed of scanners is the Regency MX-5000, a 20-channel keyboard programmable job which has the rather intriguing capability of tuning all frequencies between 25 and 550 MHz. This permits coverage of the usual public safety bands and the VHF aero band, plus CB, FM broadcast, TV (audio), and other things—not the least of which are the 72 to 76 MHz band, the exotic and (until now) elusive 225 to 400 MHz military UHF aero band, plus the 406 to 420 MHz federal communications band. With the exception of its frequency coverage, the MX-5000 seems to be very similar to the Regency MX-7000, which covers 25 through 1250 MHz (1.25 GHz).

The MX-5000 programs easily by means of its front panel keyboard—a keyboard that consists of a flat sheet of printed plastic which covers the actual buttons lying beneath. While this can be somewhat disconcerting to those who have not previously encountered such a system, when you understand that it helps to keep dust out of the switch contacts it makes a lot of sense. Each time an instruction is programmed in and accepted by the scanner, a “beep” is sounded. Standard priority and lockout features are provided as well as a scan-delay capability. Inasmuch as the MX-5000 covers such a large span of frequencies, when programming the unit it is necessary to select a receiving mode from the 3 modes in which the unit functions—AM, wideband FM, or narrowband FM. The mode is programmed individually for each frequency to be received so that the user can mix and match modes. A front panel “lock” switch is available to disable the keyboard and prevent accidental reprogramming. There is also a fast/slow scan key on the keyboard which selects between 20 channels in 6 seconds or 20 channels in 12 seconds.

The MX-5000 also has a search feature



Regency's MX-5000 offers a chance to scan 200 to 400 MHz UHF aero band in addition to standard scanner frequencies.

which can check out a 1 MHz segment of spectrum in about 6 seconds and also gives the user a chance to select the spacing between channels searched, offering a choice of 5 kHz, 12.5 kHz or 25 kHz frequency separations. This is a nice feature and it comes in handy, although 50 kHz spacing would have been a quicker way of sorting through the UHF aero band for those of us who head for those lofty realms and view the Regency MX-5000 as the most convenient way of checking out this band.

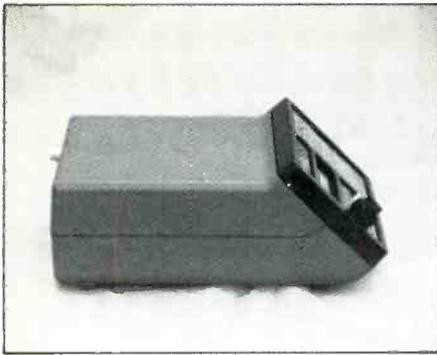
The sensitivity is rated at 1 μ V in the narrowband FM mode and 1.5 μ V in the AM and wideband FM modes. Selectivity is ± 7.5 kHz in narrowband FM, ± 50 kHz in wideband FM, and ± 5 kHz in AM mode. These selectivity specs are for points 6 dB down. Sensitivity specs are for 12 dB SINAD (FM) and 10 dB S/N (AM).

The frequency readout is provided by means of LCD's (black letters on a silver background) about 1/4" high. A front panel switch marked “light” is intended to illuminate the LCD display, but it provides only

minimal help towards seeing what's “on the screen” at times when room light is less than adequate. There are also various “prompt” and other instructional words appearing on the screen to advise the user of the status of the delay, lockouts, modes, frequency separation in search mode, etc. For the most part, these words are in extremely small letters about 1/16" high and you may well need your specs to make out what they are saying. The MX-5000's internal clock, which reads out in hours-minutes-seconds via 24-hour format, offers its information via the same LCD's providing frequency data.

The MX-5000 requires 12 to 14 VDC for operation and comes with a power cord for mobile use and a plug-in supply for 117 VAC use at home. No batteries are required to retain the memory in case of power failure and the set's programming will remain for about a week while unpowered.

On the rear panel, in addition to the power socket, there is an external speaker jack and an attenuator switch for reducing the sensitivity of the scanner if you're in a con-



A side view of the MX-5000 shows the interesting sloping front panel that offers easy viewing of the controls.



The rear deck of the MX-5000 is relatively simple and uncluttered. You may have to get used to the BNC antenna connector, though.

gested area and are seeking only local signals. The antenna connection is also on the rear deck and it may come as a surprise to some scanner users to note that it isn't the old and familiar RCA-type jack that has long been used on scanners. The MX-5000 is fitted out with a totally different connector which the instruction book describes as a "Motorola type antenna plug (Cinch-Jones No. 13B or H.H. Smith No. 1200)." For some reason, the instruction book does not make matters as easy as possible on the user by simply calling this thing by its most common name, a "BNC" type connector. For those who have existing coaxial cables arriving from antenna systems made up with an RCA type plug, this may prove to be inconvenient and will require the replacing of the existing plug or the use of an adapter (if one can be easily located). For those whose antenna systems utilize a PL-259 and previously had to use an adapter (such as the Radio Shack 278-208) to hook into a scanner, it's only a matter of replacing that adapter with a type UG-255/U (Radio Shack 278-120 or equivalent).

The scanner is physically rather small, weighing in at less than 2½ lbs. and measuring 5.4 inches across, 3.1 inches high, and 7.9 inches deep. It's housed in a gray plastic case with the front panel arranged on an angle for easy user-viewing. The speaker is in the front just beneath the faceplate. The faceplate is dark gray plastic with red, white, and blue color touches. The compact size

makes this unit less than half the size of most of the standard scanners from earlier days.

The instruction manual is a very small 24-page pamphlet that offers no schematic or any insights as to what makes the MX-5000 tick, but instead provides only the basic instructions for operating the scanner and outlining its features and specs. The instructions provided are generally adequate for easy operation, although there seems to be a step missing for entering the high frequency limit in the search mode. However, this can be figured out in a few minutes. The booklet, being as small as it is, is easy to misplace (it's smaller than 4½" x 6") if you're prone to putting things down where they don't belong.

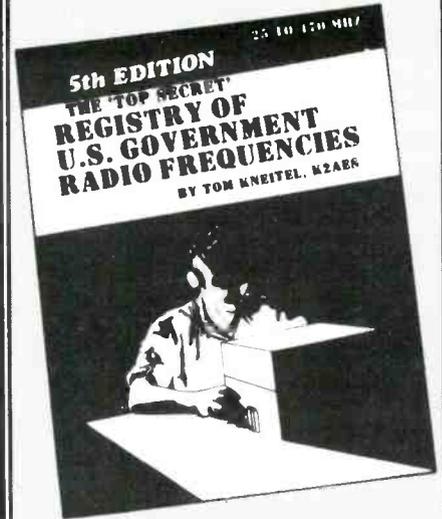
In operation, the MX-5000 gives a good account of itself and it was put through its paces between CB and UHF TV (it tunes to UHF TV Channel 27). Of course, in order to obtain the best results, it is advisable to have an antenna that is somewhat suitable for the frequencies you are seeking to receive. The MX-5000 instruction book suggests using a tri-band antenna but doesn't mention a discone, although these are available and might offer better frequency response across the huge frequency range involved. My own personal preference was to use the MX-5000 to concentrate on only one general frequency range at a time and attach thereto a single-band antenna that is the most suitable for that band from those I had available on the roof. I was especially interested in the UHF military band (225 to 400 MHz) and found that this band came in very well with ½-wave verticals for use on the 220 MHz and 450 MHz ham bands. Considerable signal improvement was noted with the addition of a Hamtronics receiver pre-amplifier. There is a telescoping antenna provided with the MX-5000 and this seemed adequate for local reception on all bands, but those who are interested in hearing stations in the distance (especially aero, maritime, and land mobile transmitters) will certainly want to use an external (roof mounted) antenna—as with any scanner installation.

For those who have complained that keyboard programmable scanners in the past have been annoyingly prone to picking up spurious signals and images, the MX-5000 is rated with a rejection figure of -50 dB. In operation, it seemed to be pretty "clean" and less interested in bringing in unwanted signals than quite a number of earlier-generation scanners. There are nine "birdie" frequencies listed in the operating manual.

In all, the Regency MX-5000 is a nifty little set and should offer an open door to many exciting new frequencies that many scanner users have long wished to monitor. If you've been wondering what's going on on some of the more unusual frequencies, this unit does appear to be a viable way of accomplishing that end while still providing coverage of the more familiar scanner bands. And when nothing exciting is taking place, you can use the set to listen in on FM and TV broadcasts!

Reviewed by Dr. John Apella, KIL9JF

"INSIDER'S INFORMATION"

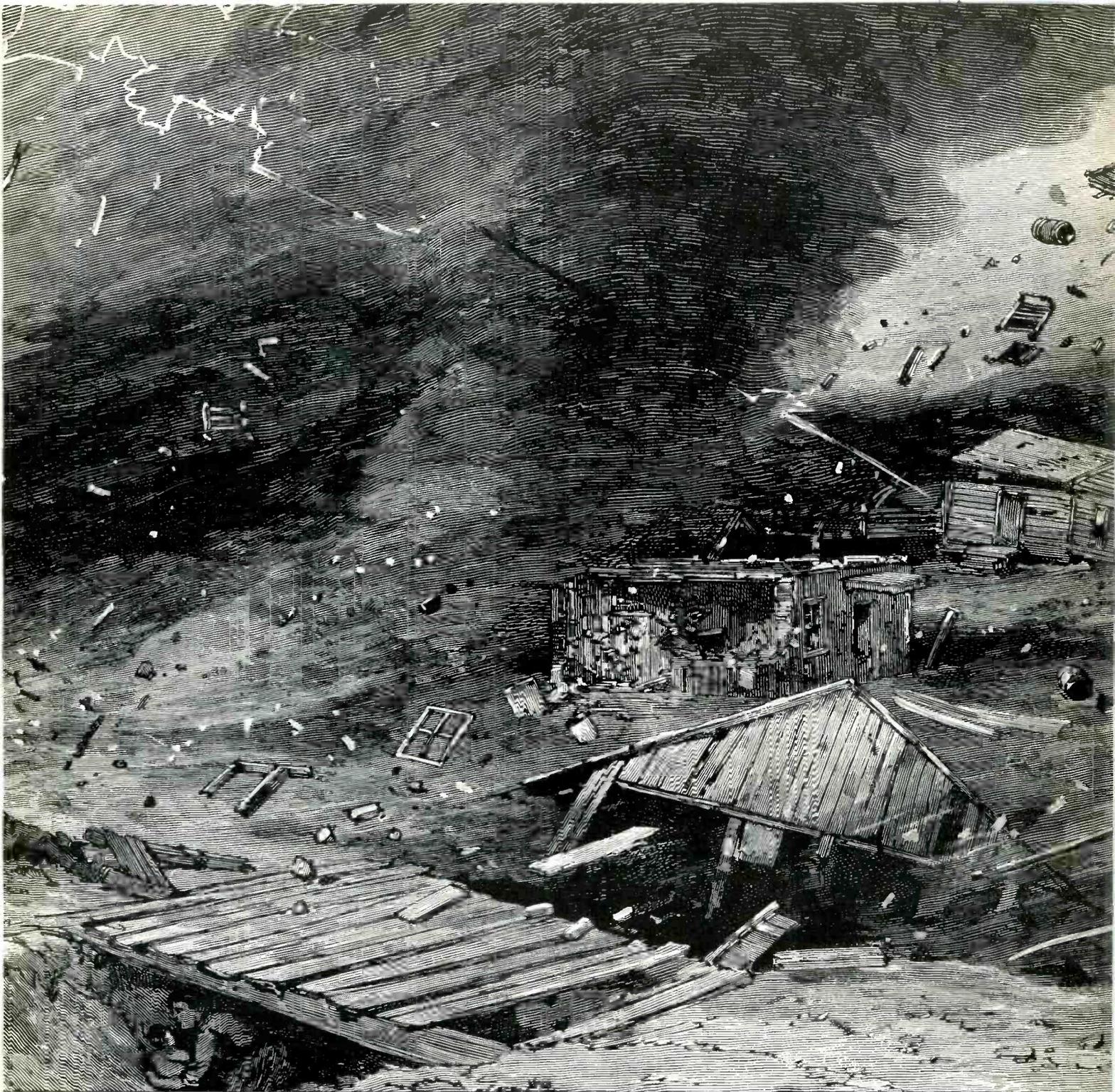


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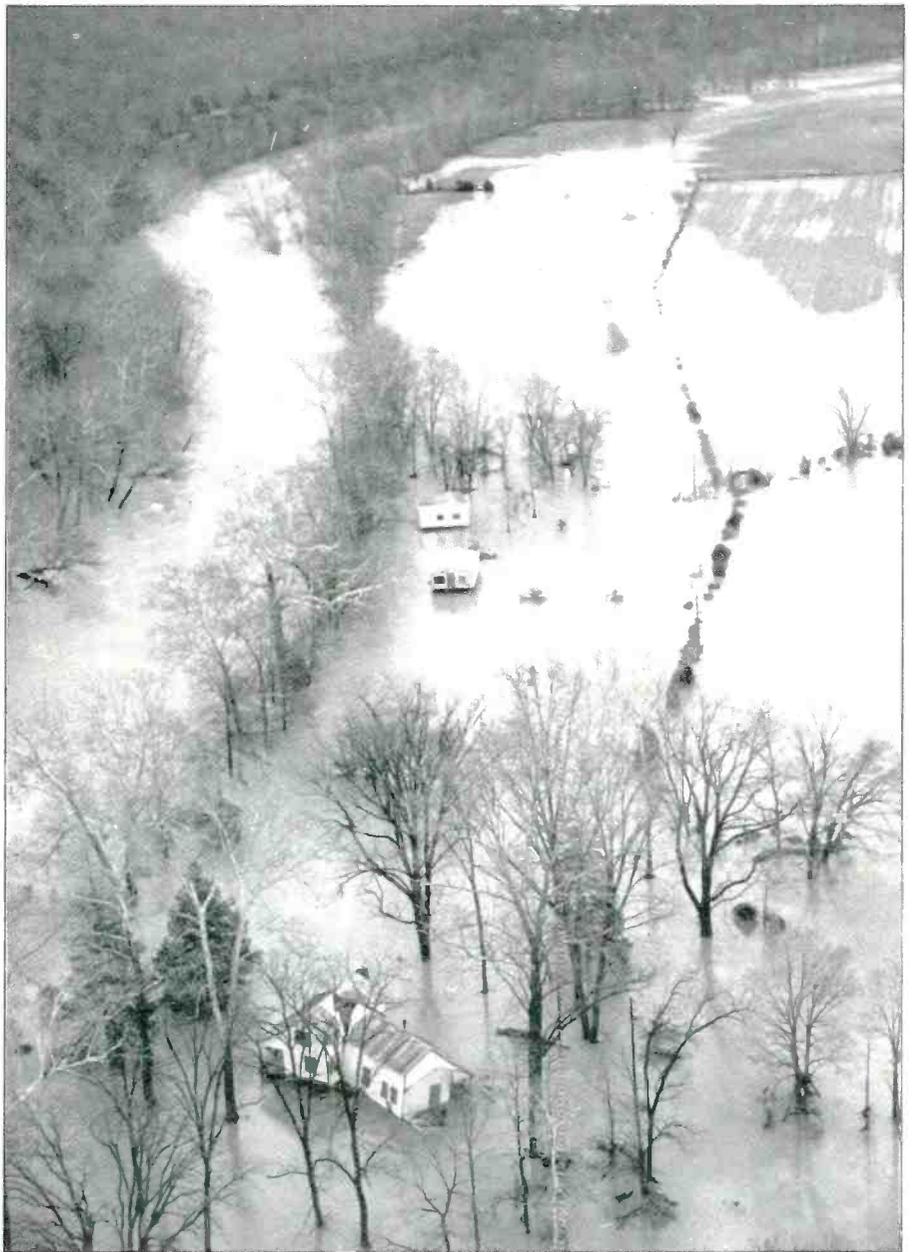
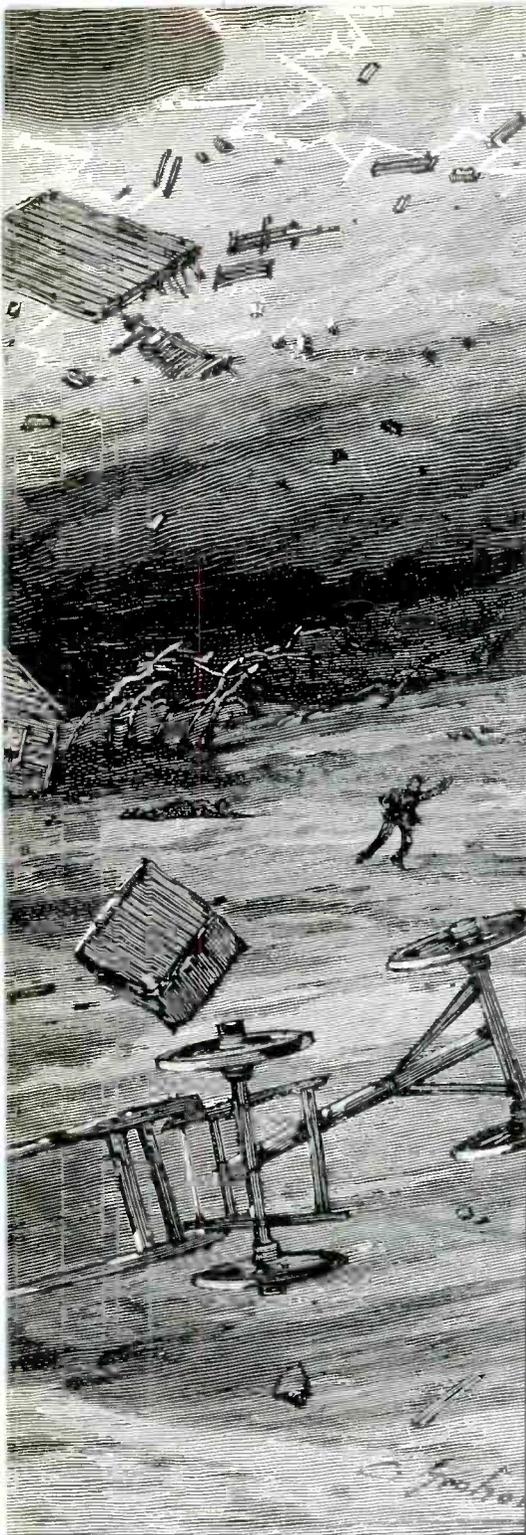
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Is ELF Able To Manipulate The Weather?

*Has A Technique Devised By Tesla Permitted
The Soviets To Alter The World's Weather?*

BY HARRY CAUL, KIL9XL



Are floods and other freaky weather conditions deliberately caused by Soviet ELF radio signals? (Photo courtesy U.S. Army)

Last Christmas the low temperature records in 21 states and 60 cities were broken. According to the National Severe Storms Forecast Center in Kansas City (MO), twelve cities shattered all known records for record low December temperatures. While this was going on, December in Europe was unseasonably warm. Paris was basking in temperatures ranging as high as 70 degrees. Notwithstanding the drain on the energy resources of North America, the cold weather here during December caused the deaths of

138 persons and damaged many millions of dollars worth of crops.

Of course, these have not been the only strange weather patterns noted in recent months and years. El Nino, for instance, is a disturbance in the Pacific that shows up every ten years and brings heavy rains to portions of South America. El Nino has traditionally been very limited in scope, but when it popped up unexpectedly and off schedule in 1982 and 1983, *The New York Times* (5 April 1983) reported that it was

much larger than usual, with the entire eastern Pacific, from Chile to Alaska, being affected. Even areas as distant as the East Coast of North America were being influenced by El Nino, and El Nino had begun earlier than any previous appearances. *The Times* quoted Dr. Klaus Wyrski of the University of Hawaii as saying it was "totally unexpected...it also did not follow a period of unusually strong trade winds."

El Nino had previously been noted in the mid-Pacific, but Dr. Jerome Namias of the

Scripps Institution of Oceanography (San Diego, CA) was quoted in *The Times* as observing that its new location close to South America had caused air pressure over the Aleutians so very low that it is "unlikely to recur for another century." He noted that storm tracks had been displaced hundreds of miles southward.

The *Washington Post* (6 March 1983) reported that El Nino was the worst it had been in 100 years and that equatorial trade winds, blowing from east to west, stalled. Warm water normally carried towards Asia stopped, backed up, and ended up being located off South America's West Coast. Although nobody came forward with an explanation based upon past experiences, the direction of the trade winds was reversed and that caused droughts in Australia and torrential rains in Peru. By the shifting of the course of the jet stream, frigid Arctic air was shot more easterly than normal.

Radically changing weather patterns have brought serious floods to parts of the United States, and even the Utah Salt Flats have begun to flood over for the first time in memory. Several nights per week, the evening network news features bizarre weather phenomena here and abroad—floods, droughts, blizzards, heat waves—where and when they

aren't supposed to be, at the wrong time of the year, and with a severity far worse that people are ready to handle.

Has this been a worldwide weather flip-flop? Probably, and while we have come out on the short end of the bargain it appears that the Soviets have gained warmer winter weather for their farmers in the European USSR and the Ukraine. In fact, Warsaw Pact nations in Eastern Europe such as Romania, Poland, Czechoslovakia, and Hungary have also been experiencing warmer weather. As the jet stream blew all of the cold to North America and away from Siberia (which gives the European USSR its cold winters), it has left a sort-of vacuum into which warm air from Africa has been drawn.

Is all of this sheer coincidence? Has the planet tipped over on its axis? Is it the ozone layer, the greenhouse effect, acid rain, the arrival of Amageddon, or *what?* Amongst the several speculations as to its possible cause, several voices have been heard which suggest the possibilities that it is a deliberate manipulation of the world's weather by the Soviets in order to aid their troubled agricultural output, and it's all done with radio waves! A far-fetched explanation? Maybe, but nonetheless fascinating.

In 1978 Dr. Andrew Michrowski of the

Canadian State Department commented on this technique using ELF (extremely low frequency) radio signals. He said, "In the case of the winter of 1976-77, the Soviets have managed to establish terrestrial electrical resonance, and then learned how to establish relatively stable and localized ELF magnetic fields, which were able to hamper or divert the jet stream flow in the Northern Hemisphere."

He described just how stationary fronts were established over the West Coast of North America, between Baja California and Alaska, which "permitted great diversion of air movement and the maintenance of high and low pressure areas."

Michrowski went on to observe, "In the case of the winter of 1977-1978, the Soviet scientists involved had the ingenious idea of setting up one series of standing columnar waves that extend from the westerly tip of Alaska all the way to Valparaiso, Chile. This columnar wave form was projected from just outside Angarsk, Siberia. East of this formation, the weather was drier, and west of it, precipitation was enhanced."

He further stated, "As the columnar waves rotated clockwise, the westerly winds were sucked upwards counter-clockwise into the upper atmosphere, while a drag brought air from the upper atmosphere on the opposite side."

Michrowski was not alone in his concept. Early in 1977, some American scientists agreed that there was evidence that the Soviets were using high intensity radio signals to move Arctic air masses away from their coastline and towards North America. In 1979, Dr. Walter Orr Roberts of the Aspen Institute of Colorado was quoted as saying, "The idea of changing the conductivity of the atmosphere as a weather modification experiment is not ridiculous."

Weather is affected by the jet stream 7 to 10 miles above the Earth. Weather modification could be accomplished by regulating the movement of the electrically charged particles in the upper atmosphere. That would result in changing the direction of the jet stream to some degree.

Tesla

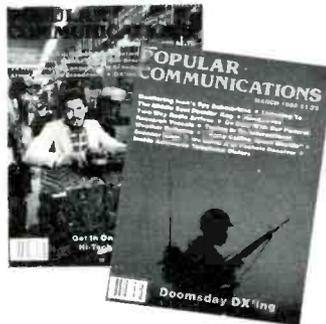
It does appear that the Soviets have been exploring the theories and experiments of Nikola Tesla, the Slavic genius who was born in 1856 in what is now Yugoslavia. He came to the U.S. and although he advanced some brilliant concepts and produced a number of startling inventions in the fields of radio and electric power transmission, he was not fully appreciated by his contemporaries. He died a rather obscure person in 1943; however in recent time more serious attention has been paid to his ideas than during his lifetime.

At the turn of the Century, Tesla proved that the Earth might be used as a conductor of electricity and would respond to electrical vibrations at a specific frequency. He demonstrated his theory by illuminating 200 electric lamps at a distance of 25 miles without any connecting wires. He suggested

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many possible uses for his discoveries, including modification of the weather.

Dr. Michrowski postulates that the Soviet ELF signals are pulses on a frequency of 31.5 Hz and have caused "giant standing wave troughs in the Rocky Mountains" between Alberta and New Mexico, and another through the eastern United States.

Tesla's notes still exist even though many of them were never completed. The notebooks are on file at the Tesla Museum in Belgrade, Yugoslavia. A Canadian researcher did manage, in 1976, to locate Tesla's last known living assistant, Arthur Matthews. In Quebec, Matthews revealed that he had been asked "a lot of questions from a lot of people" including some with "Russian sounding names." This, of course, doesn't actually prove anything, except that people do seem to be taking the trouble to try to find out what Tesla was doing.

Further research into the Soviet ELF signals has been conducted by an American Electrical Engineer named Al Beilek who recently delivered a lecture about natural and artificial ELF signals in the Pacific Northwest. Beilek discussed that the Soviets had been experimenting with these signals on a particular frequency but it was only after a change to 31.5 Hz that El Nino's strange activity began to be observed. He said that the first Soviet transmitting sites were in Riga (Latvian SSR) and Gomel (Byelorussia). (Gomel, it is believed, is also the source of the so-called Woodpecker OTH—over the horizon—radar pulses that have been moni-

tored for years by shortwave listeners.) Signals from these sites were noted in 1979 in the Pacific Northwest and were on 15 and 30 Hz. Later examination of the characteristics of the signals implied a connection with Tesla's experiments and also indicated that one possible transmitting site was near the Ustyurt Plateau (between the Aral and Caspian Seas). It was also observed that when the ELF signals vanished from the airwaves for a two week period in 1980, the Northern Hemisphere's jet stream flow was normal.

ELF has been recognized by our own government as having military potentials, including for long range underwater communications. It has, however, been the cause for considerable concern by environmental groups that complain about the possible harmful effects if high level signals in the ELF spectrum. In fact, this past January, a federal judge in Wisconsin ordered the U.S. Navy to immediately stop work on its Project ELF system near Marquette, Michigan and not to upgrade its ELF testing facility near Clam Lake, Wisconsin. The Navy claims that the system is intended to defeat Soviet attempts to jam radio communications in the event of a nuclear attack. The Navy's ELF project was first proposed in the 1960's, but Judge Barbara Crabb said a 1977 environmental impact statement filed with the EPA in 1977 was insufficient for the project. Judge Crabb also ordered the Navy to stop installing ELF receivers on submarines.

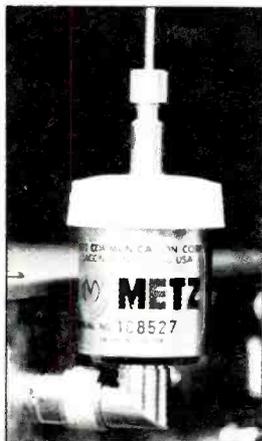
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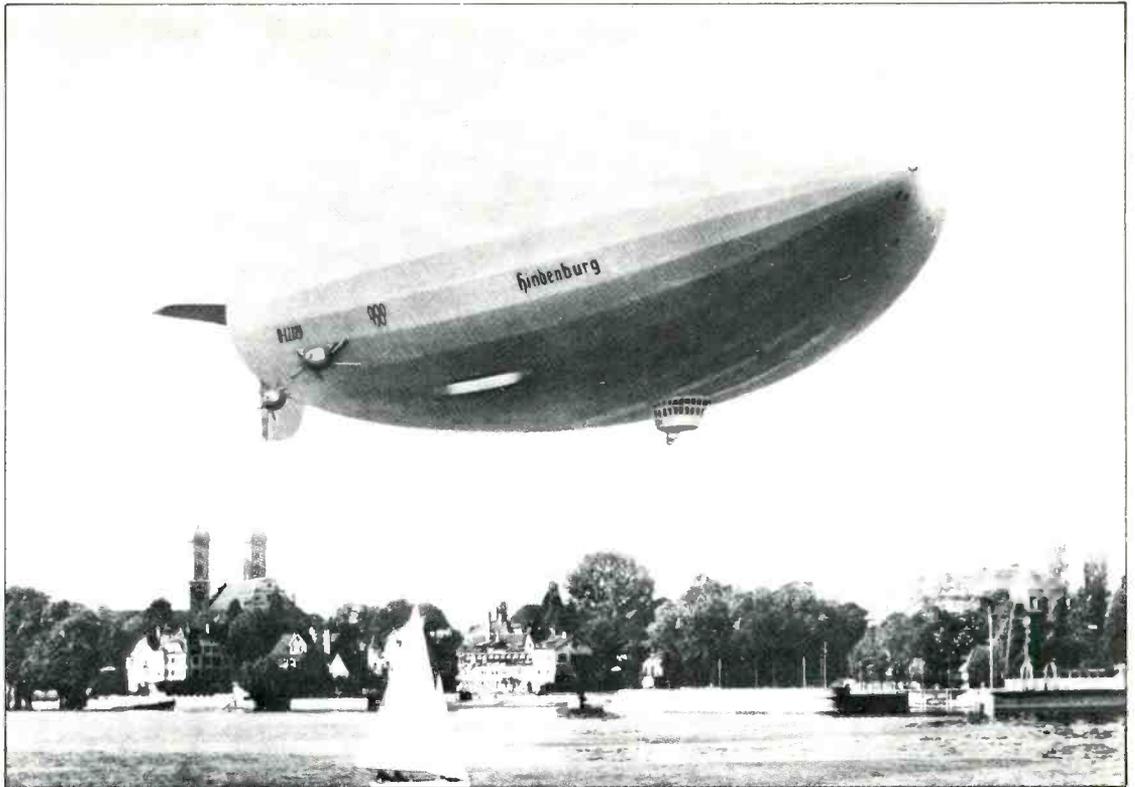
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The Hindenburg

And Its “Lost” Radio History

Rummaging Through History We Look At Something Investigators Have Ignored

BY TOM KNEITEL, K2AES, EDITOR

In the late 1920's there was a truly fabulous passenger airship in the world's skies, the *Graf Zeppelin* (LZ-127). It was more than a humble gas filled balloon with a gondola slung beneath; this was a rigid-frame ship that was outfitted as a transoceanic luxury liner and its 20 passengers were accommodated on a par with the passengers aboard the finest ocean-going luxury vessels. Although it was filled with 3½-million cubic feet of highly explosive hydrogen, it carried the very latest in safety equipment and its German owners had outfitted it with a full complement of state-of-the-art communications gear. The station was assigned the German call sign DENNE and its signals were eagerly sought after by listeners throughout the world.

The *Graf Zeppelin* travelled the globe, going to the Mediterranean, South America, Africa, Russia, and even the North Pole. It had racked up a 1-million mile perfect safety

record, having made 590 flights, 144 ocean crossings, carried 13,110 passengers and more than a quarter million pounds of mail and freight. Moreover, it was a mighty propaganda tool of the new Nazi regime in Germany that came into power in 1933. Nevertheless, despite the many things the *Graf Zeppelin* had going for it, in 1937 the airship was locked in a giant shed and was never again seen the air.

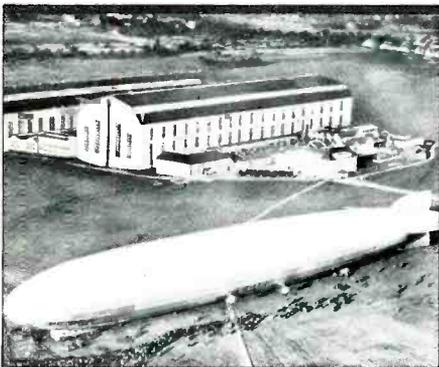
“The” Airship

What led to the sudden and untimely end to the career of the *Graf Zeppelin* was actually a greater technological triumph than the LZ-127; it was the *Hindenburg* (LZ-129). Built in 1936, this 803 ft. long rigid airship held twice the amount of hydrogen and was double the size of the LZ-127. It was the pride of the Third Reich and was designed to carry 50 passengers in its lavishly fitted state-

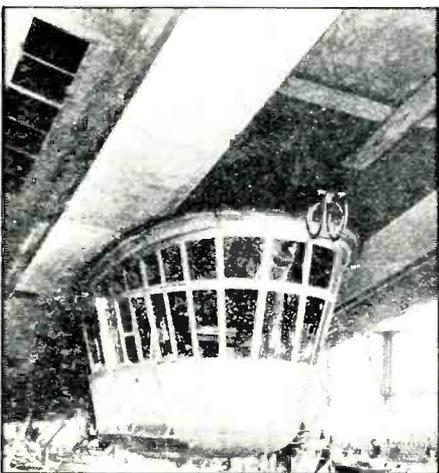
rooms. Put into transatlantic service in 1936, the *Hindenburg* and the *Graf Zeppelin* made headlines wherever they went. Ultimately, however, the *Hindenburg* proved far more newsworthy when, on May 6, 1937, after its first crossing of the '37 season, it blew up while attempting to land at Lakehurst NAS in New Jersey and was completely destroyed along with a loss of 36 lives. Second perhaps to the loss of the SS *TITANIC*, the *Hindenburg* disaster remains one of the most talked about incidents in commercial transportation history. Although many theories have been advanced to speculate upon the reason for the *Hindenburg* disaster, the exact cause has never been proven. Some investigators hold to a time bomb theory, others ascribe the explosion to a discharge of static electricity in the vicinity of a hydrogen leak. Upon the loss of the *Hindenburg*, the German government decided that—at least for the time be-



The Graf Zeppelin (callsign DENNE) was actually quite a successful airship but its career ended early because of the Hindenburg.



Think the Graf Zeppelin (shown here) was huge? The Hindenburg was twice its size!



The gondola of the Hindenburg showing the direction finding loop.

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Eileen Hofmaster

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Empfangsbericht über LS "Hindenburg" IV C 5 4. Juni 1936

Wir erhielten Ihr Schreiben vom 12. Mai und danken Ihnen für Ihren Empfangsbericht über LS "Hindenburg". Wir bestätigen Ihnen gern, daß Sie LS "Hindenburg"

DEKKA auf Welle 10290 kc/s (29,16 m)

am 8. Mai gehört haben.

Wir würden es begrüßen, wenn Sie uns auch Beobachtungen über die deutschen Kurzwellen-Rundfunksender einsenden würden. Der Deutsche Kurzwellensender Zeesen bei Berlin sendet auf Welle:

DJA 9560	kc/s	(31,38 m)
DJB 15200	"	(19,74 ")
DJC 6020	"	(49,83 ")
DJD 11770	"	(25,49 ")
DJE 17760	"	(16,89 ")
DJL 15110	"	(19,85 ")
DJM 6079	"	(49,35 ")
DJN 9540	"	(31,45 ")
DJO 11795	"	(25,43 ")
DJP 11855	"	(25,31 ")
DJQ 15280	"	(19,63 ")
DJR 15340	"	(19,56 ")

In Vertretung

Haber

Rarest of the rare — one of the very few QSLs ever issued by the Hindenburg. (QSL courtesy of Eileen Hofmaster)

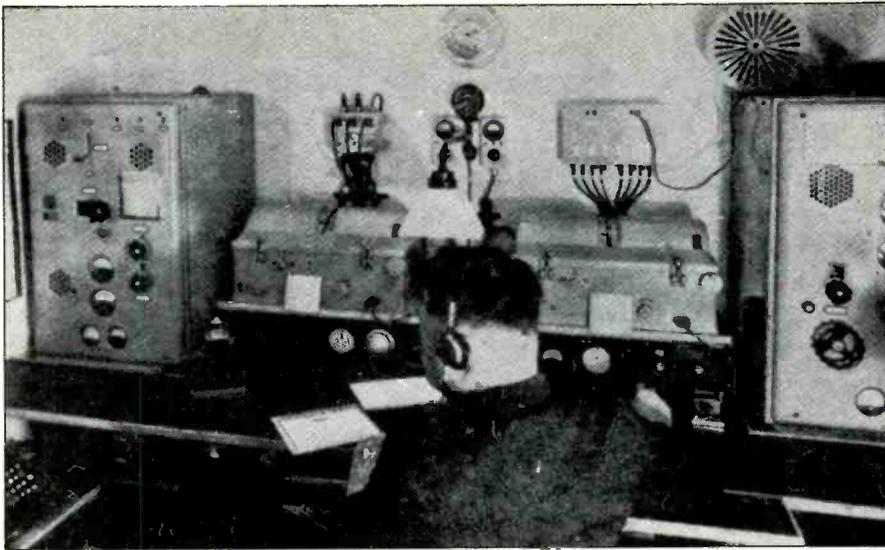
ing—the age of the giant passenger carrying airship had ended. Hence the grounding of the *Graf Zeppelin*. In September, 1938 the Germans built a slightly modified sister ship of the *Hindenburg* and dubbed it the *Graf Zeppelin II* (LZ-130), but the craft did little more than make a few exhibition and test flights over Germany. In April of 1940, the LZ-130, the older *Graf Zeppelin* (LZ-127), and the main Zeppelin operating terminal in Frankfurt were dismantled so their steel and duralumin could be used for the German war effort.

Many books have been written about the *Hindenburg* and practically every aspect of its conception, construction, career, and spectacular death. Seldom touched upon even slightly in the most detailed studies of the craft is information relating to the radio communications equipment installed aboard the LZ-129. To persons interested in communications, the *Hindenburg's* radio opera-

tions and equipment have always remained somewhat of a "lost" factor in this otherwise well known and closely studied airship and the events surrounding its colorful existence. And yet the radio room and its activities were no less noteworthy than most other things surrounding the airship.

A Modern Station

The radio operations aboard the *Hindenburg* were conducted under the German callsign DEKKA and were noted by listeners on the following frequencies: 5280, 10290, 10335, 10500, 11040, and 12550 kHz. Although licensed as a non-broadcast aeronautical station, DEKKA was actually quite free-wheeling in its operation. Indeed, it was monitored on its maiden flight testing with commercial shortwave stations and also broadcasting musical programs consisting of recorded songs and live piano selections.



The Hindenburg's radio shack. At the extreme left is the shortwave transmitter with its associated receiver alongside. At the far right is the longwave transmitter with its companion receiver.

Comments from the passengers regarding the airship and the trip were also sent out to the world.

One of the American listeners who was lucky enough to pick up this historic broadcast was POP'COMM reader Eileen Hofmaster of Ohio. In fact, Eileen was also fortunate enough to have been able to acquire a QSL letter from DEKKA verifying her reception of 8 May 1936! Pictured here, this unusual verification may well be one of the rarest and most historic of any and all QSLs still in existence. I'm most indebted to Ms. Hofmaster for permitting me to share it with my readers.

The Radio Shack On The LZ-129

Successful communications from the Hindenburg with commercial stations were easily accomplished from the airship. The German shortwave stations at Zeesen, operating on twelve different frequencies between 6 and 17 MHz, assured that contact could be made at any hour of the day or night. Communications to the United States were usually handled by coastal station WCC at Cape Cod, Massachusetts.

The Hindenburg had two transmitters, one for low frequencies and the other for shortwave. Two receivers were installed as well as no less than three radio direction finders.

The low frequency transmitter could be tuned up on any frequency between 111 and 525 kHz. Using plate modulation, the power to the antenna was 200 watts while using CW and 125 watts during 'fone transmissions. The antenna for this transmitter was a 2-wire system 393 ft. 8 inches in length. This antenna could be unreeled by a motor winch. The low frequency receiver used the same antenna and was set up with a VOX-like automatic relay so that if the transmitter was not keyed or modulated for more

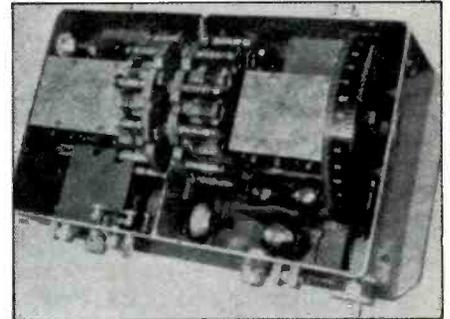
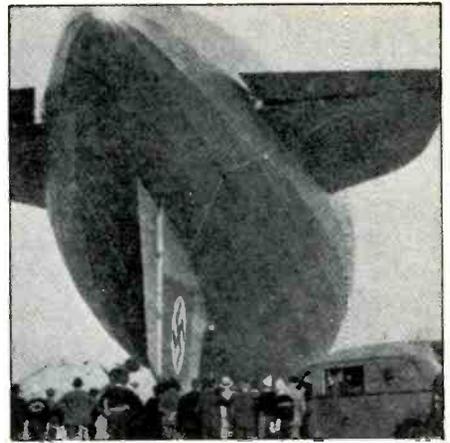
than half a second, the receiver was switched into the antenna circuit.

The shortwave transmitter had the same power output as the low frequency unit and could operate on any desired frequency between 4280 and 17700 kHz. The range was covered by the equipment in two overlapping bands. The shortwave antenna was a quarter-wave trailing wire reeled out to the optimum length for the frequency in use during a particular transmission. It had a maximum length of 60 feet.

The receivers used were designed around 4-tube tuned RF circuits and had the ability to tune from 15 to 20000 kHz, subdivided into 10 bands. Unlike many similar receivers of the era, the Hindenburg's equipment did not utilize clumsy plug-in coils for each band. Instead, switching from one band to the other was accomplished quickly because all of the coils were mounted on a drum that could be rotated by hand. Receiver power was supplied by a bank of storage batteries which provided both A and B voltages. The batteries could be recharged in flight.

Recharge power and also power to operate the transmitters, ship's lighting, and the heating current for the all-electric galley were provided by a gasoline driven generator. The filament and plate supplies (A and B power) were obtained by means of transformers with filters placed in the lines to eliminate interference.

The three direction finder (DF) receivers aided the navigation of the Hindenburg. The main DF receiver could tune from 175 to 1000 kHz which covered the beacon bands and also the frequencies used by high powered AM broadcast stations on both sides of the Atlantic. The other two DF receivers were intended as backup equipment and for use during landings. A large loop antenna was coupled to two DF receivers by a transformer. The third DF receiver was coupled to its own smaller loop antenna. The output of the three DF receivers was fed to



Previously unpublished photo showing the bandswitching arrangement of the Hindenburg's receiver.



NBC announcer Max Jordan standing in the Hindenburg's radio shack, which can be seen to the right of the photo.

two indicating instruments, each having three pointers and controlled by one of the three receivers. During landings, the ground crew at the air station operated three radio transmitters which, in addition to providing an accurate position "fix," also gave complete directions for grounding the airship, releasing the grab-lines, etc.

This, then, consists of information that has been overlooked or ignored by Hindenburg researchers and historians—including the never-before-seen-by-the-public historic Hindenburg verification letter. It doesn't, however, solve the mystery of what caused this majestic behemoth of the skies to become the focal point of one of modern history's most notorious disasters, one which is still being studied 47 years after it took place.

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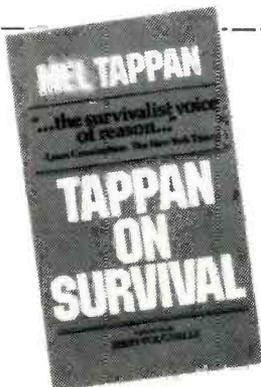
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- ★ **ALEXANDER JASON**, security consultant, reveals the smart ways to find low-crime areas.
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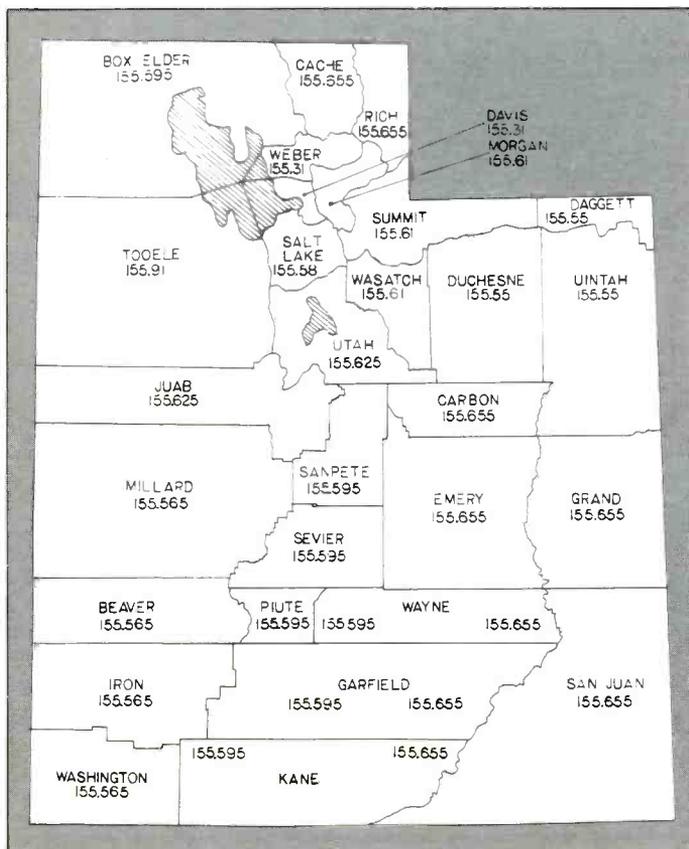
Scanning The Utah Highway Patrol

Readers Michael L. Smith of Salt Lake City, Utah sent along monitoring information for the Utah Highway Patrol, including a county map of the state which very clearly depicts each of the frequencies used in the various sectors. There is also a listing of the 10 Codes used by the UHP.

Readers are invited to furnish similar information relating to state law enforcement agencies, and also agencies located in major metropolitan areas.

Utah Highway Patrol 10 Signals

- | | | |
|-------------------------|----------------------------------|---------------------------------------|
| 10-0 Caution | 10-13 Existing conditions | 10-42 Ending tour of duty |
| 10-1 Signal weak | 10-14 Information | 10-43 Shuttle |
| 10-2 Signal good | 10-15 Message delivered | 10-44 Permission to leave |
| 10-3 Stop transmitting | 10-16 Reply to message | 10-45 Animal carcass at _____ |
| 10-4 Affirmative (OK) | 10-17 Enroute | 10-46 Assist motorist |
| 10-5 Relay (to) | 10-18 Urgent | 10-47 Investigate suspicious vehicle |
| 10-6 Busy unless urgent | 10-19 In contact | 10-48 Disturbing the peace |
| 10-7 Out of service | 10-20 Location | 10-49 Traffic light out at _____ |
| 10-8 In service | 10-21 Call _____ by phone | 10-50 Accident (F, PI, PD) |
| 10-9 Say again | 10-22 Disregard | 10-51 Wrecker needed |
| 10-10 Negative | 10-23 Arrived at scene | 10-52 Ambulance needed |
| 10-11 _____ on duty | 10-24 Assignment completed | 10-53 Traffic control |
| 10-12 Stand by | 10-25 Report to _____ (meet) | 10-54 Change to channel _____ |
| | 10-26 Estimated time of arrival | 10-55 Intoxicated driver |
| | 10-27 License/Permit information | 10-56 Intoxicated pedestrian |
| | 10-28 Ownership information | 10-57 Hit & run (F, PI, PD) |
| | 10-29 Records check | 10-58 Airplane crash |
| | 10-30 Danger/caution | 10-59 Reckless driver |
| | 10-31 Pick up _____ | 10-60 Out of car on violator at _____ |
| | 10-32 _____ units needed | 10-61 Motor inspection |
| | 10-33 Help me quick | 10-62 Request permission car/car |
| | 10-34 Time | 10-63 Prepare to make written copy |
| | 10-36 Security check | 10-64 Vandalism |
| | 10-38 Computers down | 10-65 Juvenile problem |
| | 10-39 Urgent. Use light/siren | 10-66 Major crime alert |
| | 10-40 Silent run, no lights | 10-67 Net message |
| | 10-41 Beginning tour of duty | 10-68 Runaway juvenile |



Utah Highway Patrol

Frequency	Location	Area Dispatched
155.595	Brigham City	Box Elder County
155.595	Richfield	Sanpete, Sevier, Piute, and western parts of Garfield, Wayne, & Kane Counties
155.655	Logan	Cache & Rich Counties
155.655	Price	Carbon, Emery, San Juan, Grand, and eastern parts of Garfield, Wayne, & Kane Counties
155.91	Tooele	Tooele County
155.58	Salt Lake City	Salt Lake County
155.61	Coalville	Summit, Morgan, & Wasatch Counties (Combined area-dispatch)
155.31	Ogden	Weber County
155.31	Farmington	Davis County
155.625	Orem	Utah & Juab Counties
155.55	Vernal	Uintah, Duchesne, & Daggett Counties
155.565	Cedar City	Millard, Beaver, Iron, & Washington Counties
155.505	"Statewide-One"	Emergency, Pursuit, Inter-Department, & Car-Car
155.745	"Frequency-Three"	UHP car-car, Car-aircraft, Radar & Aircraft Speed Traps
155.775	Div. of Wildlife Resources (Game Wardens)	
154.28	State Fire Marshal	Statewide Fire Channel

- 10-69 Missing person
- 10-70 Fire alarm
- 10-71 Nature of fire
- 10-72 Progress report of fire
- 10-73 Rape
- 10-74 Civil Disturbance
- 10-75 Domestic problem
- 10-76 Meet complainant
- 10-77 Return to _____
- 10-78 Back up _____
- 10-79 Notify coroner
- 10-80 Chase in progress
- 10-81 Breatherlizer report
- 10-82 Prisoner in custody
- 10-83 Confidential information
- 10-84 Visitors present
- 10-85 Victim's condition:
 - A = Fair
 - B = Poor
 - C = Critical
 - D = Possible fatality
 - E = Obvious fatality
- 10-86 Crime in progress
- 10-87 Abandoned car
- 10-88 Man with gun
- 10-89 Bomb threat
- 10-90 Bank alarm at _____
- 10-91 Burglary
- 10-92 Theft
- 10-93 Unnecessary use of radio
- 10-94 Contact your home
- 10-95 Out at home
- 10-96 Mental subject
- 10-97 Test signal
- 10-98 Prison break
- 10-99 Wanted/stolen indicated

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The Iranian Naval vessel Artemise is a former Royal Navy destroyer built in 1965. It is equipped with air surveillance radar, two fire control radars, sonar, and Decca navigational equipment. It carries 16 SAM missiles (Seacat type). Its callsign is EPAA.



A POP'COMM Intelligence Report

Iranian Naval Communications

Eavesdropping On The Ayatollah's Sailors

BY ANTON KUCHACEVICH *ze* SCHLUDERPACHERU

One of the most bizarre ongoing major world conflicts has been between Iran and Iraq—a curious and especially vicious confrontation that has lasted for several years and springs forth from reasons which defy understanding and even definition. Nevertheless, it has been marked by poison gas, suicide missions, and waves of desert troops stretching from horizon-to-horizon. The Naval forces of Iran have been especially vital to Iran's war efforts, having been charged with the task of protecting the nation's oil resources in the Persian Gulf and also Iran's shipping lanes at the Gulf of Oman and the Straits of Hormuz. Furthermore, Iran has threatened to restrict shipping through the Straits of Hormuz, a threat which (if carried out) could jeopardize the flow of oil from several nations to the West and also bring the Iranian Navy into direct conflict with American Naval forces dedicated to keeping the Straits of Hormuz open.

Iran has the largest Navy in the Persian Gulf and the strongest missile capabilities. Many of the Senior Officers had been trained in the United States and in Great Britain prior to the 1979 revolution, and even though few of those officers remain in Iran's present Navy, the residual effect of their methods is probably still of some advantage. The Iranian Navy is comprised of about 20,000 officers and men stationed at bases in the Persian Gulf, on the Gulf of Oman, and (to the north) in the Caspian Sea.

One major problem facing the Iranian Navy is the disruption brought to its administration and organization by the revolution five years ago. Another problem is the state of decline of the vessels

Shore Stations: The Iranian Navy

Location	Callsign	Frequencies
Bandar Abbas	EPC	SSB/CW 4083, 4186, 6447, 6488, 8759, 8809, 12448, 17250 CW 4785, 4888, 6291, 8350, 8470, 12504, 13194, 15783, 16100, 16668, 17660, 21780, 22692, 24055 SSB 6517, 15480
Bandar Bushehr	EPE	SSB/CW 4186, 6336, 8809
Bandar Chah Bahar	EPI	SSB/CW 3173, 4186, 6270, 8809
Bumusa Island	EPO	SSB/CW 4305, 5750, 7653, 11550
Farsi Island	EPW	SSB/CW 4305, 5750, 7653, 11550
Farur Island	EPT	SSB/CW 4305, 5750, 7653, 11550
Hengam Island	EPN	SSB/CW 4305, 5750, 7653, 11550
Kharg Island	EPF	SSB/CW 4186, 6336, 8809
Khoramshahr	EPG	SSB/CW 4186, 6288, 8580, 13060
Kish Island	EPK	SSB/CW 4305, 5750, 7653, 11550
Larak Island	EPV	SSB/CW 4305, 5750, 7653, 11550
Lavan Island	EPU	SSB/CW 4305, 5750, 7653, 11550
Sirri Island	EPL	SSB/CW 4305, 5750, 7653, 11550
Teheran (HQ)	EPR	CW 3897, 4172, 4967, 5620, 7490, 7827, 7997, 8600, 12270, 13876, 14390 SSB 4100, 5403, 6520, 6761, 10512, 10722, 12323
Tumbe Bozorg	EPQ	SSB/CW 4305, 5750, 7653, 11550

Iranian Naval Vessels

Name	Serial #	Callsign	Type of Vessel
Artemise	D-5	EPAA	Destroyer
Babbar	61	EPAP	Destroyer
Bayandor	F-25	EPAF	Frigate
Falakhon	P-226		Fast Attack Craft
Faramarz	DE-18	EPAE	Frigate
Gardouneh	P-229		Fast Attack Craft
Gheshm		EPAU	LCU Landing Craft
Gorz	P-228		Fast Attack Craft
Harischi		EPAN	
Hormoz		EPAR	
Hovercraft 1	01	EQAD	Transport
Hovercraft 2	02	EQAE	Transport
Hovercraft 3	03	EQAF	Transport
Hovercraft 4	04	EQAG	Transport
Hovercraft 5	05	EQAH	Transport
Hovercraft 6	06	EQAI	Transport
Hovercraft 7	07	EQAJ	Transport
Hovercraft 8	08	EQAK	Transport
Hovercraft 11	11	EQAL	Transport
Hovercraft 12	12	EQAM	Transport
Hovercraft 13	13	EQAN	Transport
Hovercraft 14	14	EQAO	Transport
Joshan	P-225		Fast Attack Craft
Kahnamoie	F-28	EPAI	Frigate
Kaywan	201	EPAX	Large Patrol Craft
Khadang	P-223		Fast Attack Craft
Khanjar	P-230		Fast Attack Craft
Larak	512	EQAW	Tank Landing Ship
Lavan	513		Destroyer
Lengeh Iran		EPAS	
Milanian	F-27	EPAH	Frigate
Naghdi Iran	F-26	EPAG	Frigate
Neyzeh	P-231		Fast Attack Craft
Palang	62		Destroyer
Parvin	PGM-65	EQAA	Large Patrol Craft
Peykan	P-224		Fast Attack Craft (sunk?)
Rostam	DE-16	EPAD	Frigate
Saam	DE-12	EPAB	Frigate
Shahrokh	31	EPAJ	Minesweeper
Shamshir	P-227		Fast Attack Craft
Sohrab		EPAQ	
Tabarzin	P-232		Fast Attack Craft
Tiran	202	EPAX	Large Patrol Craft
Tonb	514		Tank Landing Ship
Zaal	DE-14	EPAC	Frigate
Zoubin	P-222		Fast Attack Craft

Miscellaneous Government Vessels

Azadeh	EPPV	Tug
BP Guard	EPGH	Patrol
BP Warden	EPGI	Patrol
Gorgan	EPPS	Tug
Hormoz	EPPX	Tug
Isfahan	EPPR	Tug
Khorassan	EPPT	Tug
Navid	EPPU	Tug
Payam	EPPW	Tug
Poolad	EPPY	Tug
Tavana	EPPZ	Tug

themselves now that no more spare parts and maintenance personnel from the West are available. Naval vessels, even in peacetime, require a constant flow of repairs and expert maintenance personnel, and during hostilities these factors are all the more vital. It may well be that some of Iran's larger vessels may be operational only on a limited basis since many of them are former Western Naval vessels which were built in the 1960's. The *Artemise*, for instance, is the former HMS *Sluys*, a British destroyer built in 1965! The *Bayandor* is the former USN frigate *PF-103* built in 1963. Vessels such as these certainly would require extensive maintenance and repair work by now. It does seem, however, that fast attack craft, such as the *Joshan*, *Tabarzin*, and others of their type are probably fully operational and quite potent, having been built as recently as the late 1970's and armed with electronic warfare equipment and Harpoon missiles.

The main bases of the Iranian Navy are Bandar Bushehr, Kharg Island, Khoramshahr in the Persian Gulf, Bandar Abbas at the Straits of Hormuz, and Bandar Chah Bahar in the Indian Ocean. These bases can communicate with vessels by means of SSB and CW, and a listing of their known frequencies and callsigns is included with this report. It should be noted that stations at the Naval bases may communicate with merchant marine vessels of various nations.

We also list most of the Naval vessels of the Iranian Navy which are believed to be in service at the present time, along with their callsigns (where known), Iranian Navy serial numbers, and information relating to the type of vessel.

In addition to the high frequency SSB/CW capabilities of the Iranian Navy, FM voice transmissions of a tactical nature from Iranian military forces have also been monitored on 39.10 and 39.40 MHz.

Keeping in mind the present political situation in Iran and the past actions of the rather belligerent Iranian Government, it would seem that these Naval forces will probably be active for quite a while to come. It may be of interest to keep an ear tuned to the communications frequencies of these forces.

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Mobile Scanner Reception

Peculiar Problems That Affect Monitoring

BY JOSEPH J. CARR

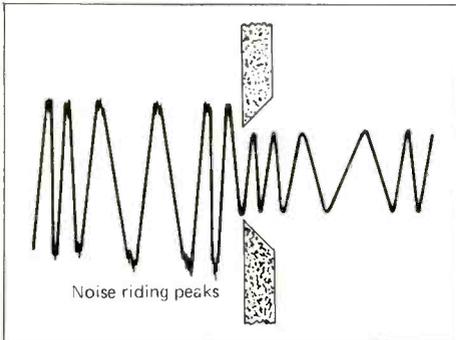


Figure 1. Limiting on strong signals removes noise peaks.

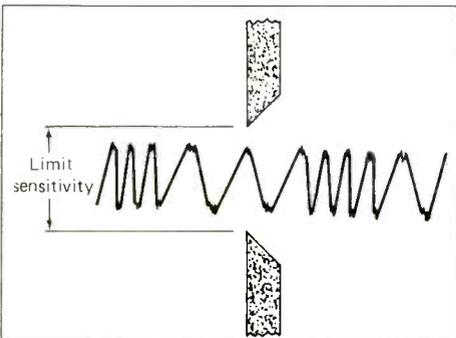


Figure 2. Weak signal is below the limiting threshold, so noise peaks are received.

Mobile FM receivers have long been hot items in the automobile electronics market. The most common receivers, of course, are FM and FM stereo broadcast receivers, but now many thousands of automobiles are equipped with communications receivers either as individual scanners or as part of a VHF/UHF two-way FM transceiver. FM broadcast receivers range from \$10 "converters" that make the AM radio think it's FM, to multi-kilobuck stereo wonder radios. Monitors likewise range from low-cost converters to high priced digitally controlled scanner radios.

One headache that affects all forms of mobile FM receivers, however, is the multitude of reception problems experienced. Technicians in the repair shops have complained since the late fifties that salespeople create a lot of the complaints because they sell too much performance. While every good salesperson "sells the sizzle," the customer sometimes finds that the sizzle is from greasy fatback instead of the promised prime rib!

The purpose of this article is to show you some of the more common reception problems seen on mobile FM receivers so that you can tell whether some difficulty is nor-

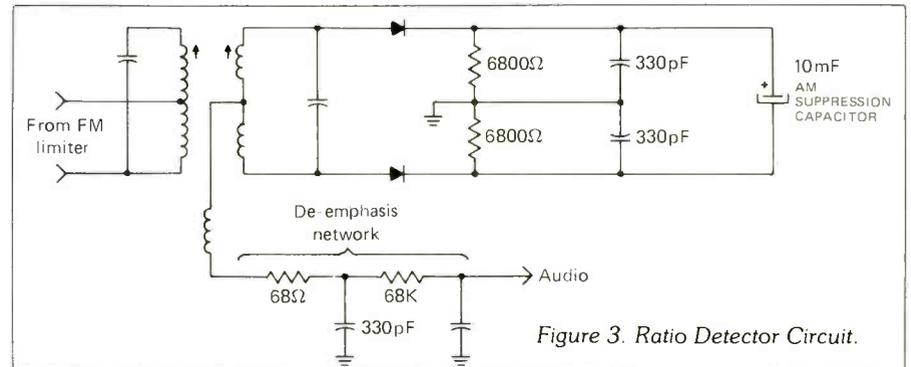


Figure 3. Ratio Detector Circuit.

mal or if there is a defect that needs correcting before the warranty runs out.

Noise Rejection

Advertising and salespeople often make the claim that FM is "noise free." While this claim is most often heard in the context of FM broadcast band receivers, the same idea usually carries over to other FM receivers (e.g. monitors) as well. Without some qualification, however, this claim is patently false. Any salesman who tells you that FM is noise free is either woefully uninformed or is "disturbing salt water taffee." FM is more noise free than AM, but only under certain specific conditions will reception be virtually noise free. It is not true that you will never be bothered by noise when monitoring an FM receiver. The FM receiver's limiter circuit is the key to this phenomena.

Figure 1 illustrates graphically how an FM receiver reduces or eliminates noise signals. Notice that when a strong signal is passed through a limiter stage, its amplitude peaks are clipped. Because most man-made and natural types of static noise tend to *amplitude modulate* the signal (true frequency modulation of the signal by noise does occur, but it is rare), it is removed along with the signal peaks. Under conditions where the signal is subject to maximum limiting, little noise will get through to the detector.

Figure 2 illustrates the situation in which the noise *will* get through to the detector and subsequently appear in the audio output. Suppose the receiver is tuned to either a very low power station or a distant station. If the received signal is below the limit sensitivity of the receiver, the limiter circuit will have no effect. When a signal is tuned in that has less than the level required to initiate limiting, then the limiter will fail to act and will perform merely as an amplifier. Those noisy signal peaks will pass through the detector to the audio amplifiers.

Even when inadequate or no limiting oc-

curs, the noise produced by an FM receiver may be less severe than that produced by an AM receiver. This is attributable to several factors which aid in reducing any noise that gets by the limiter. One such factor is the de-emphasis network that is usually connected between the output of the FM detector and the input of the audio amplifier. Some broadcast receivers use a 75 microsecond de-emphasis, while others use a 25 microsecond de-emphasis. Communications receivers tend to have a -6 dB/octave de-emphasis in order to compensate for the equivalent pre-emphasis added to the signal at the transmitter in order to improve apparent signal-to-noise ratio. Another factor is that the detector is less sensitive to amplitude variations than frequency variations. Certain types of detectors even have their own built-in AM suppression. The well-known "ratio detector," for example, employs a relatively large-value capacitor for this purpose (see Figure 3). Many receivers do not employ a separate limiter stage, even when the detector is not apparently equipped with AM suppression. The much-used integrated circuit quadrature detector is a case where an IC is used to provide an exceptional amount of limiting (and noise-free operation), even though there is no external "limiter" stage. The total limiting function is performed inside of the detector IC. Also, some of those quadrature detectors are inherently good at AM rejection (even though you would need an engineering degree to understand the math that proves the point!).

Sensitivity

Mobile radio and automobile radio technicians routinely receive complaints that the FM receiver seems unable to receive distant stations. The problem seems especially bad on FM broadcast receivers. Once upon a time, when I worked as a car radio technician, I had a customer who complained and was told that he could easily listen to a classi-

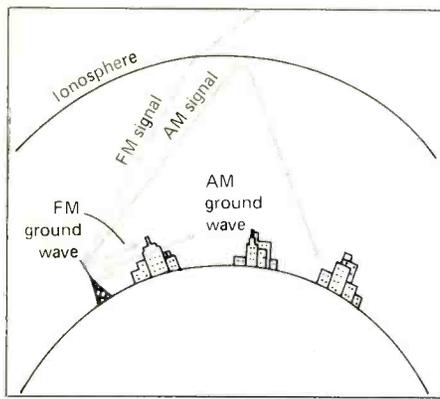


Figure 4. Skywave as compared to Ground-wave reception.

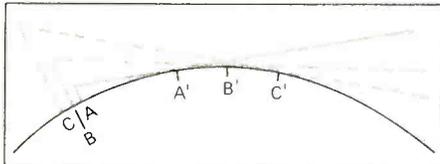


Figure 5. VHF/UHF reception beyond the apparent horizon.

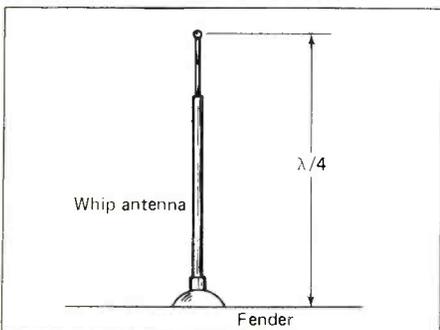


Figure 6. Quarter wavelength whip antenna.

cal music FM stereo station in a city that was some forty miles distant if he would only buy the FM stereo car radio offered by that particular dealer. A demonstration was given in the showroom, and sure enough, the station was loud and clear. The chap was naturally upset when he discovered that the "sizzle" sold by the salesman was coming out the loudspeakers—in stereo no less! That \$400 receiver was incapable of giving him local performance on signals received from 40 miles away. The problem was sensitivity.

Sensitivity is a measure of the radio's ability to pick-up weak signals. The reliable range of most FM car radios at that time was about twenty miles or so on monaural stations and 15 miles on stereo stations. The reason for the difference between stereo and mono, incidentally, is that the 19 kHz Pilot signal and L-R encoded stereo signals only modulate the FM transmitter about 10 percent each.

The reception of any FM signal, whether communications or broadcast, is limited by the fact that VHF and UHF frequencies used for these signals are "line of sight." At lower frequencies, such as those occupied by AM and shortwave band broadcasters, the ionosphere will bend the radio signals back to earth so that they "land" some distance away—often thousands of miles away. At VHF/UHF, the degree of refraction is insuffi-

cient to reflect them back to earth. Those waves travel into space. In the VHF/UHF spectrum, only the groundwave is useful. Figure 4 illustrates these characteristics.

Because the useful propagation of VHF/UHF signals is limited to the groundwave, the greatest distance that can be reliably used is a little further than the optical horizon ($4/3$ earth's curvature). See Figure 5. This is line-of-sight propagation, although the term itself is a little misleading. All of us know stations that are normally received at distances that seem greater than $4/3$ -horizon. The reason for this discrepancy is that the radio line of sight is a function of the height of the transmitter and receiver antennas above the earth's surface. It is the $4/3$ -horizon distance as viewed from the antenna towers that determines normal reception distances.

Because most mobile antennas are close to the ground, reception of VHF/UHF FM signals by a mobile radio receiver over longer than optical distances requires a very high transmitting antenna. That is why mobile radio operators typically rent space on top of buildings or on broadcast towers for their base station antennas. People who typically have better reception at home than in the car generally have either a prime location or a superior antenna (or both!). The base station receiver is connected to that wonderful super "antler," while the poor mobile receiver will have either a simple quarter wavelength vertical or some minimum (and sometimes phoney) gain antenna. While some homeowners have a 50-foot tower for their antennas, both broadcast and otherwise, very few mobile installations can boast the same (don't laugh! I once had a customer who welded a 50-foot slip-up mast on the back of his Winnebago).

A fair improvement in apparent sensitivity can be realized if the antenna is tuned somewhere near resonance. Figure 6 shows a typical quarter wavelength vertical antenna. For reception in the FM broadcast band, the optimum height is 26 to 32 inches depending upon actual frequency. The usual advice is to set the antenna at some middle band height (e.g. 28 to 30 inches), or to set it either at the high end (26 inches) or low end (32 inches), depending upon the frequency of your favorite station. For all other bands, set the height of the quarter wavelength whip antenna at the height determined from the equation below:

$$L_{\text{inches}} = 2808/\text{FMHz}$$

This formula will yield the height in inches of the radiator when the frequency is expressed in MegaHertz.

Fading

Once, when I was a kid, a bunch of us were playing one Sunday afternoon when the burglar alarm at the bank across the street went off. A gaggle of cops showed up and determined that the problem was an alarm failure. One of the officers remained behind to await the bank manager to come and disable the errant alarm. When he parked, he noticed that his radio reception

was poor, so he called the dispatcher and requested a "slow ten count." As the radio crackled out "1, 2, 3..." the officer moved the car a few inches and restored reception. Since I was just getting into ham radio and SWLing at that time, I was thoroughly intrigued that the car could move only a few inches and make such a profound difference in the reception.

Another phenomenon that is well-known is the ability of FM signals (well, actually, the modulation makes no difference—read "VHF/UHF signals") to penetrate tunnels where AM radios fade out. However, an FM signal may fade out in a tunnel just as badly as an AM signal if the tunnel is long enough or if the "propagation" inside the tunnel is wrong. The downtown areas of several cities provide many examples of fading and reception irregularities similar to both of our examples. The causes are "dead zones" and "multi-path cancellation" of the signal.

A dead zone exists where there is little or no signal. It can be caused either by the multi-path problem or by shadowing. One type of shadowing is shown in Figure 7. If an omnidirectional transmitting antenna is located at point "X," the radio waves would travel outward from point "X" in ever expanding concentric circles. The longer waves in the AM broadcast band can bend around obstructions. The short waves of the VHF/UHF bands, however, cannot. An obstruction, such as a tall building, therefore, creates a shadow zone on the side that is opposite of the transmitter antenna. There can exist many dozens of shadow zones in a downtown area.

Unfortunately, shadow zones tend to increase as the angle between the receiving and the transmitting antennas is reduced. This effect is similar to the effect of the setting sun on your own shadow. With the sun directly overhead at noontime, there is little or no shadow. However, as the sun sets, your shadow tends to become both deeper and longer. Likewise, in a radio system, the shadow zones will become more severe as the distance between the receiving and transmitting antennas increases, or the antenna heights decrease.

Multipath reception is illustrated in Figure 8. It occurs when a signal bounces off an obstruction, such as a building or water tower, and arrives at the receiver a few microseconds later than the direct signal. This is the same phenomenon that causes "ghosts" in TV reception. Because this late-arriving signal is out of phase with the direct signal, there will be at least some partial cancellation of both signals when they meet at the receiver antenna (this effect is a function of their wave nature). The listener hears a "ffff ffff" sound as the car moves from one multipath zone to another. Technicians who work on FM broadcast receivers sometimes call this effect "picket fencing." Note that picket fencing can mimic the sound of a defective AFC, or an unlocked phase locked loop (PLL) local oscillator, so one should be certain that the radio is operating properly. Those defects will occur whether or not the

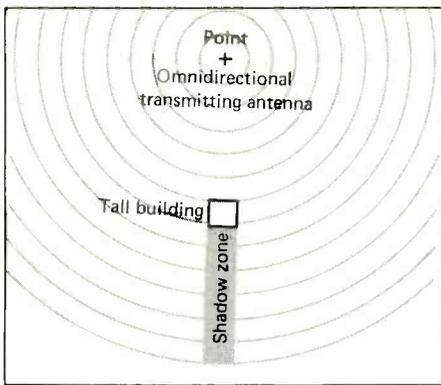


Figure 7. Shadowing due to obstruction.

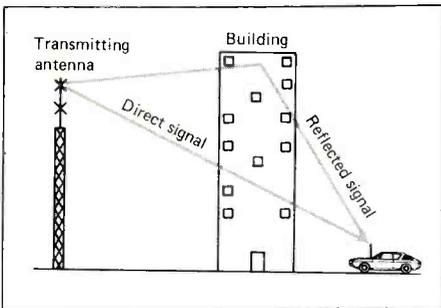


Figure 8. Multi-path reception.

car is moving, while the multipath effect only occurs when in motion and it is not found in all locations. It was a multipath effect that caused the police officer in my earlier story to move his car. This effect depends upon the wavelength of the signal, and can be expected to change every quarter wavelength or so. In the case of the 157 MHz police radio, quarter wavelength was on the order of 18 inches, which explains why the officer moved the car only a foot or so and found reception a lot better. I have seen TV antenna installers move an antenna only a couple of feet up, down, or sideways and thereby improve reception immensely.

Although most VHF/UHF shadow zones are in what might be called over-civilized areas where there are lots of buildings, it is not unusual to encounter them also in the open countryside. The obstruction that causes either a reflection or shadow can be located many miles from where the reflected and direct signals recombine at a receiver. Either type of zone can be located anywhere, and might be only a few inches across.

Another example of VHF/UHF fading out on the open road is the phenomenon of "hilltopping" (see Figure 9). I live in the Piedmont section of Virginia, which is characterized by miles of rolling foothills to the Blue Ridge Mountains ("piedmont" means "foot of the mountains"). When I drive down Interstate 95 from Washington, DC to Richmond, Virginia, my mobile ham rig is usually tuned to the 31/91 2-meter repeater in Tyson's Corners (Fairfax County). The further I get from Washington, the more I hear hilltopping: the repeater signal breaks in and out depending upon whether I am on top of a hill or in the trough between hills. On top of the hill, the repeater signal is loud and clear, and my puny 10-watts has no trouble

getting into it. In the troughs the repeater signal is weak (or nonexistent) and my transmitter won't even "key-up" the repeater transmitter (hilltopping works both ways!).

Intermodulation Problems

There is a hill in my home town that local hams call "Intermod Hill." It happens to be one of the higher locations in the county, so several broadcasters and AT&T have seen fit to build radio towers there. In addition, both of the two main radio towers bristle with landmobile antennas whose owners rent space on the tower in order to get better coverage. We have, then, two 50,000-watt FM broadcast stations, a 1000-watt AM broadcast station, a many-frequency microwave relay station, and several dozen 150 MHz to 950 MHz landmobile stations and radio paging stations. Nearby is a hospital that operates its own security system radio station and a hospital pager. They also have a coronary care unit that uses radio telemetry to keep track of ambulatory patients. All of those signals can combine in unusual ways to produce apparently valid signals on other channels. The frequencies produced are many, and roughly follow the rule below:

$$\text{Funwanted} = (MF_1) - / + (NF_2)$$

Where: M and N are integers (1, 2, 3 . . .)
 F_1 and F_2 are the frequencies present

Imagine the number of possible combinations when there are literally dozens of frequencies floating around the neighborhood! My wife is a nurse, and she works in that hospital mentioned earlier. I used to wait for her in our car at the end of her shift, and I listened to my 2-meter ham receiver to pass time. I could hear the hospital security department and the local telephone company mobile telephone frequency clear as a bell on the 19/79 repeater frequency! The ability (or lack of same) to reject these intermods is a good measure of a receiver's performance. My first rig was kit-built and was miserable. Later on I bought a Kenwood TR-7600, and it doesn't respond to the intermods. Similarly, the FM radio in my Dodge Aspen is a \$10 converter bought in a drug store, while the FM radio in my Chevy wagon is a Delco. The Delco doesn't respond to the intermods on "Intermod Hill," while the cheapie converter is unusable within quarter mile of the place. I suspect that the linearity or dynamic range of the input RF amplifier is a factor in both cases.

One of the funniest intermod situations I know of occurred to me when I worked in another hospital as a Bioelectronics Engineer. We used a telemetry unit to monitor

patient ECG's in the "PCCU," which is the unit that Coronary Care Unit patients go to after they are not longer acute, but still need watching. The transmitters generated 1 to 4 milliwatts of RF that was frequency modulated with the patient's electrocardiogram (ECG) signal. The signal level was so low that we needed five 17-inch whip antennas sticking down from the ceiling to cover an area that consisted of two corridors approximately 150-feet in length. Each antenna was connected directly to a master TV antenna 60 dB amplifier (the transmitter channels were located in the "guard bands" between TV video and audio carriers); one of the whip/amplifier assemblies was right over the receiver console.

One morning about 2 a.m. a nurse called me at home, complaining that Mr. Jones's ECG was riding in on Mr. Smith's channel. Not quite believing her, I never the less went to the hospital and checked the situation out. Swapping receivers, telemetry transmitters, and amplifiers did no good. Finally, after two hours of trying (and almost to the point of looking silly to nurses who don't easily tolerate other's failures regarding their equipment), I noticed the FM broadcast receiver sitting on top of the telemetry receiver cabinet less than 18-inches from the antenna/amplifier, and it was playing. On a hunch, I turned off the receiver and Mr. Jones went back to his own channel! Previously, his signal was showing up on both his own channel and Mr. Smith's channel, but was now only where it belonged. Turning the FM receiver back on caused the situation to return. Also, tuning the radio to another channel made the problem go away.

What happened in that situation? The local oscillator in the FM broadcast receiver was heterodyning with Mr. Jones's signal to produce an intermod frequency on Mr. Smith's channel. Following that night we banned FM radios in the CCU/PCCU area for exactly the same reason they are banned on commercial airliners: interference with the electronic equipment. Of course, the nurses complained, but not too loudly. They were, after all, interested in the well-being of their patients.

Conclusion

VHF/UHF/FM reception problems can depreciate the enjoyment of your mobile broadcast or communications receivers. But understanding these problems can help you either solve the problems, or, to select radios that are less susceptible to the problems. This is why I prefer to "audition" a receiver in a car before plunking down the bucks. **PC**

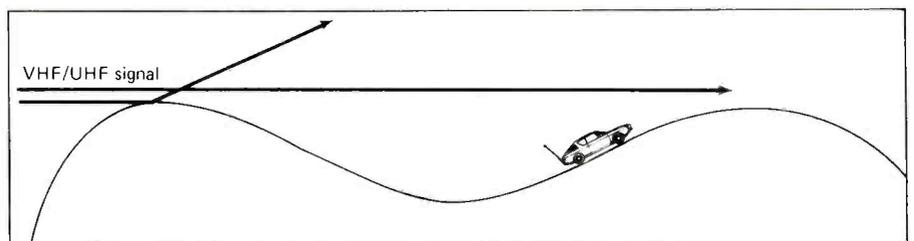


Figure 9. "Hilltopping."

THE EXCITING WORLD OF RADIOTELETYPE MONITORING

For the newcomers in the super hobby of RTTY monitoring, I would like to review the basics of reception and interpretation of the digital signaling process. RTTY offers quite a few advantages over voice and our old friend, Morse code. It used to be said that Morse code will get through the "soup" or strong interference where other modulation schemes fail. This is true only when referring to voice (either Amplitude Modulation or Single Side Band), as true frequency shift keying (FSK) offers a significant improvement over voice and Morse code. This is why the number of RTTY FSK signals (most encrypted however) continue to increase in number on shortwave. The obvious first question readers ask is, "What can be logged using RTTY equipment?"

On shortwave (3-30 MHz), one can find active weather, international news, aeronautical, embassy, military, and ship RTTY communications. More than half of the RTTY signals cannot be read due to the highly secure and confidential nature of military and embassy communications. The rest—weather, international news, and some embassy RTTY—can be read with readily available equipment. Many will be elusive due to changing schedules and frequencies; hence, a greater challenge logging RTTY compared to voice broadcast transmissions. Keep in mind these transmissions are point-of-point in nature rather than broadcast to a general location and highly directional antennas are commonplace.

The equipment required to display RTTY signals can be broken down into sections. First, the antenna *must* be a distance (at least 25 feet) from the receiver with *shielded* coax cable coupling the antenna to the receiver. Without a shielded coax cable, the intended RTTY signal will be buried in the radiated interferences produced by the computer or terminal. An omnidirectional vertical or horizontal antenna is practical, but a carefully tuned directional antenna will give a stronger signal (expensive). I like both a general horizontal long wire and a vertical antenna with radials. Some days the horizontal will grab a better signal than the vertical, and other times a vertical will out-produce a horizontal, depending upon the final polarization. Since determining the final polarization is quite unpredictable, a coaxial switch between the horizontal and vertical antenna provides a convenient switchover of antennas. Well, from the antenna to the receiver, a shielded coax will help prevent the "local" interference from coupling into the lead in.

The receiver used should be very stable—a synthesized HF receiver works best. Stability should be in the area of 50 Hz or better after a 15 minute warm-up. My favorite receivers are those that are frequency synthe-

ADN ALLGEMEINER DEUTSCHER NACHRICHTENDIENST-GERMANY
13895.0 kHz
AFP AGENCE FRANCE PRESSE-FRANCE 20318.5 kHz, 15908.0 kHz
ANSA AGENZIA NAZIONALE STAMPA ASSOCIATA-ITALY 20085.0 kHz
AP ASSOCIATED PRESS-LONDON 12280.0 kHz
CETKA CESKOSLOVENSKA TISKOVA KANCELAR-CZECHOSLOVACIA
13597.0 kHz
KCNA KOREAN CENTRAL NEWS AGENCY-KOREA 10580.0 kHz
MAP MAGHRETS ARABE PRESSE-MOROCCO 19068.4 kHz, 18695.9 kHz
MENA MIDDLE EAST NEWS AGENCY-EGYPT 13653.0 kHz

During a recent weekend, I logged these RTTY news transmissions using 50 baud, 400/425 Hz shift during 1530 GMT and 1600 GMT.

sized and quite stable. A few dedicated RTTY Frederick surplus receivers (Model 1500A) are starting to be seen. These receivers are exceptionally stable and selective but require a separate crystal for each RTTY center frequency. A front panel rotary switch selects one of six frequencies. Other than the dedicated crystal controlled receivers, the older PTO or variable oscillator units have excessive drift and are unsuitable for RTTY reception.

The actual digital signal is transmitted by shifting the carrier frequency slightly in frequency—one frequency representing a binary 0 and the other frequency representing a binary 1. By alternating between the two frequencies, a character is transmitted. A mutually agreed upon sequence of 1's and 0's then is the Baudot or ASCII code. By international agreement, the Baudot code is very common on shortwave.

The receiver changes the two frequencies into two audio tones by mixing an internally generated carrier or beat frequency oscillator with the incoming changing frequencies. The resultant tones, referred to as mark and space, will be easier to demodulate into a stable changing voltage (common) or current (least common). The function of the demodulator—sometimes referred to as a terminal unit—is to convert the proper audio tones into a "cleaned up" binary voltage. Again by international agreement, there is an audio tone of 2125 Hz for 1 (mark) and a higher pitched tone for 0 (space). Typical tone differences are:

- 170 Hz—Amateur Radio, ships
- 400 Hz—few new agencies
- 425 Hz—new agencies (most common shift)
- 850 Hz—meteo, military, news

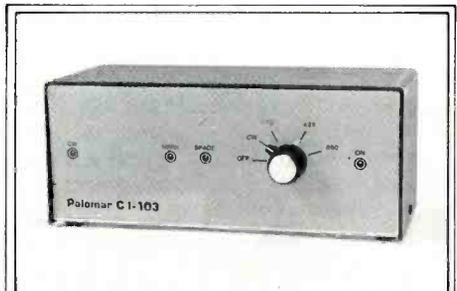
For military RTTY then, 2125 Hz would be a binary 1 and 2975 Hz a binary 0.

Now we have changed a shifting RF carrier into a shifting digital voltage. Since we have agreed that a particular sequence of 1's and 0's will represent a certain character, a computer or code converter will be required to print out or display on a CRT this certain character. A microcomputer is commonly

used today to change the stream of 1's and 0's into visual characters. Of course the rate of the RF carrier change has to be agreed upon also. The unit of speed or rate of change is known as baud. Technically, it is defined as the reciprocal of the signaling rate. Commonly used baud rates include:

- 45 baud—most Amateurs
- 50 baud—news agencies, military, embassy
- 75 baud—weather, military

The slowest rate (45 baud) seems to penetrate the most severe propagation conditions where 75 baud would be error prone (a larger bit error rate).



RTTY/ASCII/CW Computer Interface

Palomar Engineers has a new computer interface Model CI-103. It connects between your rig and home computer and lets you send and receive RTTY, ASCII, and CW using a VIC-20, Apple, TRS-80C, Atari, TI-99, or Commodore 64 computer.

The CI-103 copies on both mark and space with a dual diversity combiner that gives much improved reception in the presence of noise and fades. It receives both amateur and commercial shifts and features both pre and post limiter filtering, keying for either plus or minus polarity, regulated voltages for stability and a three lamp indicator system for easy tuning. Operation is from 12-24 volts DC or from 115 volt AC with optional adapter.

The Model CI-103 retails for \$139.95. For further information, contact Palomar Engineers, 1924-F W. Mission Rd., Escondido, CA 92025, phone (619) 747-3343.



World's Oldest "Number Code" Mystery – Still Unsolved!

If You Solve It You Could Be Rewarded With \$16 Million In Gold And Silver!

There may well be \$16-million worth of gold, silver, and jewels hidden away somewhere in rural Virginia, except there have been folks looking for it for many years and they can't locate the place where it's hidden. It's not that there are no clues; the hiding place is spelled out in three Ciphers concocted by the fellow who hid the treasure more than 160 years ago. Problem is that only one of the Ciphers has ever been unravelled—the other two have resisted all attempts to unlock their mysteries, despite repeated attempts to do so by code experts using sophisticated computers. Thousands of man hours have been spent in vain!

So, a cache of 2,921 pounds of gold, 5,100 pounds of silver, and a large number of jewels still awaits liberation from the iron pots in which the materials were buried six feet below ground, just as it was left by Thomas Beale.

The Beale Story

The story of the fabulous Beale treasure and the mysterious Ciphers which tell its lo-

cation first came to light in 1885 when a booklet was issued telling the Beale story. The booklet, believed to have been written by one James B. Ward, describes how Thomas J. Beale befriended the owner of the Washington Hotel in Lynchburg, Virginia. In early 1822, Beale left Lynchburg, leaving behind a locked metal strongbox. Eventually, the hotel keeper, Robert Morriss, received a letter from Beale in St. Louis which advised him to await his return, but if nothing was heard from him for 10 years, he should open the box and adhere to the instructions therein. That was the last anybody in Lynchburg ever heard from Thomas J. Beale.

Ten years passed, twenty years, in fact forty years passed before Morriss got around to opening the strongbox. When he opened it in 1862 he found a lengthy epistle which described Beale's 1819 gold and silver diggings in New Mexico, how some of the metals were later swapped for precious stones, and how all of this was hidden near Buford's Taven in Bedford County, Virginia. The specific location of the treasure trove was contained in three coded messages which

consisted of a series of numbers. There was also mention of a key to open the locked treasure pots, and that was supposed to have been sent separately to Robert Morriss. Morriss claimed never to have received this key and he thereupon turned all of the Beale materials over to a friend, Robert Ward, and within the year, passed away.

According to Ward's booklet on these matters, Ward set about trying to figure out the Ciphers left by Beale. After long effort he determined that the series of numbers related to the first letter of specific words contained in a book or document. Therefore, if Beale's Cipher showed a number 462, then Ward decided that the first letter of the 4th, 6th, and 2nd words of that document would spell the actual word. Ward found that one Beale Cipher matched up with the Declaration of Independence and, when deciphered, it described the treasure and gave a description of how it was buried. It also told that the specific location of the treasure would be found in another of his secret messages. It has been presumed by cryptanalysts that the message which begins with

I HAVE DEPOSITED IN THE COUNTY OF BEDFORD ABOUT FOUR MILES FROM BUFORDS IN AN EXCAVATION OR VAULT SIX FEET BELOW THE SURFACE OF THE GROUND THE FOLLOWING ARTICLES BELONGING JOINTLY TO THE PARTIES WHOSE NAMES ARE GIVEN IN NUMBER THREE HEREWITH THE FIRST DEPOSIT CONSISTED OF TEN HUNDRED AND FOURTEEN POUNDS OF GOLD AND THIRTY EIGHT HUNDRED AND TWELVE POUNDS OF SILVER DEPOSITED NOV EIGHTEEN HUNDRED AND NINETEEN THE SECOND DEPOSIT WAS MADE DEC EIGHTEEN TWENTY ONE AND CONSISTED OF NINETEEN HUNDRED AND SEVEN POUNDS OF GOLD AND TWELVE HUNDRED AND EIGHTY POUNDS OF SILVER ALSO JEWELS OBTAINED IN ST LOUIS IN EXCHANGE TO SAVE TRANSPORTATION AND VALUED AT THIRTEEN THOUSAND DOLLARS THE ABOVE IS SECURELY PACKED IN IRON POTS WITH IRON COVERS THE VAULT IS ROUGHLY LINED WITH STONE AND THE VESSELS REST ON SOLID STONE AND ARE COVERED WITH OTHERS PAPER NUMBER ONE DESCRIBES THE EXACT LOCALITY OF THE VAULT SO THAT NO DIFFICULTY WILL BE HAD IN FINDING IT

This is the transcript of the Beale Cipher #2 which was deciphered in 1885. The contents of Ciphers #1 and #3 remain a challenge, although #1 apparently holds the information needed to claim \$16 million in treasure. Want to try breaking the code?

the numbers 71-194-38-1701 is the one with the vital data—but somehow the Declaration of Independence doesn't work for that Cipher. It also doesn't work with an enormous number of other possible "keys," including the Bible, the Magna Carta, The Constitution, various plays and classic books, etc. It has been run through computers, tried by psychics, and some have even claimed to have broken the Cipher—but thus far none has revealed the location of the treasure.

Beale Cipher devotees have also spent many hours actually digging up a number of locations in Bedford County, based upon a number of announced "solutions" to the Ciphers. A retired army officer has made several dozen trips to Bedford County and the Buford area (now called Montvale) in an effort to find the treasure. One of the more formidable persons to devote countless hours to the mystery has been Dr. Carl Hammer, retired Director of Computer Sciences at Sperry-Univac. Dr. Hammer has established that the three Ciphers were all written in a similar fashion. They do not noticeably differ one from the other in structure or statistical parameters, and most likely they all contain hidden messages and are not just a series of randomly selected numbers.

Some have approached the Beale Ciphers from the point-of-view of historians and have attempted to find some proof that a person such as Thomas J. Beale ever actually existed. A former CIA agent who has rooted around in ancient archives was unable to locate any evidence that anybody named Beale ever showed up in Santa Fe, New Mexico (which was still part of Mexico at the time Beale was supposed to have been there). Another researcher claims that Beale and James Ward are one and the same and the whole thing is an elaborate hoax. Nevertheless, more people take it seriously than those who don't, and those who are trying to crack the Beale Ciphers have formed into a group called the Beale Cypher Association. The association holds national symposiums where the members compare notes and revelations. The BCA also issues a newsletter that comes out quarterly and also maintains a small reference library of material pertaining to the Beale Ciphers. This reference ma-

terial is available to all members—many of whom are persons who are or have been professionally involved in cryptanalysis or employed within the "Intelligence Community," although membership is open to anyone. For more information on the Beale Cypher Association, send a self-addressed stamped business size (#10) envelope to the Beale Cypher Association, P.O. Box 216, Medfield, MA 02052.

In perusing some of the BCA literature, it becomes quickly apparent that the members have looked at the situation from every conceivable angle in order to be objective. The BCA itself allows that there may be no treasure at all and that perhaps it was a clever hoax begun when James Ward published his pamphlet in 1885. Towards this matter they have outlined some 17 factors which relate to the possibilities of whether the Beale Ciphers are authentic or not, plus a coldly logical commentary and set of deductions that address these factors. By this method they explain why they have felt it to be worthwhile to continue to persevere in their search to break the Beale Ciphers.

At a time when many amateur code-breakers have been using their talents and microcomputers to try to unravel the various mysterious "numbers" transmissions heard via shortwave, here's a challenge which could, at best, hold a \$16-million reward; at worst it will be no more or less baffling than the numbers transmissions. It may well have been the very first numbers message—the granddaddy of them all, so cleverly constructed that it continues to defy all attempts at prying loose the secrets it holds. **PC**

71	194	38	1701	89	76	11	83	1629	48
94	63	132	16	111	95	84	341	975	14
40	64	27	81	139	213	63	90	1120	8
15	3	126	2018	40	74	758	485	604	230
436	664	582	150	251	284	308	231	124	211
486	225	401	370	11	101	305	139	189	17
33	88	208	193	145	1	94	73	416	918
263	28	500	538	356	117	136	219	27	176
130	10	460	25	485	18	436	65	84	200
283	118	320	138	36	416	280	15	71	224
961	44	16	401	39	88	61	304	12	21
24	283	134	92	63	246	486	682	7	219
184	360	780	18	64	463	474	131	160	79
73	440	95	18	64	581	34	69	128	367
460	17	81	12	103	820	62	116	97	103
862	70	60	1317	471	540	208	121	890	346
36	150	59	568	614	13	120	63	219	812
2160	1780	99	35	18	21	136	872	15	28
170	88	4	30	44	112	18	147	436	195
320	37	122	113	6	140	8	120	305	42
58	461	44	106	301	13	408	680	93	86
116	530	82	568	9	102	38	416	89	71
216	728	965	818	2	38	121	195	14	326
148	234	18	55	131	234	361	824	5	81
623	48	961	19	26	33	10	1101	365	92
88	181	275	346	201	206	86	36	219	320
829	840	68	326	19	48	122	85	216	284
919	861	326	985	233	64	68	232	431	960
50	29	81	216	321	603	14	612	81	360
36	51	62	194	78	60	200	314	676	112
4	28	18	61	136	247	819	921	1060	464
895	10	6	66	119	38	41	49	602	423
962	302	294	875	78	14	23	111	109	62
31	501	823	216	280	34	24	150	1000	162
286	19	21	17	340	19	242	31	86	234
140	607	115	33	191	67	104	86	52	88
16	80	121	67	95	122	216	548	96	11
201	77	364	218	65	667	890	236	154	211
10	98	34	119	56	216	119	71	218	1164
1496	1817	51	39	210	36	3	19	540	232
22	141	617	84	290	80	46	207	411	150
29	38	46	172	85	194	36	261	543	897
624	18	212	416	127	931	19	4	63	96
12	101	418	16	140	230	460	538	19	27
88	612	1431	90	716	275	74	83	11	426
89	72	84	1300	1706	814	221	132	40	102
34	858	975	1101	84	16	79	23	16	81
122	324	403	912	227	936	447	55	86	34
43	212	107	96	314	264	1065	323	428	601
203	124	95	216	814	2906	654	820	2	301
112	176	213	71	87	96	202	35	10	2
41	17	84	221	736	820	214	11	60	760

The granddaddy of all number codes—Beale Cipher #1 which may well reveal the location of thousands of pounds of gold and silver lying beneath the surface of the earth.

LISTENING POST

BY GERRY L. DEXTER

WHAT'S HAPPENING: INTERNATIONAL SHORTWAVE BROADCASTING BANDS



Ronald Pokatiloff of Zion, Illinois at his "bedside station," which includes a Kantronics Mini Reader, Drake SPR-4, Autek Audio Filter, Gilfer preselector, RS equalizer, McKay Dymek DR33C, Sanyo and Sony 2001 receiver.

We've seen still another month when radio stations have been busy at the mimeo machine, cranking out press releases and announcing grand plans for the future.

The biggest splash was made by the United States Information Agency which wants to practically rebuild the Voice of America.

The VOA is suffering the aches and pains of old age. Some of its European-based transmitters were used by the enemy in World War II! Studio equipment at the VOA's Washington, DC headquarters dates back at least twenty years.

The VOA improvement proposal calls for a total of five new transmitter sites. New relay bases are planned for the Caribbean, South America, the Middle East, the Arabian peninsula, and the Far East. Rumor has it that the Caribbean site will be Puerto Rico and we suspect, based on earlier announcements, that the Middle East site may be Turkey.

In addition, transmitter powers would be increased at most of the current VOA transmitting facilities. Studio facilities would also be upgraded.

The plan would also add nineteen additional languages, bringing the VOA's tongue tally to 62.

The improvement effort needs to receive a Congressional blessing before it can proceed. Once the work starts, it will take six years to complete. The whole package carries a price tag of about one billion dollars spread over that period.

Some of that money would go towards increased funding for the Radio Marti service to Cuba.

Speaking of Radio Marti, word from William W. Marsh, Chairman of the Marti Task Force, quashes rumors and/or hopes that the Marti service might also be on shortwave. It won't. Nor will it use a medium

wave frequency of 530 kHz in addition to 1180 kHz. That possibility was speculation.

Marsh says that Marti will start sometime this spring, probably with about four hours of air time per day. That would be gradually increased to fourteen hours as the staff is enlarged. Broadcasts will be aired from the VOA 1180 kHz relay station at Marathon, Florida.

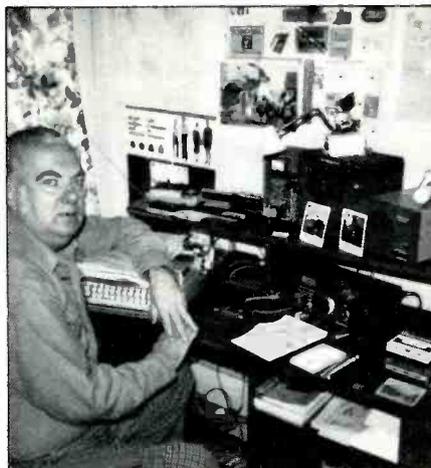
DXers within range of the 1180 signal should keep an ear on this frequency. It will be interesting to witness what happens in Havana once Radio Marti begins broadcasting. Will there be retaliation? If so, will it be on medium wave only, or will shortwave be involved as well? Stay tuned.

Radio Japan, too, wants to flex its muscles. The main Radio Japan transmitting station in Japan is to have its power increased. Africa Number One in Gabon is already acting as a vehicle for Radio Japan programming. And apparently the proposed relay station in Panama has been agreed to by all parties concerned so that country, long lost on shortwave, will be back on the air in a couple of years.

Broadcasting hours for Radio Japan are to be increased as well and an effort will be made to improve the station's programming. The only hitch involves the recent elections in Japan and the subsequent delays in budget approval.

Another lost country should be back on shortwave soon if it isn't already. Syria hasn't had a shortwave voice since the late 1970's, but now they've got a new 500 kilowatt transmitter waiting in the wings. Check the following frequencies and times for Syrian Radio: 9.505 from 0300 to 0700 and 1500 to 2400 and 15.215 from 0700 to 1500. As yet we've seen no reports of this one, but it could show at any time.

Radio France International's new relay station in French Guiana should be on the



J. White of North Vancouver, BC, Canada at his listening post.



Robert F. Elmore of El Paso, Texas combines listening and hamming. Left to right, a Heathkit IM-2410 frequency counter, Kenwood 2 meter TR-2500, Radio Shack scanner, SWR bridge, Kenwood R-1000 receiver, and Uniden 40 channel AM/SSB.

air by now. Its most recent proposed schedule was as follows: 0900 to 1100 on 9.575 and 11.880; 1000 to 2200 on 17.860; 1100 to 2200 on 15.435; and 2200 to 0200 on 9.605, 11.790, and 15.300. Broadcasts generally will be directed to South America.

Those who haven't added Sao Tome e Principe to their logs should check 4.806 variable around 0500 for Radio Nacional, which resumed shortwave use a couple of months ago. Reception reports go to C.P. 44, Sao Tome.

Guess who's back? Vladimir Danchev, the Radio Moscow news reader who achieved instant notoriety when he rewrote the wording on some news broadcasts about Afghanistan and disarmament policies in a way that portrayed the Soviet government as an aggressor.

The 35-year-old Danchev was "allowed" to return to his home city of Tashkent, was given psychiatric help, and most people probably thought he would disappear into an institution or labor camp as is the usual policy for an offense of this size.

Press reports say that Danchev's father is a Communist Party official which no doubt contributed to his getting off easily. Danchev is not, however, being allowed to work in an on the air capacity!

Mailcall

There's another good batch of letters this month, so let's look at a few of them.

James Morgan of Bangor, Maine wants to know where he can buy tapes of the interval signals used by shortwave stations. Radio Canada International produced tapes of this nature a few years ago, James. We're not sure if these are still available, but you can try writing to the Canadian Handicapped Aid Program (CHAP) at 6 Coolbreeze Avenue, Pt. Clair, Quebec H9S 5G4. CHAP han-

dled distribution of these as a fund raising project and they could tell you about current availability. A cassette called "HAP Identification Signals of the World" is also available from HAP-UK, P.O. Box 4, St. Ives, Huntingdon, PE17 4FE, England for five pounds twenty five, payment to be made in Pounds Sterling only.

James is also looking for back copies of *White's Radio Log* and *Communications World* magazines. If you can help out, write to James Morgan, Rainbow Mobile Home Court, 1343 Ohio Street, Lot 56, Bangor, Maine 04401.

J. White of 211-155 West 13th St., Vancouver, British Columbia V7M 1N5 wants to hear from owners of the Kenwood R-600 regarding any accessory items R-600 users may be operating with this receiver to improve reception. Mr. White sent us a number of attractive QSL cards. We appreciate the interest but prefer good copies or photos. It can be chancy trusting your cards to the mail any more than they have been!

Pierre J. Nimax, who lives in Staunton, Virginia, supplies us with a photo this month and notes that he's been DXing for 27 years. He uses longwire antennas "facing all four corners of the world."

Christopher H. Tucker of North Kingstown, Rhode Island logged a single sideband feeder of ARTS and was turned down on his request for a QSL. As we noted a couple of months back, *POP'COMM's* Military Advisor, Harold Ort, Jr. has managed to get this policy of no QSLs for continental U.S. residents changed a bit. Try writing to AFRTS again, this time including a verification card you make up yourself, complete with stamp.

Owner's manuals for secondhand receivers are on the minds of two of our readers. Gary Barnes of Rt. 3, Box 85-A, Four Oaks, North Carolina 27524 is looking for a manual for a Radio Shack (Realistic) DX-160. Kenneth Reheman, 3100 North 12th Avenue, Evansville, Indiana 47712 is seeking a manual for the Sanyo RP-8880. If you can help either of these readers, please write to them directly.

You've seen "The Pepsi Challenge" on TV. Here's the Bill Orr Challenge. Bill, W6SAI, is the author of the well-known book *Better Shortwave Reception* as well as a number of other books on the more technical aspects of radio.

Bill has issued a challenge to *POP'COMM's* Listening Post readers to log and verify Radio NYAB in Bhutan.

As Bill notes, the station uses only 300 watts, is on the air only from 1100 to 1400 on 4.620 (which varies) and 0600 to 0900 on 7.040. And this is only Wednesdays, Fridays, and Sundays! Bill will award a copy of his shortwave reception book to the first person who can provide an authentic QSL from this station. If you verify it, send a copy of your QSL to my attention in care of *POP'COMM*. I'll pass it on to Bill.

Questions about the pirate station Radio Clandestine are raised by Thomas N. Cerf of Highland Park, Illinois who wants to know



Pierre J. Nimax of Staunton, Virginia takes a new logging in his well-appointed monitoring station.



The shack of Leo (Herb) Stowell of Hammond, Indiana has quite a line-up of equipment including an FRG-7700 receiver, active antenna for the 7700, Drake 2C receiver, M-200F CW converter with video monitor. Also a 6 meter converter.

how to get a QSL from this station. Reports can be sent to Box 982, Battle Creek, Michigan 49016. Enclose three 20¢ stamps.

The old question of what receiver to buy is asked by Robert Carto of Deerton, Michigan who wonders if there's any kind of catalog available that has all the receivers on the market listed. Well, not to our knowledge, Robert. We suggest you contact the equipment dealers who advertise in *POP'COMM*. Some have catalogs available showing the lines of equipment they carry.

Bruce Rossi is a shortwave listener and a ham, NF7J (and for ArmyMARS, AAT9PU). Bruce uses a Kenwood R-1000 and 80 and 40 meter inverted dipole antennas. Bruce tapes a lot of the stations he hears and preserves the recordings as a permanent record of his loggings. He recommends the Voice of Vietnam on 10.040 around 1330 GMT and on 10.010 from around 1100 GMT for interesting music and programming. Bruce also notes that it may take a number of reports and a long wait before getting a reply to your reception report.

We've been unable to answer a question we've had in the bin here for a couple of months. William Mullane of Monpansett, Maine wants the address of Steve Leite of Fall River, Massachusetts. Bill needs infor-

mation about getting a digital readout unit for his Hammarlund HQ-180 which Steve had done. Unfortunately, we don't save letters from month to month and since we haven't heard from Steve in a while we can't supply the address. Steve, if you're out there, drop us a line or write to William at P.O. Box 182, Monpansett, MA 02350. Maybe there are other readers who've added digital readout to the 180 and can give Bill some assistance.

How about letting us hear from you next month? Your loggings, program schedules, high-contrast photos or copies of QSL cards, questions, comments, shack photos, general news, and what have you are always welcome.

Listening Reports

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

Albania Radio Tirana at 0011 on 7.065 in English. (Murphy, VA) Radio Gjirokastrer on 5.025 in parallel to 5.057 at 0504 with classical operatic music, woman announcer in Albanian. (Tarte, MI)

Algeria Radiodiffusion Television Algerienne in French at 1900, English at 2000, and Spanish 2030 to 2100 is now on unannounced 15.170. QRM'd by WYFR in German and English. Also beware of Tahiti using French here. (Wood, Saudi Arabia)

Angola Radio Nacional on 9.535 heard at 2255 with American and European rock. (Tarte, MI)

Argentina RAE noted on 15.345 at 2200 to 2230. (Janflone, PA)

Australia Radio Australia on 11.790 at 1700, excellent level with international headlines, letters to the press, and contemporary music. (Cerf, IL) On 9.710 at 1205 with news in English, ID, and "Australian Profile." (Ort, NY) 9.580 and 9.710 at 1414 in parallel. (Morgan, ME)

VLM4 Brisbane on 4.920 at 1210 with weather and local time checks. (Ort, NY) With cricket match and market reports at 0840, national news 0900. VLH9, also Brisbane at 1115 with "Sunday Recital" and national news at 1200, on 9.680. (Unruh, HI)

VLW9 Perth at 1002 on frequency 9.610 in English. (Murphy, VA)

Belgium BRT on 5.910 in English with "Music Box" and "DX Panorama." Good at 0030. (Paszkievicz, WI) News, music, cultural, and letter box program by woman from 0040 to 0055. (Wright, MA) On 17.610 at 1407 with news about Belgium and "Mailcall." (Morgan, ME)

Belize Radio Belize, 3.285 at 0450 with orchestra pops, ID at 0500 followed by a political talk. (Tarte, MI)

Benin ORTB on 4.870 at 2250 with French ID by man, African music, national anthem, and sign off at 2300. (Paszkievicz, WI) At 2215 in French with woman announcer, call and response type music. (Tarte, MI)

Botswana Radio Botswana, 4.848 (nominal 4.845, Editor) at 0400 with English religious programs, choir hymns, talk, and music. (Paszkievicz, WI)

Brazil Radio Bare, 4.895 noted with clear ID at 0900, electric music with South American pop sound. Just 1 kilowatt producing a good signal from Manaus. (Tarte, MI)

Canada Radio Canada International on 11.720 at 2000 in French and English. (Herman, IN) 15.260 via BBC Ascension Island relay at 1800 in English to Africa. (Unruh, HI)

CFRX Toronto on 6.070 with news, weather, music in English at 1253. Heavy BBC interference. (Unruh, HI) At 1800 to 1900. (Janflone, PA) 2340 in English. (Murphy, VA)

CKZN St. John's Newfoundland on 6.160 at 1040 with the "Morning Show," news, weather, music, interviews. Good strong signal. (Tucker, RI)

Cameroon Radio Douala, 4.795 at 2110 in English with news, ID, and football news. Into French at 2117. (Ort, NY) (Likely Douala with Yaounde relay, Editor).

Yaounde, 4.850 at 2125 with Afro-pop. (Tarte, MI) Radio Garoua, 5.010 at 2130 with traditional African music. (Tarte, MI)

Radio Bafoussam, 4.000 with news in English at 0545, commentary on Angola, into accordian music. (Tarte, MI)

Central African Republic Radio Centrafrique, 5.035 in French with African music, ballads, talks,



Beneath D. R. Kingsbury's wall of QSLs sit a Hallicrafters S-38E, a Realistic DX-200, Lafayette HE-40, and a Patrolman 50 receiver. D.R. is from Bangor, Maine.



Dr. Richard E. Wood of Abha, Saudi Arabia has been a top-flight DXer and monitor for many years. He is tuning his Hammarlund HQ-180.

Press Time Flash

The Far East Broadcasting Company's new KFBS in Saipan reported to be testing on the following schedule:

0900-1100 on 15.115	1500-1730 on 15.110
1100-1300 on 15.150	2100-2200 on 9.505
1300-1500 on 9.575	2200-0000 on 15.125

The testing is done in both the English and Asian languages. Reception reports should go to: KFBS, Box 209, Saipan, CM 96950.

drums. ID at 0500. (Paszkievicz, WI) At 0524 with African pops. (Tarte, MI)

Chile Radio Nacional in Spanish at 0032 on 15.150. (Shute, FL)

China Radio Beijing at 1420 in Chinese on 9.555, barely audible through heavy interference. (Morgan, ME) Heard at 0000 to 0100 on 9.860 and 11.650, at 1100 on 9.820, 1200 on 9.820 and 11.650. (Janflone, PA) In English to North America with news at 1200 on 11.650. (Unruh, HI)

Clandestine Radio Guazapa noted on 10.080 at 0200 with two men and one woman announcer, revolutionary and traditional music. (Valdes, NM)

Radio 15 de Septiembre, 5.920 at 0620 with martial music, religious flavor anti-communist, anti-Sandinista programming. (Valdes, NM)

La Voz del CID's Radio Ignacio Agramonte service heard at 0210 with fanfare, interval signal, anti-Castro talk in Spanish. (Tarte, MI)

Costa Rica Radio Reloj, 4.832 and 6.006 announces an address as Apartado Postal 4334, Codigo Postal 1000, San Jose. (Tratt, MD)

Czechoslovakia Radio Prague heard on 9.930 at 0300 to 0400 with sign on, news, comments, "History of the Socialist Community," musical interlude and "Music For Recording," "Science and Technology," and "Youth Magazine." Into Spanish at 0400. (McBroom, MS)

Dominican Republic Radio Clarin, 11.700 in Spanish with pop music at 0025 tune in. (Janflone, PA)

Ecuador HCJB on 3.220 at 0916 with Andean flute music, devotional music, and talk in Quechua. (Tarte, MI) In English to North America on 11.915 with "Latin American News" and "Passport" program to 0530, then "DX Party Line" at 0630 and sign off 0700. (Unruh, HI) A partial schedule for HCJB reads: 0030 to 1100 on 26.020, 0030 to 0500 on 15.155; 0500 to 0700 on 11.910, 9.745; 1200 to 1500 on 17.890; 1200 to 1430 on 11.740. (Simpson, CA) (Presume this is the English schedule, Editor)

Egypt Radio Cairo in English on 9.745 with Egyptian music, "Do You Know," recipe, news, comment "Roundabout" and mailbag around 0200. (Paszkievicz, WI)

Finland Radio Finland with the "Northern Report" in English at 1500 on 15.400. (Ort, NY)

France Radio France International on 21.620, parallel to 21.685 with English at 1618. (Paris Calling Africa, Editor) Woman with ID at 1621, 21.620 the better frequency. (Ort, NY)

Gabon Africa Number One, 11.940 at 2050 without any ID at 2100, just two male announcers in French.

Good but some interference from Canada, also in French, on 11.945. Gabon covered by Canada's sign on at 2107 on 11.940. (Ort, NY)

Radiodiffusion Television Gabonaise on 7.270 at 0450 with news, comment in French by woman, into classical music. Good level. (Tarte, MI)

Ghana GBC at 0430 on 4.915 with hymns, light guitar music, and vernacular announcements. Also at 2145 with English news highlights and ID. (Tarte, MI) At 0559 with drum IS, into English. Poor. (Shute, FL) (0430 is considerably earlier than they are normally on, Editor)

Guyana GBC Georgetown on 5.950 at 1020 to 1040 with commentary on West Indies vs. Australia cricket match, commercials. Lost to interference at 1041. (Tucker, RI)

Haiti 4VEH, 4.930 in French with talk, time check, ballads, religious drama, address, and a sign off at 0300. (Paszkievicz, WI)

Honduras A Sweden Calling Dx'ers report which referred to an AFRTS outlet being built in this country is, in fact, just a 100 watt U.S. Navy station operating on 100.3 FM. No AM or shortwave used or planned by this station. (Ort, NY)

India AIR Delhi noted with interval signal at 1125, Hindi news at 1130, English news 1135-1140 on 15.320 with interference from Moscow in Japanese and on 11.850 with interference from Moscow in Russian as well as Deutsche Welle. (Wood, Saudi Arabia)

Iran Voice of the Islamic Republic of Iran on 9.022 with man and woman announcers in English. Good, with IDs ending English at 2030, into unidentified language. Very low modulation level but very good signal. Address given as P.O. Box 98-2000 Tehran. After ID, three tones and six note interval signal. (Ort, NY)

Iraq Baghdad is observed on four parallel 31 meter band frequencies at 0600 to 0700 on 9.505, 9.520, 9.554.5, and 9.689. Also on 11.895 and 17.719.5. At 1300 to 1400 on 23.630, 2nd harmonic of 11.815 is noted. Also new 11.700 at 1600, not noted at 1700 recheck. In parallel to 11.815 and 15.400. (Wood, Saudi Arabia) At 2140 in English on 9.610 with war progress reports. Radio Moscow faintly underneath. Baghdad barely audible by 2200. (Ort, NY)

Italy RAI, scheduled in English at 0100 to 0120 on 5.970 and 9.575. (Simpson, CA) English heard at 0100 on 9.575. (Herman, IN)

Japan Radio Japan at 0000 in English on 15.300. (Murphy, VA) English to North America at 2345 on 17.825 with "DX Corner" and "Crosstalk." (Unruh, HI)

Radio Tanapa (NSB) in Japanese and English with

rock at 0915 on 6.055. (Unruh, HI)

Kuwait Radio Kuwait, 11.675 in English at 1835. Woman with news, weather, and identification. Signed off at 1840. (Ort, NY) At 2048 with English at good level but interference from Radio Moscow. (Shute, FL)

Lebanon Radio Lebanon has replaced 11.730 with 11.890 in English at 1830, Arabic at 1900, and French 2000 to 2030. (Wood, Saudi Arabia)

Voice of Hope in English at 2135 on 6.215. Only a fair signal, but audible. Also heavy SSB QRM. (Ort, NY)

Liberia ELWA on 4.765 at 0720 to 0750 with religious commentary and music. (Tucker, RI)

Liberian Broadcasting System on 6.090 including English by Radio lesson, commercials for medicines and movies, public service announcement from Liberian Telecommunications Office "Keep your lines of communication open—pay your bills!" (Tucker, RI)

VOA Relay, on frequency 15.600 with African service in English at 2000. Howard Lesser with "Nightline Africa." (Unruh, HI)

Libya Radio Jamahiriyah, 11.816 with Khadafy propaganda 2215-2230. (Wright, MA)

Malta Radio Mediterran, 6.110, at 2230 in English with trumpet interval signal, ID, schedule, address, news, and pop music. (Paszkievicz, WI)

Mauritania Radiodiffusion national in French on 4.845 at 2130, into possible Arabic with regional music. (Ort, NY)

Monaco Trans World Radio, English at 0725-0800 on 7.160, switches to 9.500 at 0800. (Janflone, PA) Noted concluding Turkish at 1600 on 11.695. Then English announcer says "if you want to listen to TWR in English, listen at 8:30 a.m., Turkish time, in the 31 meter band." (Wood, Saudi Arabia)

Mozambique Radio Mozambique noted on 15.281 at 1900 with Portuguese identification listing all its regional transmitters, into Portuguese news. Booming strength but hummy modulation. Don't confuse with Radiobras, Brazil on 15.280. RM seems to have increased its power in the 19 meter band. Heard loudly all day but with hummy modulation. Exact schedule not known but its moves appear to be to avoid interference as follows: Avoids All India Radio in Swahili at 1515, Hindi at 1615 and Gujarati 1700 to 1745 on 15.280—at that time it is on 15.305 variable. Also avoids Voice of America in Arabic 1700 to 2100 on 15.305, at least during most of its schedule; then it is on 15.280 variable. During 0600 to 1500 it is mostly on 15.295 variable. All in Portuguese. (Wood, Saudi Arabia)

Namibia Southwest Africa Broadcasting Corporation



Radio Impacto in San Jose. Costa Rica sends out this attractive pennant with their QSLs. Unfortunately, their replies have, so far, been erratic.

on 3.295 at 0350 with elevator music. ID as "The English Service of Radio Southwest Africa is now closing down." Continued in vernaculars with more music. Good signal. (Tarte, MI)

Netherlands Radio Netherlands in English on 9.715 and 9.895 at 0550 to 0620. (Janflone, PA)

New Caledonia Radio Noumea, French announcer with comedy-type program, music later. Poor on 7.170 at 0940. (Ort, NY)

Nicaragua La Voz de Nicaragua on 5.950 with woman announcer in Spanish and clear ID between 0030 and 0035. (Wright, MA)

Norway Radio Norway International with ID at 1157, into language on 9.590. (Ort, NY)

North Korea Radio Pyongyang to the Far East in English at 1100 to 1145 on 9.745. News and political program. (Unruh, HI)

Nigeria Voice of Nigeria. 15.120 at 1800 with new leader speaking and giving reasons for the coup. (Ort, NY) News in English at 2130. (Tarte, MI) On 11.770 at 1600 sign on in Swahili. (Tarte, MI) 7.255 at 0600 in French. (Murphy, VA)

FRCN at Kaduna, 4.770 at 0435 in English with time check, ID, soul and reggae music. CW and SSB interference. (Paszkievicz, WI) At 0515 with music and commentary. (Tarte, MI)

FRCN Owerri on 4.755 at 0540 with Caribbean-influenced pop music, man announcer in possible Yoruba, good signal. (Tarte, MI)

Papua New Guinea NBC Port Moresby, 4.890 in English with news and talk about seabed mineral rights and influenza outbreak at 0940. (Unruh, HI) At 1150 with woman reading news, then comedy play by George Bernard Shaw. Local time checks. (Ort, NY) At 0900 with news by woman, variety music program at 1000. (Unruh, HI)

Saudi Arabia Broadcasting Service of the Kingdom of Saudi Arabia now heard on 11.685 in Arabic

1100-1500. 1500 sign off is nicely coordinated with sign on of Radio Beijing in Cantonese. Observed parallel frequencies at 15.060, 11.950, 11.870, 9.720, 7.290, 7.215 (which suffers Iraqi jamming against VOIRI there) and 5.874. (Wood, Saudi Arabia)

Seychelles FEBA appears to have begun broadcasts in Hausa from 1830 to 1900 on 11.755. Gives a mailbag address in Jos, Nigeria. (Wood, Saudi Arabia)

Singapore Radio One, 11.940 at 0800 with English and rock. At 1326 in English with new wave rock and "News In Brief" at 1400. (Unruh, HI)

BBC Relay in English at 1100 on 9.740. (Unruh, HI)

South Africa Radio RSA scheduled for English at 0200 to 0257 on 5.980, 9.615, and 11.730. (Simpson, CA) Heard at 2100 in English on 9.585, 11.900, and 15.185. (Murphy, VA) On 9.615 at 0200 to North America. (Unruh, HI) On 3.230 to Africa at 0340 in English with talk on South African educational system during the "Interaction" program. (Tarte, MI)

Radio Five of SABC on 3.250 at 0345 in Afrikaans. (Tarte, MI)

Radio RSA has adjusted former 15.185 to 15.180 in French to Europe and Africa 1957-2055 and English 2057 to 2155. 11.900 and 9.585 remain in parallel. Doubtless to avoid WINB on 15.185 which is powerful here. (Wood, Saudi Arabia)

Capital Radio, Transkei on 9.765 at 0624 with rock. Into comedy program at 0630. (Shute, FL)

Solomon Islands SIBC with various types of music at 1130 on 5.020, clear ID and local time announcements. (Ort, NY)

South Korea Radio Korea at 1223 on 7.275 in English with "News Highlights of the Past Week." It was also on 15.575 at 2235 with "Inside North Korea" and "Music Information Program" to 2300, then into Spanish. (Unruh, HI)

Spain Spanish Foreign Radio noted with interval signal at 1400 sign on in Spanish on 17.660. (Morgan, ME) On 11.880 with news at 0600 to 0610, excellent signal. (Wright, MA)

Sri Lanka SLBC on 15.120 at 1045 in English to Southeast Asia, news by woman followed by music. (Unruh, HI)

Sweden Radio Sweden International in French at 1500 on 17.860. Interval signal at sign on. (Morgan, ME)

Switzerland Swiss Radio International with "Date-line" at 1339 on 21.570. (Morgan, ME)

Taiwan Voice of Free China was on frequency 5.985 (via WYFR, Editor) at 0630 in English with excellent signal. (Herman, IN)

Togo Radiodiffusion TV Togolaise, 5.047 at 2205 with French news, choral music. (Paszkievicz, WI) Xylophone or chime interval signal, anthem and sign on in French at 0530, into rock. (Tarte, MI) Poor with low modulation at 2220. (Ort, NY)

Tunisia RTT's European Service in Arabic noted at

1900 sign on on 11.747. Not parallel to the Middle East Service then on 15.235. (Wood, Saudi Arabia)

Turkey Voice of Turkey at 0300 in English on 9.560 with "Review of the Turkish Press," "Newsreel," "DX Corner," Turkish music. (Paszkievicz, WI)

Uganda Radio Uganda, 5.027 at 0405 with English news and ID. (Paszkievicz, WI) At 0327 wishing "good morning Angola, good morning Zulu, good morning Kampala," drumbeats, into vernacular at 0330. (Tarte, MI) At 0416 in English with obituaries. (Shute, FL)

United States United Nations Radio, with "Calling Asia" at 1020 on 9.570. (Murphy, VA)

WRNO with Radio Earth International on 6.185 at 0400 to 0500. (Wright, MA) Now giving address as Radio Earth International, Evanston, IL 60201. (Janflone, PA)

VOA upper sideband feeder heard on 4.465 at 0525. Never heard in this band before. (Tarte, MI)

USSR Radio Tashkent's English service good with ID and news at 1202 on 9.600. (Ort, NY)

Vatican Vatican Radio closing in English after segment on health care in Australia on 11.740 at 1500. Abrupt sign off after few bars of anthem. (Tarte, MI)

Vietnam Voice of Vietnam in English, as announced, 1000, 1100, 1330, 1600, 1800, 1900, 2030, and 2330 on 10.040, 12.020, and 15.012. (Rossi, NV)

West Germany Bayerische Rundfunk, 6.085 at 2130 in German with man and woman talking, beautiful music, sports. QRM from Radio France International at 2156. (Paszkievicz, WI)

Zaire La Vox du Zaire, 15.245 at 2105 in French with talk by man, mentions of Zaire and Kinshasha, African music. Distorted audio. (Paszkievicz, WI)

Our thanks to: Dr. Richard E. Wood, Abha, Saudi Arabia; Sheryl Paszkievicz, Manitowoc, WI; Harold Ort, Jr., Staten Island, NY; James Morgan, Bangor, ME; Donald R. Unruh, Ewa Beach, HI; Bob Tarte, Grand Rapids, MI; Michelle Shute, Pensacola, FL; Vic Janflone, Washington, PA; Joseph F. Wright, Boston, MA; Christopher H. Tucker, North Kingston, RI; Scott Murphy, Dunville, VA; Peter C. Herman, Huntington, IN; Jon Simpson, Escondido, CA; Nelson P. Valdez, Albuquerque, NM; Bruce Rossi, Beatty, NV; Allen McBroom, Starkville, MS; Thomas N. Cerf, Highland Park, IL; Steve Tratt, Ft. Meade, MD.

Hope you'll join us again next month. 'Til then, good listening.

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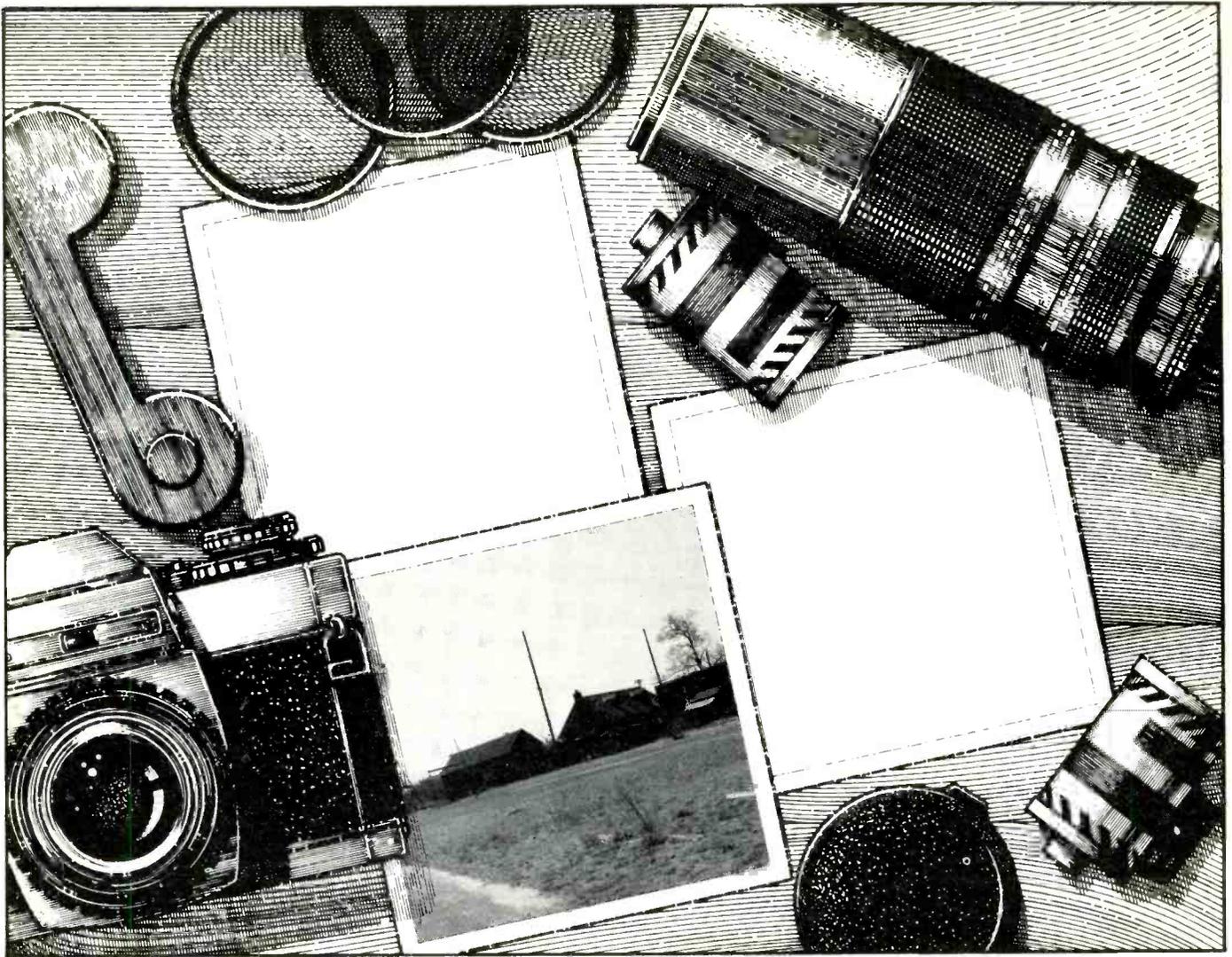
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CIRCLE 29 ON READER SERVICE CARD



DX-ploring With A Camera

Sometimes A Camera Is Best When The Transmitter's Abandoned!

BY TOM KNEITEL, K2AES, EDITOR

About 15 years ago I was 4-wheeling down a long-forgotten road when I rounded a bend at the edge of a clump of trees and found myself smack in the middle of what appeared to be a ghost town. What was unusual was that I wasn't in an area where ghost towns abound, but on Long Island, where I live, and where such places simply don't exist. Abandoned buildings were neatly arranged along paved streets—wooden buildings, concrete buildings—and it wasn't in bad condition at all. The outstanding feature of the place was the radio towers; several wooden poles were obviously used to support dipoles, some of which were still in place! The high point was the tall steel tower which supported (at its midpoint) a gigantic

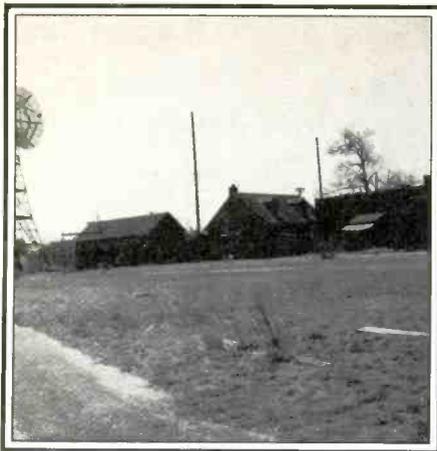
microwave dish aimed westward, all beautifully rusted into a rich orange color, with a few flecks of peeling paint still to be seen.

I snapped some photos and eventually I had a chance to dig through old maps of the area. This led me to the conclusion that I had stumbled onto a communications site that was apparently once part of a large RCA receiving station located in the outskirts of Riverhead, New York.

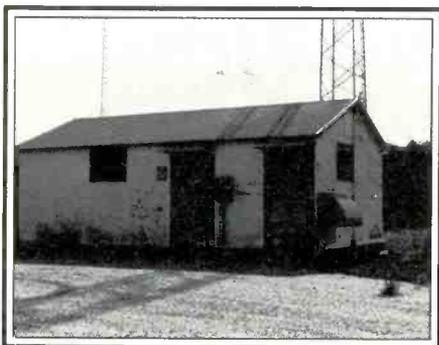
The place is long gone, having been razed to make way for a state-owned conservation area. It taught me to keep my camera handy, just in case I ever again wandered off the beaten path and unexpectedly came upon anything else quite like that dazzling sight. For many years I hoped to no avail; it seemed that

I had been given my one look back into radio history and that was that.

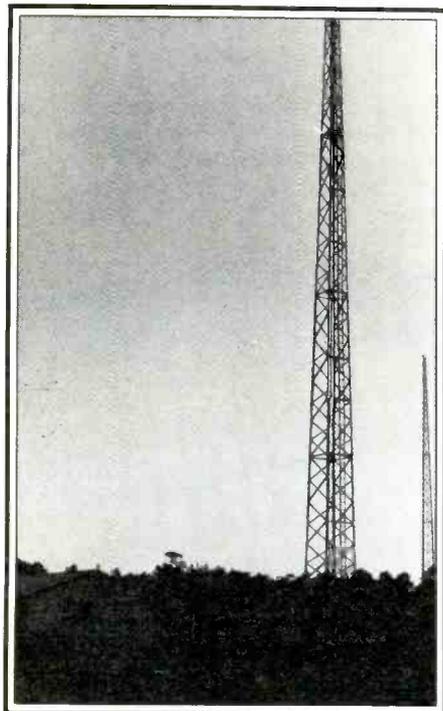
A positive attitude on all of this eventually paid off, though. About two years ago I was surprised to see the tip of a radio tower sticking up over the tree tops of a heavily wooded area. I had been past that spot countless times and never before noticed it. It was a heavily wooded area with no apparent access roads. Driving around for a half hour did turn up several overgrown dirt roads. The first one I tried was a dead end. So was the second one. The third such road twisted and turned and led directly to a chain link fenced area which surrounded a rather interesting—but totally abandoned—communications facility. It appeared to be com-



This was the old RCA site in Riverhead, New York, showing part of the huge tower and microwave dish at the far left of the picture. The two poles in the center also held antennas.

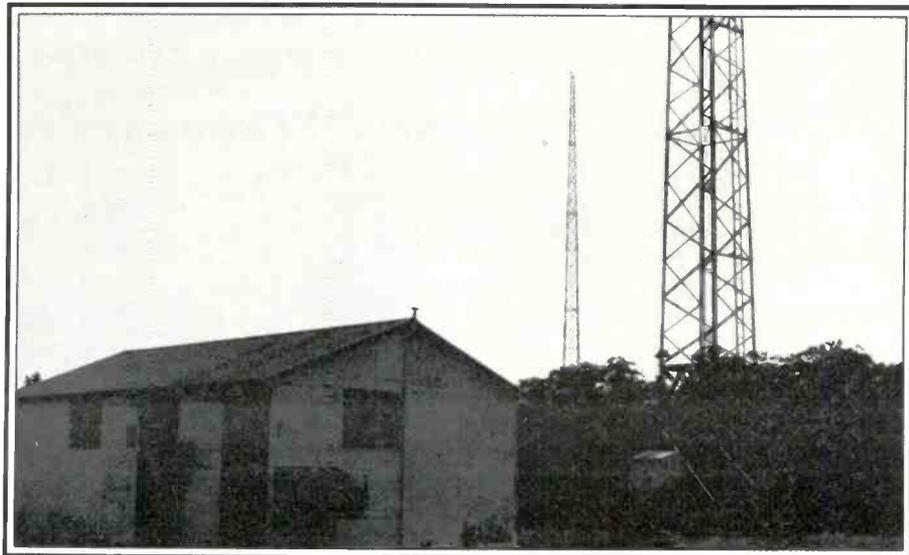


Closeup view of the transmitter building. The paint was peeling but, all in all, it seemed to be in good shape; and all of the transmitting gear could be seen through the windows and looked to be intact.

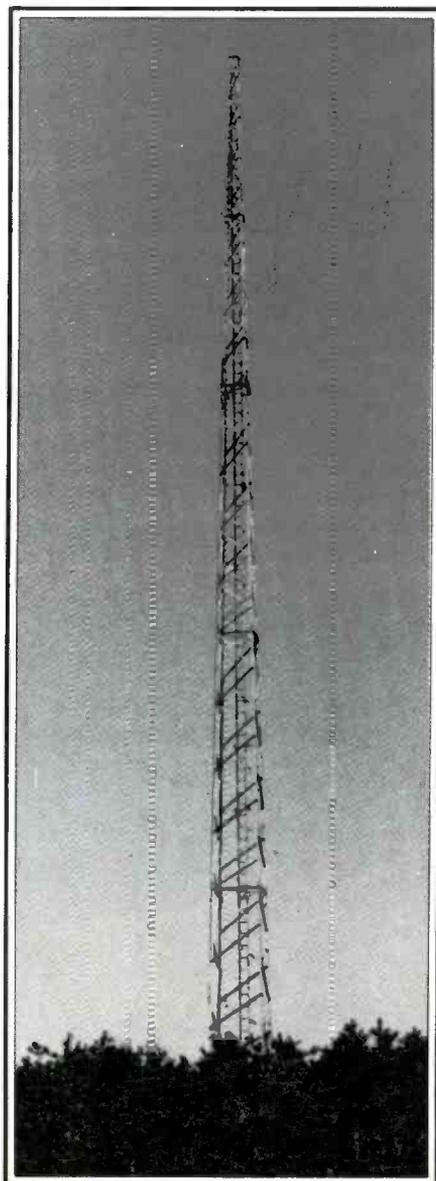


This view gives you a perspective on the height of the towers. The one that appears shorter was some distance away to the southwest but was equal in height to the one at the rear of the shed.

At the abandoned radio range site, a locked steel shed housed the radio gear while one of the towers was directly to the rear of the building. Note the antenna tuner at the base of the tower.



Long view of one of the radio range towers, this one outside of the chain link fence. It was covered with a gentle coating of rust.



pletely intact. A gate was at the entrance, and it was wide open, so I decided to take a closer look.

There was a building at the center of the area, with a tower adjacent to the structure. Four other steel towers were in the immediate vicinity, but outside of the fenced-in area. The towers were badly rusted and had obviously not been maintained in quite a long time.

The building displayed a "U.S. Government Property, No Trespassing" sign. Its two steel doors were firmly padlocked, but through the barred windows could be seen a lot of dusty vintage radio transmitting gear.

From the looks of the station it appears to have been one of the old low frequency "A-N" radio range facilities that have been around for many years. This one had certainly not been in use for a long time. I checked on flight charts dating back to 1958 and was unable to pinpoint which station this one might have been during its active period. Being about 10 miles from any major airfield, I couldn't even figure out which airport it might have been associated with. I took a batch of photos and figured that fate had given me more of a break than I probably deserved. Several months later I went by the sight and found the gates locked with a sturdy chain. It's been locked every other time I've stopped by to take another peek.

It has occurred to me that there are many other such offbeat abandoned facilities around the nation—little chunks of radio history that are rotting and rusting into oblivion, or are primed for extinction to make way for parks, parking lots, or other facilities. Obviously there isn't any real way to preserve these relics, except perhaps on film. If you know of any of these, why not document them with your camera, and if you'd like to share your little treasure with other communications enthusiasts, send along a spare set of the photos and (if they're in focus) we'll try to run them in POP'COMM and give others a peek. And if you have any idea as to what the station once was, fill us in!

ESTABLISHING SURVIVALIST COMMUNICATIONS SYSTEMS

The Art Of Communicating

“C”ommunicating” is a word derived from Latin and it carries the dual meanings of transmitting and sharing. Merely passing along a message and receiving an acknowledgement is not communicating. Communication is a vital part of survival and combat, and if the operation goes awry others connected with the operation could suffer. The more each individual knows and understands about the other individuals’ jobs, the better the chances for success. The communicator must do his or her share.

As pointed out in *Vietnam Studies: Division Level Communications* (1962-1973) by Lt. Gen. Charles R. Myer, U.S. Army (Ret.), during a Vietnam era training exercise, a staff officer wrote a long message which contained one short top secret paragraph. The rest of the message was a lower classification. Since the classification of the message had to be the same as its highest element, the entire message had to be encoded by hand, transmitted, and then decoded by hand. The message reached its recipient some 48 hours after it left the hands of its originator. Had the staff officer been familiar with the communications system supporting his particular headquarters, he could have gotten his message through in a small fraction of that time by splitting it. The longer part of the message could have been transmitted quickly over on-line teletypewriter circuits designed to handle secret traffic, while the shorter, top secret part was being encoded by hand as a separate transmission. The headquarters failed to achieve one of its objectives; because it was a training exercise, no lives were lost, nor were actual tactical operations endangered.

Communicating even face to face with another individual can be difficult. Sharing an understanding of the thought being transmitted depends upon the language being used, the cultural (and even perhaps educational) experience of both individuals, and the expectations of the recipient. Misunderstanding often comes from misinterpretation because the parties involved are thinking of different subjects. This could create a messy situation. One example was cited by an advisor who was on a combat operation with a battalion of the 7th Regiment, 5th Vietnamese Division, near Trung Lap in January 1965. During a firefight with an enemy unit, the senior American Advisor was killed and a young lieutenant had to take his place. American gunships were called by radio to provide fire support. The inexperienced advisor managed to describe the enemy location to the pilots well enough to bring the first run in close to the target. He then discussed with the pilots the adjustments



The art of communicating means using carefully selected words and phrases to avoid messy messages. (U.S. Army photo)

necessary to make the second run more effective. The advisor then abruptly switched subjects and indicated that his column was moving out in a certain direction. The pilots, anticipating information about enemy activity, apparently did not comprehend the shift in subject and shot up the battalion column. Seven soldiers were wounded before the gunships could be called off.

Vague messages also create problems. A message to send “lots of food” could be perceived in a great many ways, ranging from three bags of groceries to five truckloads. A

communicator from New York City, Chicago, or Boston might send a message stating that a particular location was “a short distance away” and mean anything from a quarter of a mile to a mile. That message, received by someone from Texas or Arizona, could be understood as anything up to about 25 miles in distance. Therefore messages which contain descriptive words such as “soon,” “near,” “far,” “a lot,” “later,” etc., should be recognized as fraught with dangerous potentials.

Not all transmission mixups occur over the radio. Messengers play a vital part of a communications system, and their use does not always guarantee that problems will not occur. In 1965, in operations near the Cambodian border, a unit of the 7th Cavalry took part in an air assault into Landing zone X-Ray. During the fighting, while a Second Lieutenant in the 1st Platoon had his hands full conducting his first big firefight as a platoon leader, a company runner came up to him with the message, “The CO’s hit. You’re in command.” The young officer was stunned. For a few heroic minutes he was under the impression that he was a company commander. That lasted only until he heard the Captain’s voice on the radio. The runner, in his haste to dodge the enemy’s bullets and deliver his message, had neglected to pass along the full message beginning with the simple word “if.”

In 1966, a long range patrol from the 2nd Brigade, 1st Cavalry Div., was operating near the Cambodian border and had not had any contact when Company A, 1st Batt., 5th Cavalry, air assaulted in on their location. Apparently a radio transmission



A misread message under combat conditions could be disastrous. (U.S. Army photo)

from an aerial observer indicating large groups of people a few kilometers away from the patrol's location had come through garbled. Brigade headquarters understood that the patrol was being attacked by large groups of people. The two units were unscrambled, and Company A was airlifted out to execute its original mission for the day, several hours later than intended.

Cultural differences have their own unique problems and can cause untold foul-ups in communications. In Vietnam this was an always-present threat. Even something as simple as the blowing of a vehicle horn was a problem in Vietnam! In Vietnamese, that means "Don't sweat, I see you up ahead and I know who and where you are." In American it means, "I'm on the move; get out of my way because I want to get by you and you're in the way." If a Vietnamese was riding down the road on his bicycle and he heard a horn behind him, he would say to himself, "How wonderful, he knows I'm here in the middle of the road," and he would relax. The American, in turn, would say, "He doesn't understand my message. I told him to get over so I can pass him." There is a total lack of communication here. As a result, the American would run the Vietnamese into a ditch, the bicycle would get smashed, and the old man would probably say, "Americans are rude idiots; barbarians. They're crude and impolite."

A cultural difference need not mean a difference in nationality or education. One noteworthy case occurred a few years ago at Ft. Leonard Wood, Missouri in screening people nominated for the Army officer candidate program. The screening process consisted of an aptitude test, a unit commander's evaluation, and a board of officers' evaluation. When a number of likely candidates did not score high enough to qualify, a detailed inquiry revealed that the scoring key to the evaluation form used by the board members was faulty for about 20% of the questions. The key and the form had been prepared by civilian consultants who were apparently unfamiliar with military word usage and attitudes. One inconsistency, for example, involved the personal appearance of the candidates. The term clean-cut, which most board members had used in describing the appearance of outstanding male candidates, would earn the candidate no points, but the term attractive would have scored a point. The board and the candidates, all of whom were male, just did not think in those terms. The use of the scoring key and evaluation form had to be changed.

Other understanding gaps come from using colloquial language, service jargon, slang, and technical verbiage. All such gaps are a potential danger to effective communication. Add to this danger mechanical communications devices, distance, static, stress, confusion, conflicting requirements, interference from other stations, sounds in the radio room, the loss of visual contact, and the chances for error rapidly multiply.

Many of the military operations in Vietnam were combined with army troops of

other nations and joint operations between our own Army, Navy, and Air Force. Under such conditions, great care had to be taken to ensure that established procedures and terms were used by operations and communications personnel to avoid unnecessary misunderstandings. For example, trained military communicators know that the term repeat has long been removed from normal military usage. The reason is that in both British and American military procedures, the term is used to order repetition of an associated fire mission. Requests for repetition of radio messages or parts of them must be made with the term *say again*.

The efficiency and professionalism of a tactical unit can be judged accurately by monitoring its command net. The command net represents the personality and the character of the unit. A frantic nervous unit has a frantic, nervous command net. A good unit's command net is quiet, uncluttered, calm, and quick to respond. The base station exercises firm control over the net, polices the net, requires legitimate users to use correct and efficient procedures, and commands trespassers to get off the net. Operating a command net for survival or military net professionally requires operators who have training and discipline.



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CIRCLE 37 ON READER SERVICE CARD

SCANNER SCENE

BY CHUCK GYSI, N2DUP

MONITORING THE 30 TO 900 MHz "ACTION" BANDS

While the space shuttle program seems to become more intense with our nation's space program, many scanner enthusiasts have taken to monitoring the missions.

Because most of the space shuttle communications take place on the UHF military aircraft band between 225 and 400 MHz, usually modified equipment or converters are needed to listen in on the shuttle crews. Many listeners have reported hearing the shuttle operating on this band in addition to routine aircraft band communications during operations closer to earth and communications through satellites.

One of our readers, Christopher H. Tucker of North Kingstown, Rhode Island, wrote in to say it would be interesting to actually hear communications between the astronauts and Mission Control in Houston when they are using their jet-packs for spacewalks outside the shuttle. Who could disagree about the excitement of hearing these spacewalk communications?

The radios developed for the spacewalk were manufactured by RCA Government Communications Systems. The astronaut's backpack radio weighs about eight pounds and is the size of a load of bread. The backpack radio transmits to a companion radio in the cockpit of the shuttle.

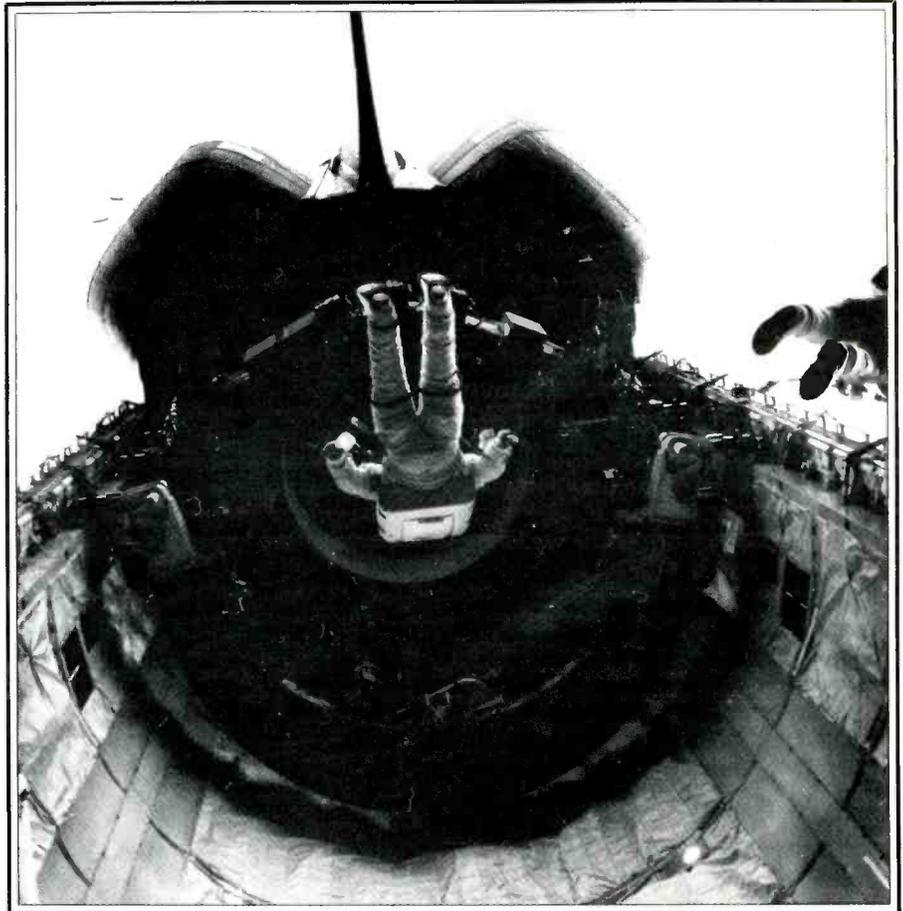
Astronauts working outside the shuttle each have their own voice channel. In the STS-6 mission, astronauts F. Story Musgrave and Donald H. Peterson used the backpack radios to describe their activities as they worked in the cargo bay of *Challenger*. The radios enabled the crew to communicate with the shuttle's cabin and to Mission Control at the Johnson Space Center.

The backpack radios contain two transmitters and three receivers and the cockpit radio has three transmitters and four receivers. Additional components in all of the radios serve as backup in case of failure.

In addition to providing the communications link with astronauts working in space, the cockpit radios are used to communicate with Mission Control. The radios also provide communications with air traffic controllers and chase airplanes when the shuttle orbiters glide toward earth landings.

The backpack radios also serve a medical function on the flights. The transmitters relay telemetry signals back to Mission Control that allow NASA officials to monitor the heart rates of astronauts. The radios also are equipped to sound a computer-generated alarm to warn astronauts when oxygen levels drop too low or carbon dioxide levels rise too high.

An extensive list of shuttle-related frequencies ran in the May 1983 issue of *POP'COMM*. But basically, if you have the capability of monitoring the 225-400 MHz band,



Astronauts maneuver about the cargo area of the space shuttle. The backpack UHF radios enable the astronauts to communicate with the cockpit and Mission Control.

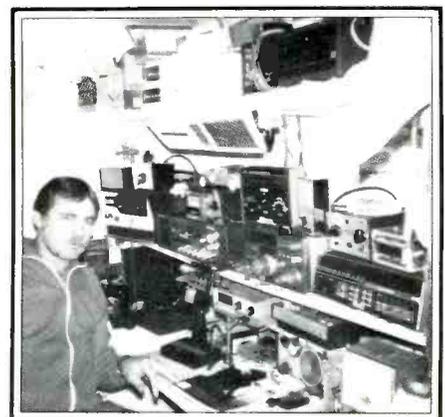
you might want to keep an ear on the following channels during the next shuttle mission: 296.8 (primary), 259.7 (secondary), and 279.0 (space suits). Let us know if you're able to hear the astronauts up there. You should be able to hear them whenever they are over North America.

Mailbag

Bobby McGregor of Madisonville, Kentucky, writes in to say: "I had been looking for a magazine of this type for years. When I got a letter in the mail saying it was coming out, I subscribed for it even before the first issue, so therefore, I have gotten every issue."

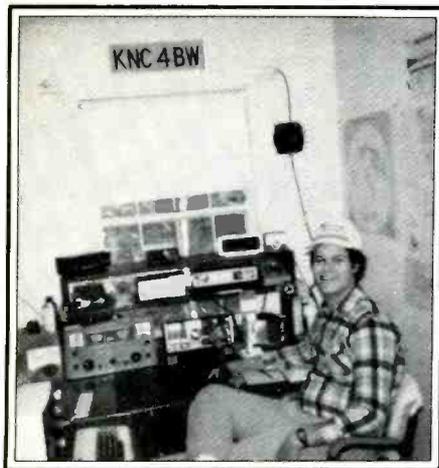
Bobby goes on to say he listens to a lot of activity, particularly from five surrounding towns and river traffic. He also listens to marine and utility stations on shortwave.

Richard, KNC4BW, of Fletcher, North Carolina, also sends in a photograph of himself at his monitoring station. Equipment in Richard's shack includes Regency M-100 and Bearcat 210 scanners, a Hammarlund HQ-110 receiver and Midland and Siltronix 11-meter transceivers. Richard says he likes

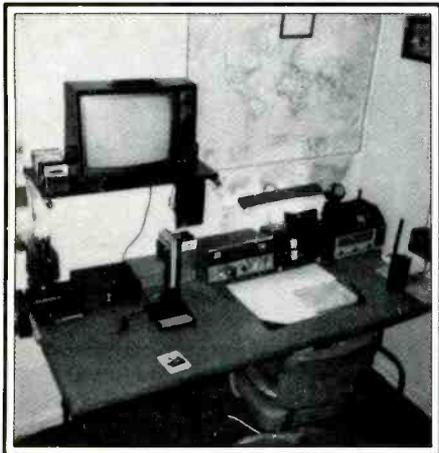


Bobby J. McGregor of Madisonville, Kentucky, has a wide variety of equipment in his shack—including a Bearcat 300 scanner.

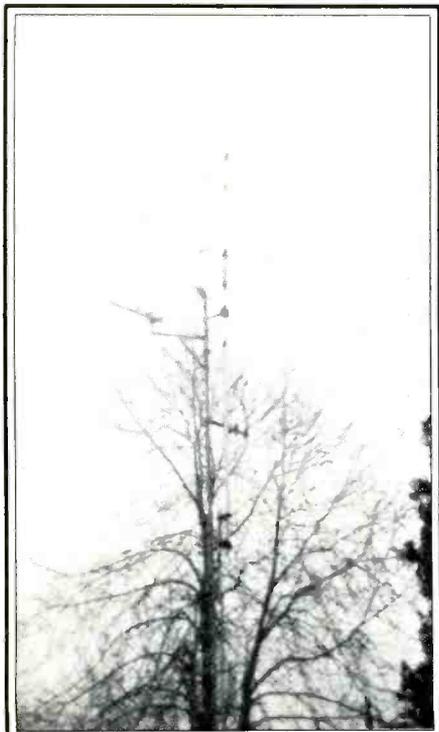
to listen to the Civil Air Patrol on 148.150 MHz, local police and ambulances, business band channels and cordless telephones on 49.83 MHz. He says his favorite columns in *POP'COMM* are Scanner Scene and Communications Confidential.



Richard, KNC4BW, of Fletcher, North Carolina, is shown sitting at his listening post.



Darwin McDonald of Madison Heights, Michigan, has a neatly arranged listening corner in his home. A T/S 1000 computer keeps track of his radio data.



This is the antenna farm of Darwin McDonald in Madison Heights, Michigan.

Darwin McDonald of Madison Heights, Michigan, sent in not only a photograph of his listening post, but also of his antenna farm. Darwin, who is 35, says he has been an SWL since he was 13 and enjoys it even more these days.

Darwin's station consists of a Realistic Pro-7A VHF receiver, A VHF-UHF Regency scanner, a Realistic DX-160 receiver, a Realistic DX-200 receiver, a Bearcat 210 scanner, a six-band Hallicrafters receiver, and a VHF-UHF hand-held scanner. Darwin also uses a Timex-Sinclair 1000 16K computer to log all his radio information. The antenna department consists of a trapped vertical, a UHF beam, a Radio Shack VHF high-low and UHF ground plane and a 70-foot longwire for shortwave.

Sebastian J. Cultrera of Wethersfield, Connecticut, questions as to what he might hear on the 136-144 MHz band besides the odd sounds of satellites. This band is commonly referred to as the military land mobile band because the main user of these frequencies are the military forces in the United States. If you live near a military installation, chances are a majority of the communications you can hear will be on this band. The 148-150.8 MHz band is used in a similar fashion. On these frequencies, you'll hear base operations, security details, paging, medical units, fire and crash units, military police, intelligence units, and fueling operations. The 136-138 MHz chunk is used primarily by satellites and the rest of the 138-144 MHz band is used mainly for two-way communications.

Because the area of coverage may be limited to a very small area—the military installation itself—many of the base stations may be running low power. Thus, it may be difficult to hear them if you aren't located near the base. Also, some of the communications on the 138-144 MHz band are AM, as opposed to FM that most scanners can receive. AM transmissions may be used by aircraft such as air national guard units. If the transmission seems to be somewhat distorted, chances are it's AM. But if you listen carefully enough, you'll probably be able to understand what is being said. If you're lucky enough to have one of the newer scanners that have AM capability, you'll be able to listen in with the flick of a switch.

Seventeen-year-old Craig A. Rose of Campbell, California, took time to send in some frequencies for the San Jose, California, area that he likes to listen to:

San Jose Police Department

- 460.200 Ch. 1 Dispatch east/northeast
- 460.325 Ch. 2 Dispatch northwest/west
- 460.425 Ch. 3 Dispatch southeast (car-to-car during off hours)
- 460.475 Ch. 4 Dispatch south/southwest
- 460.400 Ch. 5 Dispatch central
- 460.025 Ch. 7, 8 Car-to-car, stakeout, training, special events
- 460.100 Ch. 9 Dispatch south-central
- 460.050 Ch. 11 MERGE, narcotics, car-to-car, stakeout

Craig notes that 460.100 and 460.200

are simulcast during "slow" hours and that 460.325 and 460.400 are set up the same way. The call signs used by the police department are KMA359 and KSU672. Some other frequencies from Craig include:

- 154.010 San Jose Fire Department Channel 15
- 154.280 San Jose Fire Department Channel 14 (statewide)
- 154.115 San Jose Fire Department Channel 16
- 156.210 Santa Clara County Sherriff Channel 1
- 453.100 Medevac - Santa Clara Valley Paramedics
- 461.675 San Jose Professional Security Service

Craig adds that he has been a scanner listener for about four years and uses a Bearcat 210 and a Bearcat 210XL to do his listening.

So what about you? What do you have to share with your fellow readers? The more you contribute, the better we can make this column. Is there something you would like to see more or less of in Scanner Scene? If so, let us know. We're looking for frequency lists and listening tips you'd like to share and we always can use photographs of your listening posts or mobile installations. We also would like to see photographs of dispatch consoles and antenna systems. How about it? Send them to: Chuck Gysi, N2DUP, Scanner Scene, Popular Communications, 76 North Broadway, Hicksville, NY 11801.

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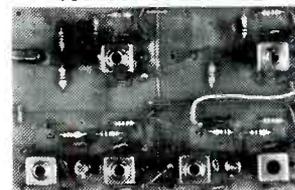
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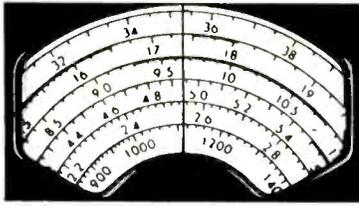
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BY HARRY HELMS, KR2H

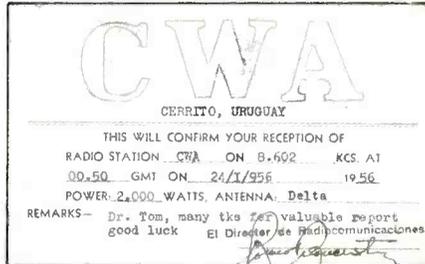
YOUR GUIDE TO SHORTWAVE "UTILITY" STATIONS

Dallas Williams of Colorado wrote in this month with an interesting postscript to the U.S. invasion of Grenada. For four days prior to the invasion, he said, "... the U.S. military channels carried some of the strangest traffic I have ever heard. The same was also true of the Cuban channels. And the volume of traffic was far more than normal. Only after hearing of the invasion did that traffic make sense. This traffic continued during and for a time after the invasion. Some in code, some in plain text, and some in military op codes. Example—'one daisy, one rose, two mangos, and six bananas last seen north bound.' No doubt some of this traffic was in relation to the goings-on in Honduras. The traffic going in and out of Cuba during this period was very heavy and sometimes on six or eight channels at once. The frequencies used have been silent since."

Dallas also comments on a station reported previously in this column by POP'COMM editor Tom Kneitel. This station was 5733.4 kHz and consisted of the message "WP IWTUE UTUTET YQWUTEIU PEITIW PEIWT" repeated in CW. Dallas remarks "it is interesting to note that the letters listed correspond directly to the numbers on a Baudot keyboard. Thus the letters if typed (shifted) on the Baudot keyboard become: 20 82573 757535 61275387 038582 03825. It almost looks like someone copied an RTTY transmission of numbers but lost the shift signal and thus got only letters. This they then transmitted via CW. I wonder what the odds are of writing a coded message using only those letters which directly convert to Baudot numbers. Only R (4) is missing from the group." Some excellent observations, Dallas, and many thanks for sharing them!

Some additional RTTY info comes from Tim Lemmon, WK4U, of Florida. He says that the RTTY sync pulses which can be heard on shortwave are military sync pulses feeding crypto gear at each end. They are used to keep both ends of a circuit synchronized when no traffic is being passed. If you try to copy RTTY without the sync pulses, the result is garbage—you can't tell where a message begins or ends!

David Eaton of Alabama writes with information on the American Antarctic stations. He finds 11533 kHz a good frequency to check for SSB traffic between McMurdo, Siple, and South Pole stations and a USCG cutter. He heard them discussing using the following frequencies: 6397, 7750, 8090, 10235, 11004, 13551, and 16595 kHz. He also heard RTTY briefly on 10235 kHz. He heard these transmissions from 0130-0530.



Profile Of A Mystery Station

John Johnson, WB4OBO/5, of Louisiana recently visited Florida and was able to spend a good bit of time listening. He started tracking the activity of a station similar to many other shortwave mysteries. This station consisted of a woman repeating "Sierra Yankee November" continuously. He first noticed that this station operates in parallel on both 5641.5 and 8425 kHz. These frequencies never varied.

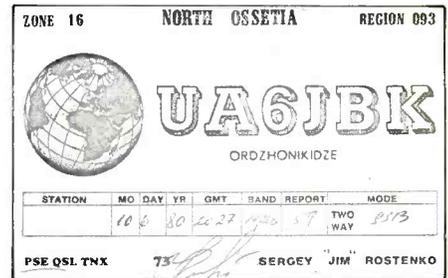
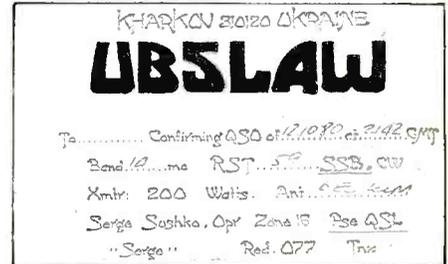
The transmission opened with "Sierra Yankee November" repeated 34 times. Then "Message, Message, Group 15, Group 15, Text, Text" was announced, followed by a message consisting of 15 five-letter groups. The letters were from the international phonetic alphabet. After the groups, "End of message, Repeat, Repeat, Message, Message" was announced, and the message was repeated. After this, "End of message, End of transmission" was announced, and the sequence began again.

John observed the station was either off the air prior to 1830 or else band conditions prevented reception. From 1830 until 0835 the station could be heard on both frequencies. The signal on 8425 kHz was usually stronger than the one on 5641.5 kHz. The 8425 kHz signal would start out weak at 1830 and build to a fair to good level by 0000. It would stay at the same level until 0730 when it would begin to weaken. John did not monitor past 0835. The signal on 5641.5 kHz was always weak to fair in the same period.

Thanks for the great report, John! Have any of you out there observed this or similar activity? Be sure to report anything you hear to POP'COMM!

More On The Numbers Stations

A reader this month writes that a friend of his had a niece who graduated from the Naval Language School in Monterey, California. Her first assignment upon graduation was an assignment in Florida, monitoring and translating broadcasts from—you guessed it—Spanish numbers stations!



Ron Weiss of Indiana has an interesting observation regarding some of the numbers stations. He says he's getting the impression that several of the numbers stations are prepared at one central studio and distributed to remote transmitters by telephone lines. Certainly the audio on many numbers stations seems "telephonic." Anyone have additional thoughts on this?

Keeping In Touch

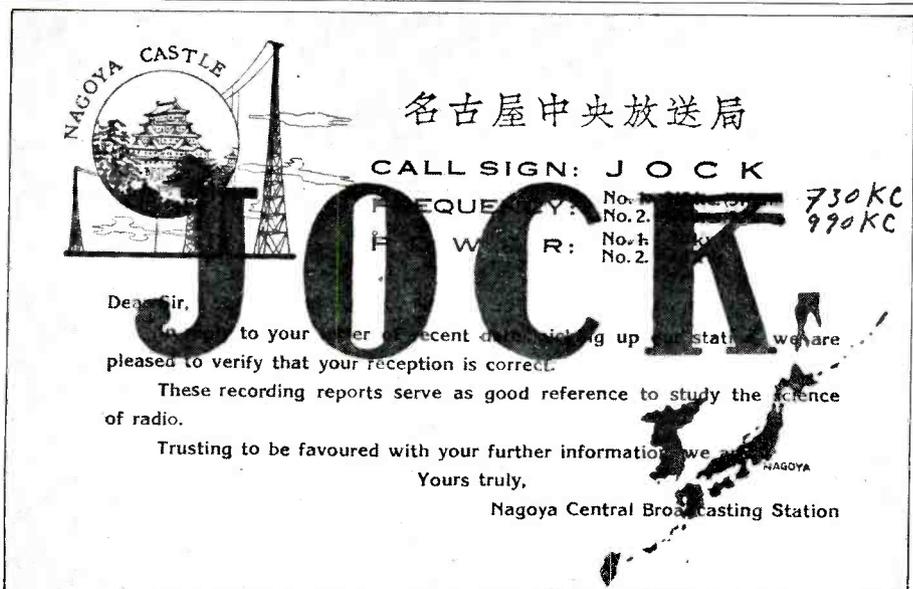
To keep up to date with the subjects we cover in this column each month, membership in a radio club is highly recommended. Two I can heartily endorse are the American Shortwave Listeners Club (ASWLC), 16182 Ballad Lane, Huntington Beach, CA 92649, and the Association of Clandestine Enthusiasts (ACE), P.O. Box 13225, D.T. Station, Minneapolis, MN 55414. ASWLC covers shortwave broadcast, utilities, the AM and FM broadcasting bands, along with a QSL column. ACE is devoted exclusively to pirates, numbers stations, and underground radio. For a sample copy of their bulletins, drop them each one dollar to cover costs. Be sure to tell them POP'COMM sent you.

Listening Reports

Here are this month's listening reports. All times are in GMT and all frequencies are in kHz. Your reports are welcome here; use the format you see below. Be sure to include the call and location for each station where applicable, and include enough detail to make your report useful to your fellow POP'COMM readers. Send your reports to

Communications Confidential, Popular Communications, 76 North Broadway, Hicksville, NY 11801. And now to this month's reports . . .

- 396:** ZBB, Bimini, Bahamas; CW beacon at 0739. (Michael Fox, IN)
- 530:** NB, North Bay, ON, Canada with continuous beacon 0400. (Robert Homuth, AZ)
- 2630:** "Alpine 6" working "Willock" (tactical call for the USN shipyard at Long Beach, CA). (Mike Chabak, AZ) Welcome, Mike! (Editor)
- 3085:** Five-digit Spanish numbers station with female announcer 0336, heavy RTTY interference. (Robert Zeisloft, FL)
- 3131:** "Hotel Zulu Charlie" working "Hotel Romeo Three" in SSB 0204: military traffic. (George Osier, NY)
- 3375:** Five-digit Spanish numbers station with female announcer 0105. (Robert Thompson, NY)
- 3747.6:** "MK6Z0J," "PETA6B," "PTP5VG," and "VG2BFB" among the stations working in a net in CW around 0545. Poorly sent code with several errors. (D. C. Greenwood, OH) Possibly military in Central America? (Editor)
- 3786.1:** NRV7, USCG, Tap Island, Caroline Islands, traffic in SSB 1036. (Mike Chabak, AZ)
- 4223.9:** ZRQ2, Simonstown, South Africa, V marker in CW 0252. (Rodney Grussling, KS)
- 4256:** KLC, Galveston, South Africa, CQ marker in CW 0258. (Rodney Grussling, KS)
- 4349:** JCS, Choshi, Japan, CQ/QSX marker in CW 1340. (Mike Chabak, AZ)
- 4387:** WOO, Ocean Gate, NJ, working the "Rotterdam" in SSB at 2000. (George Osier, NY)
- 4467.5:** Gulf Coast Hurricane Disaster net heard in SSB at 0100; can also be heard each Tuesday on 4627 kHz at 0115. (J. R. Waggoner, AR)
- 4543:** Five-digit German numbers station with female announcer 0731; opened with tones and "Romeo Tango." (Raymond Rocker, MS)
- 4607:** "WCW9 DE FXL6" in CW at about 0506. (Robert Margolis, IL)
- 4625:** VEB2, location unknown but believed to be in Canada, time pulses every two seconds 0104. (George Osier, NY)
- 4668:** Four-digit Spanish numbers station with female announcer 0310. (David Rainey, TN)
- 4670:** Four-digit Spanish numbers station with female announcer 0249; was parallel to 5810 kHz. (Thad Adamaszek, OH)
- 4694:** Coded traffic in CW between two stations 0305. (Robert Margolis, IL)
- 4723:** MVU, Royal Air Force, West Drayton, England, VOLMET in SSB 0106. (George Osier, NY)
- 4990:** Five-digit German numbers station with female announcer 2210; was in SSB and alternated between "3/2" and "2/3" patterns. (George Osier, NY)
- 5013:** WUB4, U.S. Army Corps of Engineers, Baltimore, MD, working other Corps stations in SSB 1315; traffic consisted of lake elevations and weather reports. (George Osier, NY)
- 5015:** Five-digit German numbers station with female announcer 0036. (George Osier, NY) Later noted in SSB 0006. (George Osier, NY)
- 5182:** Five-digit German numbers station with female announcer 0530; was in SB and opened with "Echo Romeo." (Raymond Rocker, MS)
- 5260:** "NOV" and "G1W" in SSB making arrangements to test an RTTY circuit 0245. (Jim Bedient, WI)
- 5284:** "VVV DE DVE" repeated in CW 0528, then into five-digit CW groups. (Raymond Rocker, MS)
- 5302:** "This is AJE, Alpha Juliet Echo, testing for transmit propagation for all areas south of St. Johns" repeated by male in SSB 0049. (George Osier, NY) Nice one, George; this is the USAF station at Croughton, England. (Editor)
- 5426:** KRH50, U.S. Embassy, London, England, CW traffic 0044. (Henry Ponder, NC)
- 5640:** "Sierra Yankee November Two" repeated by female 0443. (Raymond Rocker, MS)
- 5695.5:** JJG8, Japanese Defense Agency, Atsugi, Japan, calling "Yankee Whiskey 5" in SSB 1308; Most transmissions are in English but with heavy accents. (Mike Chabak, AZ)
- 5810:** Four-digit Spanish numbers station with female announcer 0210-0237. (J. P. Waggoner, AR)
- 5924:** Five-digit Spanish numbers station with female announcer 0810. (Ken Navarre, CA)
- 5985:** Five-digit Spanish numbers station with female announcer 0920. (Glenn Elliott, ND)



A rare QSL from station JOCK dated 1937. This station was located in Japan's Nagoya Castle and operated on 730 and 990 kHz. Most definitely a difficult station to hear in North America. Thanks to reader William Bowers in California for sharing it with us.

- 6227:** Five-digit Spanish numbers station with female announcer 0600. (Raymond Rocker, MS)
- 6228:** "RDU NT" repeated in CW at about 0505, followed by five-digit groups using "cut numbers." (Raymond Rocker, MS)
- 6326.5:** WNU, Slidell, LA, "DE WNU" in CW 0042. (Don Saunders, NJ)
- 6337:** CLA5, Havana, Cuba, with Spanish news in CW 0735. (Robert Margolis, IL)
- 6393.5:** ZLB3, Awarua, New Zealand, CQ/QSX marker in CW 0825. (Mike Chabak, AZ)
- 6461:** FUM, French Navy, Papeete, Tahiti, V marker in CW 1335. (Mike Chabak, AZ)
- 6617:** Unidentified station sending Russian traffic in CW 0810. (Robert Margolis, IL)
- 6621:** "VVV NDTWT" repeated in CW 0630, then into five-digit groups using cut numbers 0635. (Raymond Rocker, MS)
- 6683:** SAM 27000 heard 1522 on the ground at Andrews Air Force Base running several communications checks with "Crown"; at 1600 SAM 27000 changed its destination to Air Force One and departed for Chicago. (Wesley Willard, PA) "SAM" is an abbreviation for "special air mission," while "Crown" is the White House communications center. This logging illustrates how the identifier Air Force One is not used unless the president is actually aboard the flight. (Editor)
- 6694:** CZW, Halifax Military, Halifax, NS, Canada, traffic in SSB 1811. (George Osier, NY)
- 6708:** "Alpha Six Sierra" doing a ten to one "count-down" 0717. (Ken Navarre, CA) Apparently military testing of some sort. (Editor)
- 6733:** Air Force One enroute to Andrews AFB 2356 exchanging traffic with Crown and Andrews AFB. (Al Lester and Bill Wilson, GA)
- 6736:** "Dagnet Alpha" working "Dagnet Zulu" 0116, some scrambled speech on channel preceded and followed by a tone. Possibly Customs or DEA. (Greg Musgrave, IL)
- 6738:** Men exchanging groups of numbers and letters in Spanish 2342. (Don Saunders, NJ)
- 6765:** Five-digit Spanish numbers station with female announcer 0706; sound of a clock ticking in the background similar to a metronome. (Robert Margolis, IL)
- 6785:** Five-digit German numbers station with female announcer 0500; was in SSB. (Raymond Rocker, MS)
- 6800:** Four-digit Spanish numbers station with female announcer 0500; was parallel to 8415 kHz. (Thad Adamaszek, OH)
- 6802:** "Footsteps" pulses, 96 per minute, at 0353 and continuing past 0404. (Everett Quackenbush, NY) As Everett noted, these "footsteps" often precede numbers stations. (Editor)
- 6875:** Five-digit Spanish numbers station with female announcer 0710. (Jim Bedient, WI)
- 6900:** Five-digit Spanish numbers station with MALE announcer, transmission ended 0509. (Dave Bush, OH)
- 6924.2:** "KKR25 DE KKN50" in CW 0140. (Robert Margolis, IL) KKN50 is the U.S. State Department Intelligence Service in Washington, D.C.; KKR25 is likely a U.S. embassy somewhere. Any idea which one, readers? (Editor)
- 6930:** Unidentified station sending five-digit groups in CW 0851. (Robert Margolis, IL)
- 7532:** Five-digit German numbers station with female announcer 0408; was in SSB and transmissions were read in a "3/2" pattern. (Robert Zeisloft, FL) Similar station noted at 2341, but wasn't in "3/2" pattern. (George Osier, NY)
- 7545:** CCS, Santiago, Chile, V/QSX marker in CW 0312. (Mike Chabak, AZ)
- 7633:** Four-digit English numbers station with female announcer 0120. (George Osier, NY)
- 7787:** Five-digit Spanish numbers station with female announcer 0233; was in SSB. (Robert Margolis, IL)
- 7836.6:** NRT3, USCG, two Jima working NRV6, Marcus, in SSB 1045. This is an active frequency for the northwest Pacific Loran network after 0800. (Mike Chabak, AZ)
- 7840:** Five-digit German numbers station with female announcer 0131; was in SSB. (Thad Adamaszek, OH)
- 7846:** Five-digit Spanish numbers station with female announcer at both 0630 and 0700. (Jim Bedient, WI)
- 8065:** Five-digit German numbers station with female announcer 0217; was in SSB. (Tom Lima, MA)
- 8432:** SOW, Warsaw, Poland, lengthy CW message in Polish 0319. (Robert Margolis, IL)
- 8437:** 7TA6, Algiers, Algeria, CQ/QSX marker 0803. (Mike Chabak, AZ)
- 8493:** JNA, Tokyo, Japan, CW traffic at about 0806. (Mike Chabak, AZ)
- 8566:** ZSJ4, Silvermine, South Africa, CQ/QSX marker in CW 0506. (Mike Chabak, AZ)
- 8605:** DZJ, Manila, Philippines, CQ/QSX marker in CW 0856. (Mike Chabak, AZ)
- 8778:** "Yankee Five India" calling "Lima Eight Victor" at 1040, mentioned "... long range communications check during sea trials." (Ken Navarre, CA) Very likely USN. (Editor)
- 8842:** Five-digit Spanish numbers station with female announcer 0212. (David Rainey, TN)
- 8925:** Five-letter English groups (slight British accent) read by woman 0250. (David Rainey, TN)
- 8997:** McMurdo Center, Antarctica, working NPX, South Pole, in SSB 0556. This is an active frequency for Antarctic support transmissions. (Mike Chabak, AZ)
- 9043:** "K" repeated continuously 0412, interrupted for four minutes of a coded message. This is believed to be operated by the Soviet Navy in the Far East. (Mike Chabak, AZ)
- 9052:** "N" repeated in CW 0100, into five-digit English numbers read by woman 0108. (Raymond Rocker, MS) Five-digit English numbers station with female announcer 0110. (Everett Quackenbush, NY)

9074: "545" repeated in Spanish by woman until 0110 in SSB, then followed by "footsteps" pulses at the rate of 96 per minute. (Everett Quackenbush, NY)

9075: Four-digit Spanish numbers station with female announcer 0223-0235, was in SSB (Jim Thornton, TN) Also heard at 0200. (George Osier, NY) Also heard in AM 0107, parallel to 11532 kHz. (George Osier, NY)

9080: Male passing letters and numbers in Spanish 2117, no pattern noted, woman asking for repeats. Was in SSB (Jim Bedient, WI)

9265: Five-digit English numbers station with female announcer 0312. (Thad Adamaszek, OH)

9267: "N" repeated in CW 0200: at 0204 five-digit German numbers read by woman. (Raymond Rocker, MS)

9325: Five-digit German numbers station with female announcer 0146, was in SSB. (Thad Adamaszek, OH)

9450: Five-digit English numbers station in SSB 1803 with female announcer: strong German accent ("transmission" was pronounced "trans-a-mission"). (George Osier, NY) Five-digit German numbers station with female announcer 0235. (Thad Adamaszek, OH)

9875: Five-digit Spanish numbers station with female announcer 1130. (J. Lemak, NY)

9973: "N" repeated in CW 0200: at about 0204 five-digit English numbers were read by a woman. (Raymond Rocker, MS)

10000: BPM, Xian, China, CW identification and woman in Chinese at approximately 2029, then time signals. (George Osier, NY)

10051: WSY70, New York, NY, VOLMET aviation weather broadcast in SSB 1604. (Bernie Wimmers, VA)

10178: Five-digit German numbers station with female announcer 1903. (George Osier, NY)

10428.5: Unidentified RTTY station with five-letter groups 1314 425/66N. (Robert Margolis, IL)

10461: Five-digit German numbers station with female announcer 1944. (George Osier, NY)

10464: KWL90, U.S. Embassy, Tokyo, Japan, QRA marker in CW 0643. (Mike Chabak, AZ)

10493: WGY903, Federal Emergency Management Agency, Olney, MD, taking check-ins from other FEMA stations in SSB. A FEMA net on this frequency seems to conduct a test each Friday at 1600. (Jeff Gaines, TN)

10501: Five-digit English numbers stations with female announcer 1745, was in SSB. (George Osier, NY)

10570: Three-digit Spanish numbers station with female announcer 0130, opened with time pulses. (George Osier, NY)

10611: Four-digit English numbers station with female announcer 1848, pulsing background sound. Off at 1851, followed by RTTY. (George Osier, NY) Similar station 1822 in SSB. (George Osier, NY)

10649: Letters from the international phonetic alphabet read by woman 1920: at 1923 "end of message" announced and station left the air. (George Osier, NY)

10741: Five-digit German numbers station with female announcer 1903, was in SSB and opened with "Hotel Mike." (George Osier, NY)

11068: "680 680 737 737" in CW 0300, followed by five-digit CW groups. (Raymond Rocker, MS)

11109: Five-digit German numbers station with female announcer 1818. (George Osier, NY)

11201: MVU, Royal Air Force, West Drayton, England, aviation weather in English 1820. (George Osier, NY)

11245: This is an outstanding frequency for monitoring USAF traffic in SSB between 1400 and 2000 daily. Calls heard included "Pinball," "Diocese," "Lockup," and "Rawbone." (Jim Bedient, WI)

11247: Air Force One can be heard here often running phone patches through "Crown" (the White House communications center). (Henry Ponder, NC)

11396: Aeroflot 348 en route to Havana giving estimated arrival time 1828 in SSB. (Robert Margolis, IL) Aeroflot is the Soviet civilian airline. (Editor)

11535: Four-digit Spanish numbers station with female announcer 2122. (Robert Margolis, IL)

12164: "VUU4 AA4T" repeated in CW 2336, off at 2340. (Raymond Rocker, MS)

12360: Scrambled speech heard here in SSB around 1945. (Jim Bedient, WI)

12543: "TIM" repeated in CW 2210 followed by "JJW" repeated in CW 2211. (Everett Quackenbush, NY)

12657: "UMA7 DE AME3" repeated in CW 1520. (Robert Margolis, IL) These calls are assigned to Spain and the Soviet Union; however, I'm certain these calls are spurious. This marker has been reported in this column before. (Editor)

13428: Five-digit Spanish numbers station with female announcer 2135. (David Rainey, TN)

14421: Four-digit Spanish numbers station with female

announcer 2100, was parallel to 9074 kHz. Ended with a string of "footsteps" pulses. (Bob Warren, VA)

14440: "46N" repeated in CW 1905, into four-digit groups 1910. All numbers were cut but 4 and 0. (Raymond Rocker, MS)

14641: Five-digit groups in CW at approximately 1725. (Robert Margolis, IL)

14865: Four-digit Spanish numbers station with female announcer 1715. (Robert Margolis, IL)

14886: CW station sending five-letter groups 2125, very slow CW. (Bob Warren, VA)

14894: "Skyking" message to "Skybird" in SSB 2005. (Ken Navarre, CA) "Skyking" is a SAC ground station while "Skybird" is a SAC bomber. (Editor)

15042: "Whiskey Tango X-ray" with male announcer in SSB 2300. (Tony Oreluk, PA) Military traffic of some sort. (Editor)

15650: Four-digit Spanish numbers station with female announcer 1723. (Robert Margolis, IL)

15682: JNG, Ishigaki, Japan, passing coded CW messages to XUK, Kompong Som-Ville, Cambodia, and TNN, location unknown, at 1745. (Robert Margolis, IL)

16458: Five-digit CW number groups 1903. (Robert Margolis, IL)

17068.5: OXZ8, Lyngby, Denmark, "DE OXZ8" in CW 1604. (Don Saunders, NJ)

17112.5: GKB, Portishead, England, V marker in CW 1608. (Don Saunders, NJ)

17431: Five-digit German numbers station with female announcer 1619: was in SSB. (Don Saunders, NJ)

18500: Alternating tones lasting 1.5 seconds, changing pitch every 40 seconds, at 1717. (Robert Homuth, AZ)

18621: Four-digit Spanish numbers station with female announcer 2110, very strong downward modulation. (Dallas Williams, CO)

18744: WGY912, Federal Emergency Management Agency, Mount Weather, MD, sending five-element coded messages in slow CW 1740. This is a daily operation. (Mike Chabak, AZ)

19150.7: Five-letter groups in RTTY 425/66N, no identification heard. (Robert Margolis, IL)

20371: "949" sending five-digit CW groups 1430. (Robert Margolis, IL)

22925: Time pulses each second 1838, no identification heard. (George Osier, NY) Ideas anyone??? (Editor)

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AN1	\$ 79.95 + (\$ 3 UPS)	RF9	\$ 89.95 + (\$2 UPS)	ICR70	\$639.95 (\$9 UPS)	(\$2 UPS 1st book, ea additional book add 50¢ UPS)	
ICR4800	69.95 (\$ 2 UPS)	RFB50	139.95 (\$2 UPS)		DRAKE	\$1479.00 (\$9 UPS)	World Radio TV Handbook, 1984 Edition
ICF7600A	119.95 (\$ 2 UPS)	RFB300	229.95 (\$3 UPS)	R7A		AMECO	SWL Manual of Non Broadcast Stations
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AC9W	12.00 (\$ 2 UPS)	RF799	229.95 (\$3 UPS)		EAVESDROPPER		How to Tune the Secret Shortwave Spectrum
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DCC127	29.50 (\$ 2 UPS)	RF3100	289.95 (\$5 UPS)		MFJ		The Complete Short Wave Listeners Handbook
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				308	99.95 (\$2 UPS)		Whites Radio Log
							4.95

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

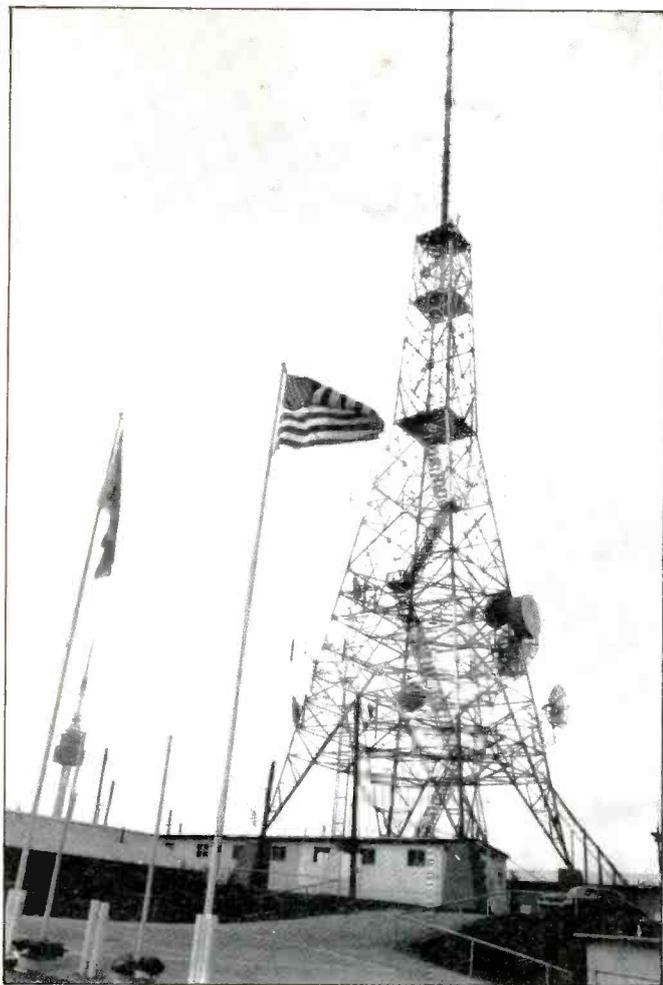


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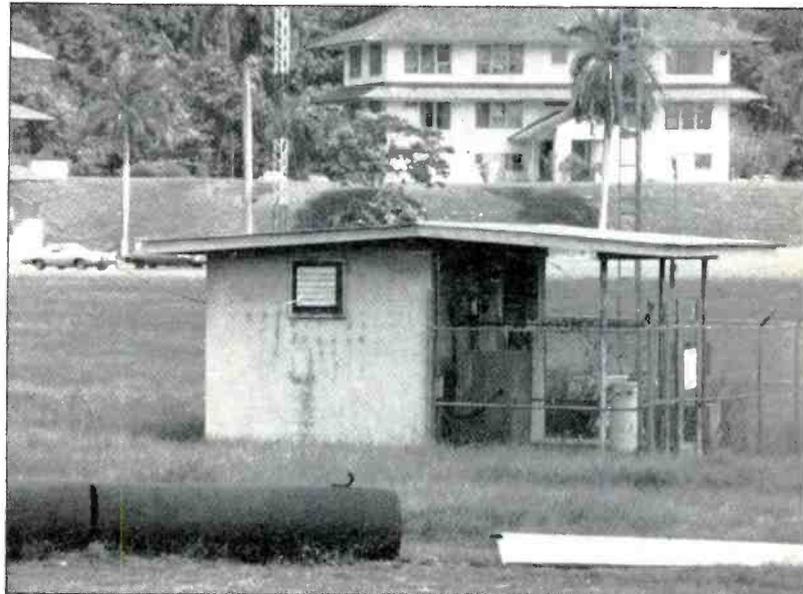
(312) 848-6777





An AFRTS transmitting antenna. (U.S. Army photo)

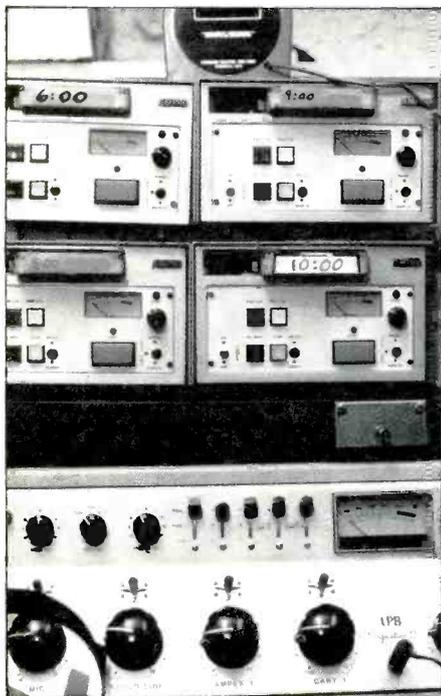
The AM transmitter at Fort Clayton. (U.S. Army photo)



DX With An American Flair

Armed Forces Radio-TV Stations

BY SFC HAROLD A. ORT, JR.



A close-up look at some of the cartridge playback units. (U.S. Army photo)

Scattered throughout the world are hundreds of AM/FM radio stations broadcasting programs designed for American military personnel and their families stationed overseas. It's a DXer's bonanza of low powered stations that are ready verifiers.

With power ranging from 1 to 150,000 watts, nearly one million Americans living overseas have access to current news and entertainment through over a thousand transmitters, relays, and translators. Staffing for and actual operation of the stations usually falls to the Army, Navy, or Air Force—usually the senior or largest command in a geographical area.

What you'll hear varies little worldwide. There are commercial-free news broadcasts from all major stateside radio networks, in

addition to sportscasts and play-by-play sports programs. Other programs include "Army News Notes," "Air Force Weekly," "Marine Diary," and "Navy Log," and each of these is a specialized news program produced by the individual services, including music and DJ shows.

Reception reports should be sent directly to the individual MW stations, while short-wave reports should be sent only to AFRTS-PC, 1016 North McCadden Place, Los Angeles, CA 90038.

In a recent development from AFRTS shortwave, POP'COMM has been informed by Lieutenant Colonel Bruce Eaton, Deputy Director for AFRTS Operations, that in a major policy change, they will verify reception reports from CONUS listeners but only



An AFRTS control room. (U.S. Army photo)

Medium Wave Armed Forces Network Stations

Location	Frequency (kHz) / Power (KW)	Address
Europe		
Berlin, Germany	1107/10 KW	Armed Forces Network, Europe, APO N.Y. 09742
Frankfurt, Germany	873/150 KW	Armed Forces Network, Europe, APO N.Y. 09757
Kaiserlautern, Germany	1107/10 KW	Armed Forces Network, Europe, APO N.Y. 09012
Munich, Germany	1107/40 KW	Armed Forces Network, Europe, APO N.Y. 09108
Nuremberg, Germany	1107/10 KW	Armed Forces Network, Europe, APO N.Y. 09696
Stuttgart, Germany	1143/10 KW	Armed Forces Network, Europe, APO N.Y. 09154
Hellenikon, Greece	1584/1 KW	Detachment 11, Air Force European Broadcasting Squadron, APO N.Y. 09223
Korea		
Munsan	576/5 KW	Armed Forces Korea Network (Army Element), APO San Francisco 96301
Pusan	783/5 KW	
Seoul	549/5 KW	
Taegu	585/5 KW	
Panama		
Canal Zone	790/10 KW	Armed Forces Radio Television Service, APO Miami 34104
Japan		
Tokyo	810/50 KW	Hq, Air Force Pacific Broadcast Squadron, APO San Francisco 96328
Naha (Okinawa)	648/10 KW	
Philippines		
Clark Air Force Base	1512/1 KW	Detachment 1, Air Force Pacific Broadcasting Squadron, Clark AFB, Pampanga, APO San Francisco 96274

AFRTS Shortwave Frequencies

GMT	kHz	M	Transmitter Site	Beams
Europe				
0900-1100	9590	31.28	GREENVILLE, NC	45
1100-0100#	15430	19.44	GREENVILLE, NC	45
0100-0700	6030	49.75	BETHANY, OH	66
Africa				
0900-1100	9530	31.48	BETHANY, OH	74
1100-1700	15330	19.57	BETHANY, OH	87
1700-2300	15345	19.55	BETHANY, OH	74
2300-0700	11790	25.45	BETHANY, OH	74
Caribbean				
0900-1300	6030	49.75	GREENVILLE, NC	175
1100-1700	15330	19.57	BETHANY, OH	168
1700-2300	15330	19.55	BETHANY, OH	074
1300-0200	15330	19.57	BETHANY, OH	168
0200-0700	6030	49.75	BETHANY, OH	168
East Asia				
1000-1600	9700	30.93	DELANO, CA	311
1600-0700	17765	16.89	DELANO, CA	311
1000-1700	11805	25.41	DELANO, CA	306
2100-0430	21570	13.91	DELANO, CA	296
0430-0700	15330	19.57	DELANO, CA	311
Southeast Asia				
0000-1500	21670	13.84	PORO POINT, RP	260
2000-2230	26000	11.54	PORO POINT, RP	264
2230-0000	15305	19.60	PORO POINT, RP	290/110

= Withdrawn as required for United Nations Use.
RP = Republic Of Philippines

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CIRCLE 60 ON READER SERVICE CARD

if the DXer encloses a prepared card so all the office does is sign and return it to the listener. No return postage is necessary. Foreign listeners will continue to receive the current AFRTS QSL . . . both are valid QSLs.

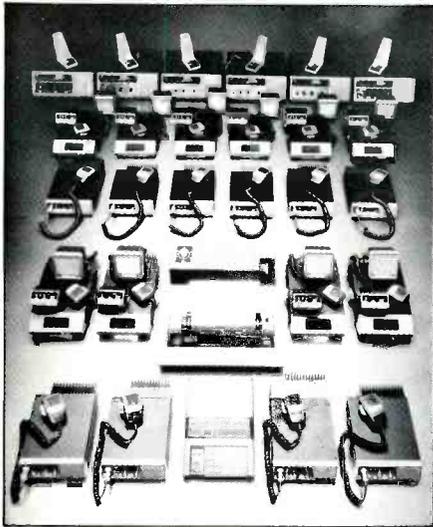
According to Armed Forces network officials, the best time to listen to the MW stations is on the hour when individual stations

air an ID which always includes the station location. Keep in mind that this is only a partial listing of the hundreds of AFRTS stations currently on the air. However, AFRTS engineers say that even the higher powered stations are difficult to hear outside their primary target area. So, fire up the receiver and give them a try!

PC

PRODUCTS

REVIEW OF NEW AND INTERESTING PRODUCTS



72 Models Complete Phase I For Midland

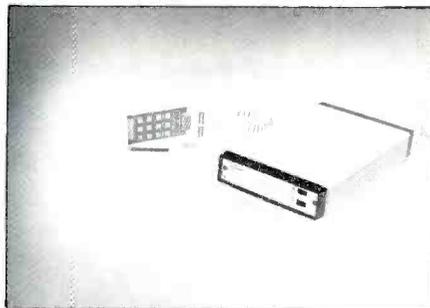
The recent addition of high-power mobiles and VHF wide-band models brings the total number of Midland SYN-TECH™ frequency-synthesized two-way radio models to 72 and marks the completion of Phase I of Midland LMR's SYN-TECH program.

First introduction in 1982, the programmable/reprogrammable E/PROM-controlled Midland SYN-TECH line now includes medium and high power mobiles and desk-top base stations in low-band, international low-band (66-88 MHz), high band, UHF, and 800 MHz models—all with 80-channel capability. Designed for maximum system flexibility, the radios' programmable/reprogrammable features and options now include tone-coded squelch, time-out timing, busy-channel lockout, two-tone sequential signaling, and channel scanning. The Midland SYN-TECH radios now scan up to 64 channels with priority channel sampling, and provide multiple scanning modes with choice of priority and carrier, tone-coded squelch, or open-channel scanning.

With the completion of Phase I, Midland LMR is now one of the broadest synthesized product lines presently available in the industry. Phase II of Midland's SYN-TECH program, expected to be detailed soon, will include the introduction of repeaters and higher-powered base stations. For more information contact Midland LMR, 1690 N. Topping, Kansas City, MO 64120, or circle number 104 on the reader service card.

Countermeasure Device

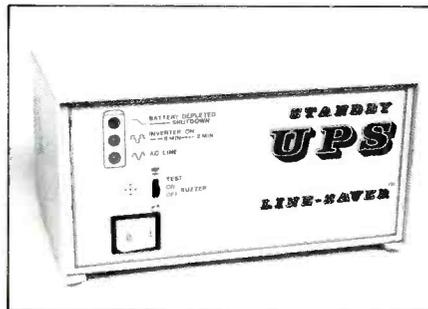
Research Electronics, Inc., is proud to announce the Telecom Security Unit (TSU3000). The TSU3000 was developed by Research Electronics, Inc., based on military countermeasure technology. The Tele-



com Security Unit utilizes your existing telephone while the interconnected security unit is hidden out of sight. Eavesdropping devices which utilize high effective impedances, capacitive or inductive coupling are for the most part undetectable by conventional methods. Telephone analyzers, which require expert technical knowledge, will completely miss these devices unless accompanied by sophisticated "Time Domain Reflectometry." Expensive, time-consuming sweeps and the infiltrations of outside technical individuals can be avoided with the new TSU3000.

The TSU3000 unit provides around-the-clock protection which enhances or completely eliminates expensive and sometimes inadequate technical sweep routines.

For more information, please contact: Research Electronics, Inc., 1570 Brown Ave., Cookeville, TN 38501.



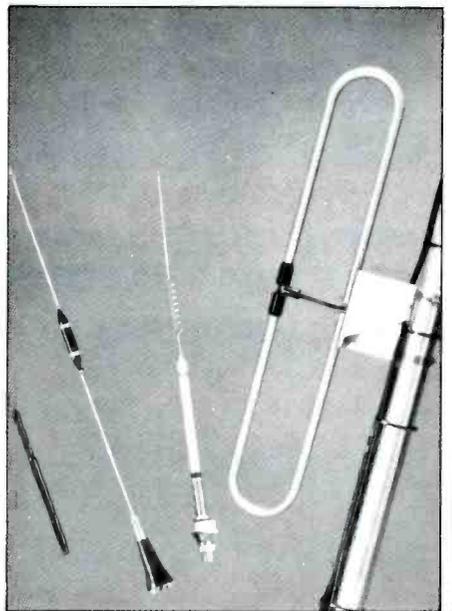
Conditioned Uninterruptible Power System

Kalglo Electronics Co., Inc. has announced a new standby uninterruptible power system (UPS) to its "AEGIS(TM)" line of power conditioning equipment.

Designated the LINE-SAVER™, Model LS-240, it represents a breakthrough in standby uninterruptible power systems for use in the home and small business computer market. It is engineered to give trouble-free standby back-up power available in 120/240 volt, 60/50Hz, with 240VA, 150-Watts capacity. The unit utilizes the latest "Pulse Width Modulation" (PWM) technology to regulate the RMS AC output voltage for greater efficiency to various load conditions. The PWM AC output will also in-

crease battery efficiency to increase back-up time; 5-10 min. @ half load, 35-40 min. @ one-third load. In addition, the unit is furnished with an internal 12V sealed rechargeable battery, four SPIKE-SPIKER™ voltage surge protected and EMI/RFI filtered AC outlets, audible and visual power failure warning system, test mode indicator and switch, replaceable external fuses, compact in size with external 12 VDC battery connectors to allow for mobility and extended hold-up time. The unit comes complete with a 6' detachable 3-prong heavy-duty grounded cord-set with a CEE-22 connector.

For more details contact: Kalglo Electronics Co., Inc., Dept. LS, 6584 Ruch Rd., E. Allen Twp., Bethlehem, PA 18017, or circle number 101 on the reader service card.



Antenna Selection Guide

Antenna Specialists' Professional Antenna Catalog is now also available in a new 28-page version covering the company's full line of base station, mobile and portable antennas and accessories for the land mobile industry. The new A/S *Antenna Selection Guide* contains specifications on more than 300 products spanning the entire spectrum from low band to 800 MHz. Major new products include the company's revolutionary DURA-FLEX™ elastomer shock-mount antenna line; a complete line of 800 MHz mobile, base station and portable antennas (including cellular); and the company's unique line of on-glass, "no hole", no-ground-plane mobile antennas.

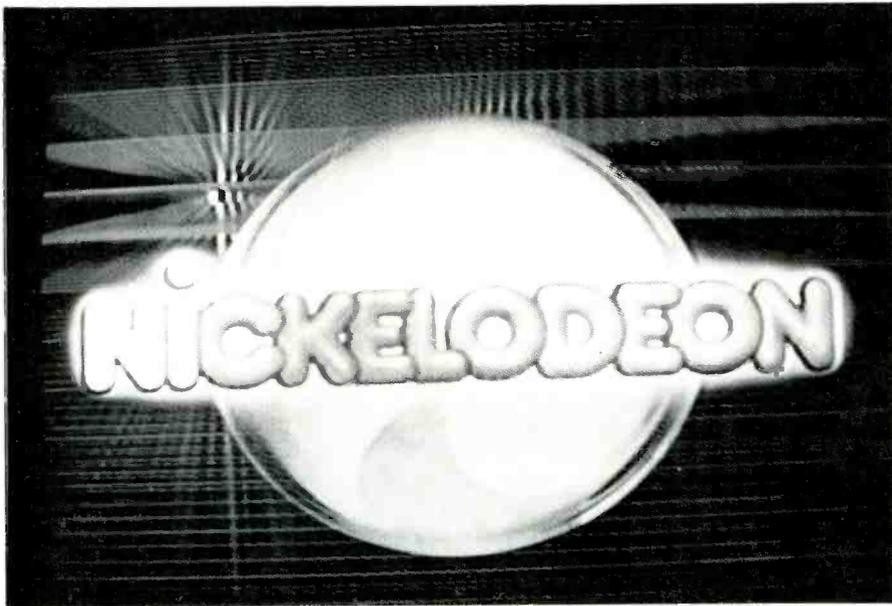
A/S's new 28-page full-line *Antenna Selection Guide* is available, free, from The Antenna Specialists Co., Marketing Department, 12435 Euclid Avenue, Cleveland, Ohio 44106, or circle number 106 on the reader service card.

SATELLITE VIEW

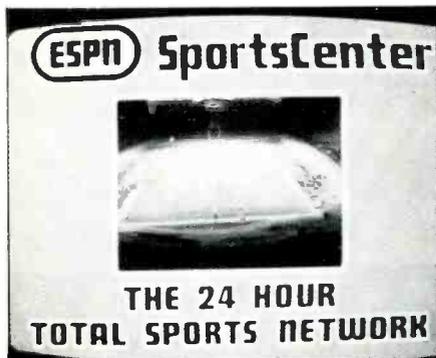
BY JEFFREY KEATING, WB4KDH

INSIDE THE WORLD OF TVRO EARTH STATIONS

"A Hitchhiker's Guide To The Satellites"



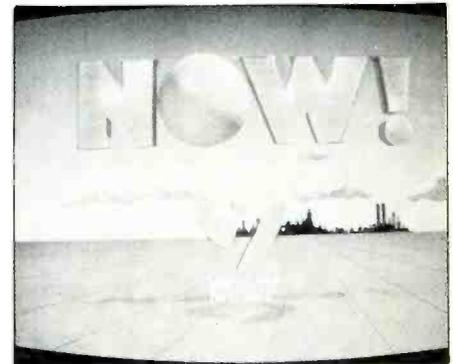
Nickelodeon provides children's programs from its transponder on Satcom F3R.



Entertainment Sports Program Network (ESPN) is carried on several satellites: Comstar D4, TR #13, Satcom F3, TR #7, Galaxy I, TR #9. Partial ESPN program feeds can also be seen on Satcom F4, TR #6.



AFRTS, the Radio and Television Service for U.S. military personnel abroad, is relayed by the following satellites: Satcom IR, TR #20, Satcom F4, TR #18 and INTEL-SAT IV F8, TR #24.



WOR-TV Superstation from New York City is carried on Galaxy I, TR #15.



MTV. Music Television provides pop music videos from Satcom F3R, TR #11.

It's time once again for POP'COMM's "Hitchhiker's Guide to the Satellites." There have been several major changes in program alignment on the American and Canadian domestic satellites during the last several months. The following list should bring you up to date with the current situation. For the first time we are also including a complete list of all video services available from the international satellites. Of course, not all locations in North America will be able to access the international birds. For the most part, access to the Atlantic Ocean region international satellites can be had from locations east of the Mississippi River. Reception of the Pacific Ocean INTELSAT birds is restricted to locations on the west coast.

Today there are more than 120 active transponders carrying video programming on the North American domsats, with an additional two dozen active video transponders on the international birds. The major story of 1984 has centered around the emergence of Galaxy I as the bright new star of cable hovering over our southwestern horizon. Galaxy I can provide high-quality video into terminals smaller than 10 feet in diameter, making the bird an attractive package for SMATV operators and mini-cable system operators who want to provide service to their customers at a reasonable price. Galaxy is also being investigated as a viable home for quasi-DBS services that would reach directly into the homes of earth

station owners throughout the continent.

Beyond the cable TV frontier, satellites are being used more than ever by the networks and independent TV efforts for the relay of programs to affiliates throughout the U.S. Programs like *Fame*, *Entertainment Tonight*, the *Merv Griffin Show*, and others are relayed by WOLD Communications satellite transponders, making independent TV programs available to home TVRO owners regardless of their location in North America.

The use of satellites for the live transmission of sporting events has also increased dramatically. On any given weekend, it is possible to select from more than a dozen live sporting events. Live newsfeeds are also on the increase; we have found that there is an incredible smorgasbord of news coverage available on both the domsats as well as the international birds.

If you would like to learn more about satellite television, *The World of Satellite Television* by Jeffrey Keating and Mark Long is available for \$12.95 plus \$1.00 for postage and handling from: SE International, Post Office Box 39, 156 Drakes Lane, Summertown, TN 38483. A worldwide Satellite Coordinates Computer printout is also available. Please specify the site latitude and longitude in any order. The price is \$7.50.



WGN-TV Superstation from Chicago is relayed via Satcom F3R, TR #3.



CNN Headline News is transmitted from both Satcom F3R and Galaxy I, TR #15 and #8, respectively.

International Satellites (Atlantic Ocean Region)

INTELSAT IV F8	1 degree west longitude
1 RHCP	ABC News London
2 RHCP	CBS L-SAT (London)
24 RHCP	Armed Forces Radio Television Service (AFRTS)
GORIZONT 7	14 degrees west longitude
- 1 RHCP	Programa I, Moscow
6 RHCP	OIRT News Unilaterals, Programa II, Moscow
9 RHCP	UPITN News, Intervision News, Programa I News
11 RHCP	Occasional video
INTELSAT V F6	18.5 degrees west longitude
22 RHCP	Occasional news and sports unilaterals
23 RHCP	
24 RHCP	
INTELSAT IVA F4	21.5 degrees west longitude
1 RHCP	Bandeirantes TV, Channel 7 Rio de Janeiro, Brazil
5 RHCP	Rede Globo TV, Channel 4 Rio de Janeiro, Brazil
11 RHCP	SBTV, Channel 11, Rio de Janeiro, Brazil
INTELSAT V F4	24.5 degrees west longitude
22 RHCP	Occasional news and sports unilaterals
23 RHCP	
24 RHCP	
INTELSAT IVA F1	31 degrees west longitude
1 RHCP	Inravisión, Channel 1, Bogota, Colombia
5 RHCP	Venevisión, Channel 8, Caracas, Venezuela
22 RHCP	Radio Y Television Peruana (RTP), Channel 7, Lima, Peru
24 RHCP	Argentina Television Color (ATC), Channel 7, Buenos Aires, Argentina
INTELSAT V F2	34.5 degrees west longitude
22 RHCP	Occasional news and sports unilaterals
23 RHCP	
24 RHCP	
INTELSAT IV F1	53 degrees west longitude
1 RHCP	XEW-TV, Mexico City Channel 2

5 RHCP	Television De La Republica De Mexicana (TRM)
13 RHCP	XETV, Mexico City Cable Channel 7
14 RHCP	XHDF-TV, Mexico City Channel 13
22 RHCP	Chile TV, Santiago Channel 7
24 RHCP	Occasional news and sports unilaterals

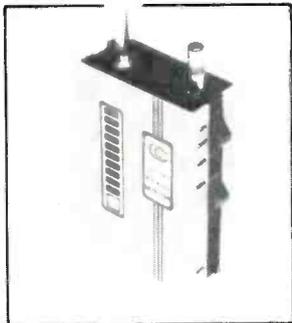
North American Domestic Satellites

SATCOM F2R	72 degrees west longitude
	Occasional video, various transponders
GALAXY II	74 degrees west longitude
	Occasional video, various transponders
COMSTAR I & II	76 degrees west longitude
	Occasional video, various transponders
WESTAR II	79 degrees west longitude
3 HOR	Occasional news and sports unilaterals
11 HOR	Occasional news and sports unilaterals
19 HOR	Occasional news and sports unilaterals
SATCOM F4	83 degrees west longitude
2 HOR	Bravo. Cultural Entertainment Programming.
2 HOR	Financial News Network.
3 VERT	Satellite Program Network. Ad-supported entertainment service.
4 HOR	Home Sports Entertainment (HSE)
6 HOR	Regional sports network.
7 VERT	Entertainment Sports Program Network (ESPN).
11 VERT	National Christian Network.
12 HOR	Home Sports Entertainment (HSE)
15 VERT	The Playboy Channel. Adult program service.
17 VERT	BizNet, The American Business Network.
18 HOR	Trinity Broadcasting Network. Religious.
24 HOR	Armed Forces Radio and Television Service.
COMSTAR D3	87 degrees west longitude
1 VERT	NBC Burbank.
10 HOR	NBC Network Program Feeds. Central Time Zone.
17 VERT	CBS Network Program Feeds. Central Time Zone.
	CBS Network Program Feeds. Pacific Time Zone.

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26 Place Vendome, 75001 Paris 297-56-00 TX: CCS 215524F

CIRCLE 67 ON READER SERVICE CARD

WESTAR III

5 HOR
19 HOR
21 HOR

23 HOR

TELSTAR IIIIC

WESTAR IV

6 VERT
10 VERT

11 HOR

15 HOR

17 HOR
21 HOR
23 HOR
19 HOR

ANIK D1

4 VERT
8 VERT

9 HOR
14 VERT
16 VERT

18 VERT
21 HOR
22 VERT

23 HOR
24 VERT

ANIK B

7 HOR
11 HOR
13 HOR
15 HOR
17 HOR
19 HOR

WESTAR V

1 HOR
2 VERT

5 HOR
11 HOR
15 HOR

16 VERT
22 VERT

23 HOR

24 VERT

COMSTAR D4

5 VERT

91 degrees west longitude

CNN regional bureau news feeds.
Occasional news and sports feeds.
Independent Network News, or occasional video.
Occasional news and sports feeds.

96 degrees west longitude

Occasional video feeds on various transponders.

99 degrees west longitude

XEW-TV, Mexico City, Channel 2
WOLD Communications. Independent TV Programs.
WOLD Communications. Independent TV Programs.
Public Broadcasting Service Program Feeds.

WOLD Communications. Independent TV Programs.

104 degrees west longitude

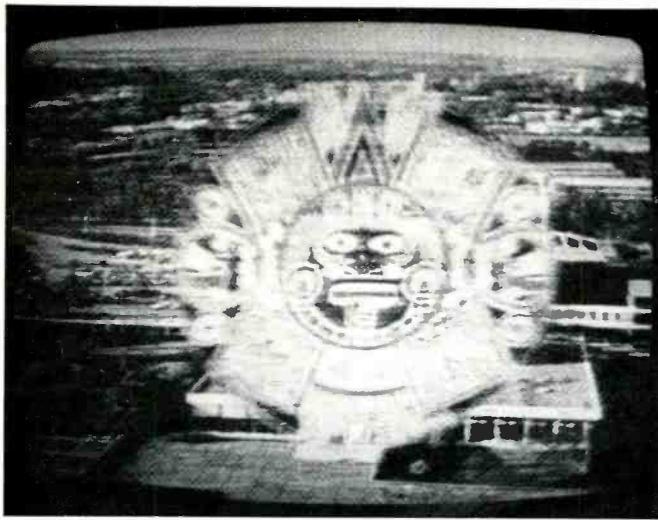
KOMO-TV, ABC-Seattle. (Scrambled).
CHCH-TV, Hamilton, Ontario. (Scrambled).
WDIV-TV, NBC-Detroit. (Scrambled).
TCTV, Quebec. (Scrambled).
CBC Parliamentary Network. (French Ed.).
CBC North. Pacific Time Zone. (English Ed.).
CITV, Edmonton, Alberta. (Scrambled).
WTVS-TV, PBS-Detroit. (Scrambled).
BCTV, Vancouver, British Columbia. (Scrambled).
WJBK-TV, CBS-Detroit. (Scrambled).
CBC Parliamentary Network. (English Ed.).
CBC North. Pacific Time Zone. (French Ed.).

109 degrees west longitude

Occasional news or sports feeds.
CBC North. Pacific Time Zone feeds.
Occasional news or sports feeds.
CBC North. French Language Edition.
Occasional news or sports feeds.
CBC North. Atlantic Time Zone feeds.

123 degrees west longitude

Financial News Network.
The University Network. Religious programs.
SELECTV. Premium movie service.
Occasional news and sports feeds.
Madison Square Garden Network (MSGN).
Regional sports and entertainment service.
Meadows Racing Report.
Bluemax Theater Channel. Adult program service.
Arts and Entertainment Network. Cultural entertainment programs.
Black Entertainment Network.
National Jewish Television (NJTV).
JPD Television Network. Family entertainment.



Reception of the Mexican spot beam lease on INTELSAT IV F1 can be obtained from just about any location within the continental United States.



This photo illustrates the quality of reception when viewing occasional news feed transmission from INTELSAT global beam transponders while using a 20 foot dish antenna.

- 9 VERT On TV West. Pay TV Service. (Scrambled).
- 11 VERT On TV East. Pay TV Service. (Scrambled).
- 13 VERT Entertainment Sports Program Network (ESPN).
- 18 HOR Country Music Television. Music videos. The Silent Network. Programs for the deaf.

SATCOM F3

131 degrees west longitude

- 1 VERT Nickelodeon. Children's programs. Arts and Entertainment. Cultural service.
- 2 HOR Praise The Lord Network. Religious programs.
- 3 VERT WGN-TV, Chicago Channel 9.
- 4 HOR The Movie Channel West.
- 5 VERT The Movie Channel East.
- 6 HOR WTBS, Atlanta, Georgia.
- 7 VERT Entertainment Sports Program Network.
- 8 HOR CBN Cable Network. Religious and family entertainment programming.
- 9 VERT USA Network. Ad-supported sports, music and entertainment network.
- 10 HOR Showtime West. Pay TV service.
- 11 VERT Music Television (MTV). Pop music videos.
- 12 HOR Showtime East. Pay TV service.
- 13 VERT Home Box Office West.
- 14 HOR Cable News Network (CNN).
- 15 VERT CNN Headline News.
- 16 HOR Home Theater Network (HTN). The Learning Channel. Video Concert Hall.
- 17 VERT Lifetime. Health Network.
- 18 HOR Reuters News and Financial Information Service. The Eternal Word Television Network (EWTN).
- 19 VERT C-SPAN. Congressional activities.
- 20 HOR Cinemax East. Pay TV service.
- 21 VERT The Weather Channel.
- 22 HOR USA Network. Regional feeds. Modern Satellite Network (MSN).
- 23 VERT Cinemax West. Pay TV service.
- 24 HOR Home Box Office East.

GALAXY I

134 degrees west longitude

- 2 VERT The Nashville Network.
- 4 VERT The Disney Channel West.

- 6 VERT Spanish International Network (SIN).
- 7 HOR Cable News Network (CNN).
- 8 VERT CNN Headline News.
- 9 HOR Entertainment Sports Program Network (ESPN).
- 11 HOR CBN Cable Network.
- 13 HOR C-SPAN. Congressional activities.
- 14 VERT The Movie Channel West. Pay movie service.
- 15 HOR WOR-TV New York.
- 19 HOR Cinemax East. Pay TV service.
- 20 VERT Galavision. Spanish language program service.
- 23 HOR Home Box Office East.
- 24 VERT The Disney Channel West.

SATCOM IR

139 degrees west longitude

- 12 HOR The Hospital Satellite Network.
- 13 VERT The NASA Contract Channel.
- 20 HOR The Armed Forces Radio and Television Service.
- 22 HOR Holiday Inn Video Network.

AURORA

143 degrees west longitude

- 18 HOR Occasional news and sports feeds.
- 19 VERT Learn/Alaska TV Project. Educational TV.
- 21 VERT Occasional news and sports feeds.
- 24 HOR Alaska Satellite TV Network. Program feeds to Alaska.

International Satellites (Pacific Ocean Region)

INTELSAT IVA F3 181 degrees west longitude

- 5 RHCP CNN, NBC, and CBS program feeds to Australia.
- 22 RHCP NHK-TV, Tokyo. Summer Olympic Coverage.
- 24 RHCP Occasional news and sports feeds.

INTELSAT IVA F6 185 degrees west longitude

- 22 RHCP Occasional news and sports feeds.
- 23 RHCP
- 24 RHCP

NEW AND EXCITING TELEPHONE TECHNOLOGY

New Cordless Channels Are Here



Cordless phones, like this new Fanon unit, will have less interference problems on the 46/49 MHz frequencies.

The Federal Communications Commission has given manufacturers the go-ahead to submit prototype cordless phones utilizing the new 46 MHz/49 MHz channel plan. The FCC adopted Report and Order in General Docket 83-325 (49FR1512, January 12, 1984) which establishes interim provisions for cordless telephones on new channels. The channels in Table 1 have been established by the FCC for the new cordless telephones.

New cordless telephones are allowed to go on the air this coming October 1st on these new frequencies. As you read this, manufacturers are busily submitting equipment to the FCC for approval. Each manufacturer will be requested to submit at least one cordless telephone for testing at the FCC Maryland laboratory.

New Channels Long Overdue

Although these new 10-channel pairs are classified as "interim" frequencies, they nonetheless will provide some much needed relief to frequency congestion on the present 5-channel pairs.

"The present channels are inadequate to meet the growing consumer demand for these devices," comments the FCC.

"The new frequencies are intended only to relieve overcrowding of cordless telephone channels while we contemplate permanent rules and some new permanent frequencies," states a Southern California FCC official.

The present five channels have one addi-

New Cordless Channels

Channel	Base Frequency	Handset Frequency
Channel 1	46.61 MHz	49.67 MHz
Channel 2	46.63 MHz	49.845 MHz
Channel 3	46.67 MHz	49.86 MHz
Channel 4	46.71 MHz	49.77 MHz
Channel 5	46.73 MHz	49.875 MHz
Channel 6	46.77 MHz	49.83 MHz
Channel 7	46.83 MHz	49.89 MHz
Channel 8	46.87 MHz	49.93 MHz
Channel 9	46.93 MHz	49.99 MHz
Channel 10	46.97 MHz	49.97 MHz

Table 1



Fanon was one of the first to announce cordless phones for the new frequencies.

tional problem besides simple overcrowding of frequency pairs. If you have used a cordless telephone, you are well aware that the major problem may not be overcrowding, but simply noisy reception of the base transponder. The present base units transmit near 1.625 MHz, just above the AM broadcast band. The base unit sends its transmitted signal down your house wiring or office wiring and uses these wires as an antenna system. This means that you pick up everything from humming dimmer switches to the buzzing of battery chargers. The constant buzz can sometimes completely cover-up a telephone conversation if you're more than a few feet away from the base transponder. The new cordless channels do not use the AC power lines for transmission of the signal—they will be heavenly quiet!

Another problem with the present five channels is the fact that the FCC may soon take over frequencies up to 1705 kHz and

reassign them to the AM broadcast band service. When that takes place (probably no sooner than 1990), present cordless telephones won't be able to pick up the telephone side of the conversation, but instead will only hear music!

New Channels, More Range

Since the new ten interim frequencies are well away from the AM broadcast band, there will be no need to transmit any signals on AC wiring. This will allow for substantially quieter conversations without annoying snaps, crackles, and buzzes. It will also allow for further transmission range because the base transponder will be able to transmit a signal further at 46 MHz than at 1.7 MHz.

I also envision manufacturers offering add-on external antennas (which may or may not be 100 percent legal) that will easily tie into the new base transponder unit. These external antennas, or a singular external 46/49 MHz antenna, may give up to three blocks of cordless telephone coverage. That certainly is better than the feeble coverage we presently receive on the older 1.7/49 MHz sets.

The new frequencies at 46/49 MHz are borrowed from a pool of channels assigned to the Army, Navy, and Air Force. There is little chance of interference from these services, and sky-wave propagation of 46/49 MHz signals at the small power output levels is quite remote except for intense summertime sporadic E openings. My, won't it be exciting to access someone else's telephone set-up a thousand miles away!

This summer expect a huge dumping of present 1.7 MHz/49 MHz cordless telephone set-ups. Manufacturers will be quick to get out from under these sets and go to the newer models. Although we are still several months away from the October 1st start-up date on the new frequencies, we already see advertisements of the new cordless telephone sets.

Fanon/Courier is announcing three new additions to its cordless telephone line which will all operate on the new 46/49 MHz frequencies (Model FCT-246, FCT-266, and FCT-346). They claim that their new frequency system will operate to a maximum range of 1,500 feet. I imagine that an external antenna will probably increase the range slightly further—but again, external antennas may bend or dent the FCC rules. Nonetheless, they will still be sold.

Since the new channels will allow cordless sets to talk and receive further, manufacturers are coming up with new schemes to keep unauthorized users from using your base transponder unit.

"Our Fanon units use a Silent Sentry integrated circuit which provides security against unauthorized use and eliminates interference and false ringing," comments Murray Trotiner, Fanon/Courier. "We also use selectable guard tone frequencies or an exclusive 'continuous monitor digital security' system that adds additional protection from unauthorized callers," adds Trotiner.

Slightly Higher Prices

It's anticipated that the new frequency sets will carry slightly higher price tags than the present cordless sets—especially if the present cordless sets get dumped. Expect that new pricing to range between \$150 and \$200 for some of the new frequency sets.

Also, don't be surprised to hear sellers of the present 5-channel cordless sets pooh-poohing the newer models. They do this out of self-protection—they need to sell their present inventory to make way for the new sets. Until manufacturers, dealers, and distributors unload their present cordless phone sets, few will be tempted to speak highly of the new frequencies until their present inventory is sold out.

Buy Now Or Wait?

If you are looking for a terrific bargain on the present five channels, buy now and get on the air with a cordless phone at a cheap, dump price. But, don't expect crystal clear conversations, and do expect to hear clicks and humming.

However, if you want the ultimate range, a clear frequency, and you don't mind waiting until October, hold out and get one of the new frequency sets. Just make sure that you're buying a set that indicates 46 MHz/49 MHz frequencies.

Will the new frequencies be interference-free? Not necessarily. While there may be little to disturb their operation at 46 MHz, five of the new ten channels are the same frequencies used by the older sets at 49 MHz.

You may wish to avoid the following handset frequencies when picking out a new cordless telephone setup:

- 49.83 MHz
- 49.845 MHz
- 49.86 MHz
- 49.875 MHz
- 49.89 MHz

These five channels are shared with toy walkie-talkies, older cordless telephones, and the popular 49 MHz vox and full duplex communicators.

The following five channels for handset operation might be good choices when selecting one of the newer cordless telephone setups:

- 49.67 MHz
- 49.77 MHz
- 49.93 MHz
- 49.99 MHz
- 49.97 MHz

These five channels are not shared with presently authorized low-power devices,

and they should be interference-free. Check the actual channel numbers with these frequencies in Table 1 to assist you in picking up a new cordless phone on somewhat exclusive frequencies not allocated to Part 15 low-powered devices.

The cordless telephone is indeed a marvelous, time-saving device. New frequencies will lead to quieter operation and less chance of local neighborhood interference. Wait for the new sets at a slightly higher price tag if you have the time. I think the new sets may be just the answer to your present interference problems. October 1st is the magic date for those new channels to go on the air.

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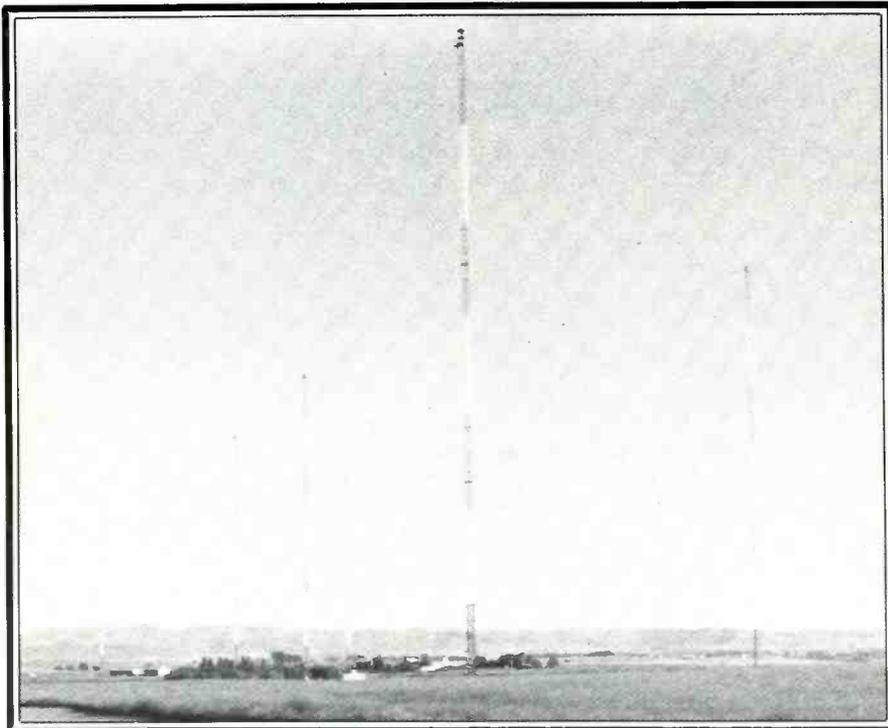
MON-FRI 9AM-6PM
SAT 9AM-3PM

Please send all reader inquiries directly.

All The Time In The World

**Exact Time—One Of Life's Greatest
Free Gifts! Tune It In!**

BY BILL TANAKA, KAZ7KG



Some of the antennas used for low frequency transmissions by the National Bureau of Standards. (Photo by Patrick M. Griffith)

Time is a funny thing. It's everywhere, but it doesn't take up any space. It can be measured, but it can't be seen, touched, smelled, gotten rid of, or put in a container. We can spend it, save it, waste it, kill it, and have it on our hands, but we can't destroy it or even change it and there's never any more or less of it. The fact is that everyone knows what it is and uses it every day but nobody has really ever been able to define it. Most of us tend to take it for granted, but it's helpful to have a reasonably good handle on it if you've got to put another nickel in a parking meter or if you're waiting to make a phone call when the long distance phone rates drop. For most of us, an error by just a minute or two in either direction isn't going to cause any major problems, but for others, time—with exacting and nit-picky accuracy—is an absolute *must-have*.

Among the must-haves are, for instance, persons using celestial navigation, power

companies, radio/TV broadcasters, the medical profession, railroads and airlines, the computer industry, law enforcement agencies, surveyors, the communications industry, musicians, manufacturers, clock-makers, astronomers, geophysicists/seismologists, the aerospace industry, the military, and scientists of all kinds. There are others, too. A time error of one second is far more than these people can tolerate. These people turn to various governments for an accurate standard by which to measure time and, in turn, frequency.

With accurate time, vessels arrive at their destination, an error of only 3 microseconds in a sophisticated electronic navigational system could have resulted in an error of more than a half-mile! Power companies can send out AC at exactly 60 Hz, TV programs begin and end on time and are sent out on the proper frequencies, piano tuners know how to locate the right notes, astrono-

mers can pinpoint their telescopes on the proper coordinates, satellites can be tracked properly, and all is right with the world.

In the United States, accurate time standards are maintained by the Naval Observatory and also by the National Bureau of Standards (NBS). The NBS standard is accurate to within one part in 100-billion (1×10^{-11}) at all times and deviations are normally less than one part in 1,000-billion (1×10^{-12}) from day to day.

The NBS shares this information with the general public in several ways, including landline (telephone), shortwave and long-wave radio, and even by UHF from satellites. The two primary radio sources in the continental United States are NBS radio stations WWV and WWVB in Boulder, Colorado. WWV operates on 2,500, 5,000, 10,000, 15,000, and 20,000 MHz. Transmissions are continuous. Station WWVB, also in Colorado, operates continuously on 60 kHz. Since the effects of the propagation medium on received signals are relatively minor at low frequencies, the changes in the signal (which can result in fluctuations in the shortwave carrier frequencies) may result in the user discovering WWVB's signals to be more precise.

The NBS runs station WWVH Kauai, Hawaii, which operates continuously on 2,500, 5,000, 10,000, and 15,000 MHz.

The large number of frequencies spread out across the radio spectrum makes the signals available throughout the entire nation at any time of the day. Indeed, the NBS signals are monitored and used practically throughout the world. Frequencies above 10 MHz offer the best daytime reception while lower frequencies are best at night. An experimental transmitter (WWVL) on 20 kHz operates on occasion.

The services provided by the NBS stations include: time announcements, standard time intervals, standard frequencies, geophysical alerts, marine storm warnings, Omega Navigational System status reports, time corrections and time code.

NBS time signals can also be rung-up on the telephone by calling (303) 499-7111; in Hawaii, call (808) 335-4363.

Accurate time via satellite is also another service offered by NBS. This service was first begun experimentally in 1971 on 135.625 MHz and today it is provided by means of the GOES satellite. The Western satellite operates on 468.825 MHz from a location of 135° West; the Eastern satellite is on 469.8375 MHz from 75° West.

WWV/WWVH Services Offered

WWV/WWVH voice announcements of times are given once per minute. To avoid confusion, a male voice is used on WWV and a female voice on WWVH. The WWVH announcement is at 15 seconds before the minute, the WWV at 7.5 seconds before the minute. The time referred to in the announcements is Coordinated Universal Time (UTC); this is the same as GMT, and (like GMT) stated in a 24-hour clock format.



Located about 60 miles north of Denver, Station WWV sends its signal to listeners throughout the world who rely upon its accuracy. (Photo by Patrick M. Griffith).

An audio pulse (5 Hz or 1 kHz on WWV and 6 Hz or 12 Hz on WWVH) resembling the ticking of a clock occurs each second of the minute and, except for the 29th and 59th seconds, is transmitted. A .8 second pulse marks the beginning of each minute and a .8 second pulse of 1500 Hz marks each hour.

In alternate minutes during most of each hour, 500 or 600 Hz audio tones are broadcast. A 440 Hz tone (equivalent to the musical note of A above middle C) is broadcast once each hour near the beginning of each hour.

DX listeners should be especially interested in the radio propagation forecasts given in voice at 14 minutes past the hour from WWV (only). These are short-term forecasts along North Atlantic paths that come with a description of current geomagnetic activity, K-index values (a measure of the earth's magnetic field) and solar flux data (a measure of the overall level of solar activity). The forecasts are given as a phonetic and a numeral—the phonetic identifies the radio propagation quality at broadcast time while the numeral is for the next six hours.

Here are the phonetics used:

Whiskey = Disturbed
Uniform = Unsettled
November = Normal

The numerals used are:

1 = Useless
2 = Very poor
3 = Poor
4 = Poor-to-fair
5 = Fair
6 = Fair-to-good
7 = Good
8 = Very Good
9 = Excellent

The K-index is a measure of variation (disturbance) in the earth's magnetic field just prior to the WWV/WWVH announcement. The K-figures range from 0 (very quiet) to 9 (very disturbed). The solar flux measurements are taken at 2.800 MHz and the values are closely related to the daily sunspot number and are a measure of solar activity.

Geophysical alerts are transmitted at 18 minutes past the hour (WWV) and 45 minutes past (WWVH) and list outstanding events in progress, plus a summary of events for the previous 24-hour period.

North Atlantic storm warnings are sent over WWV at 8, 9, and 10 minutes after the hour and for the North Pacific over WWVH at 48, 49, and 50 minutes past the hour.

The UTC time correction information provided is intended for those who require ultra-accurate time data. It informs the listener of minute variations in the rotation rate of the earth which could affect the accuracy of the time signals. Information is provided by double "ticks" during certain portions of the broadcast minute. Since this complex data is not required by most persons, I have not attempted to explain it here.

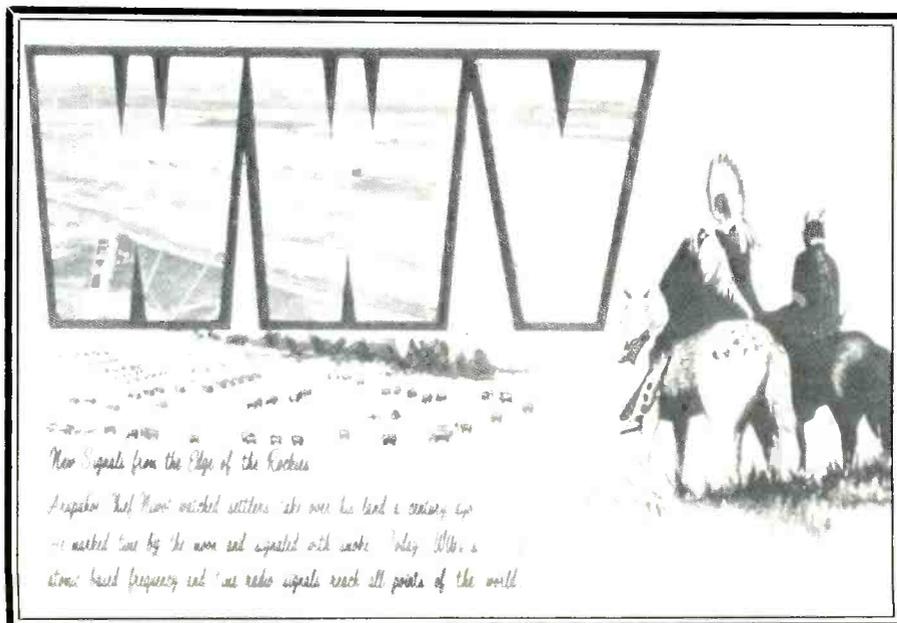
A binary-coded-decimal time code occurs continuously on a 100 Hz-subcarrier. The format is 1-pulse per second with a 1-minute time frame. It gives UTC date, hours, and minutes data along with some additional information.

Omega Navigation System announcements are at 16 minutes (WWV) and 45 minutes (WWVH) after the hour. This provides Omega users with information relating to any events which modify the status and accuracy of the Omega system.

This is a brief summary of the standard time/frequency services provided by the NBS. More detailed information is contained in the following NBS publication available from the Supt. of Documents, U.S. Government Printing Office, Washington, DC 20402.: NBS Publication 432 *NBS Time & Frequency Dissemination Services*.

The following additional publication may also be available directly from the NBS, 2000 East County Rd. 58, Ft. Collins, CO 80524: Publication #TFS-601 *NBS Time & Frequency Broadcast Services* and Publication #TFS-602 *NBS Time Via Satellites*.

WWV and WWVH also send out QSL cards verifying reception reports sent in by listeners. The WWV address in Ft. Collins, Colorado is shown above. The address for WWVH is P.O. Box 417, Kekaha, Kauai, HI 96752.



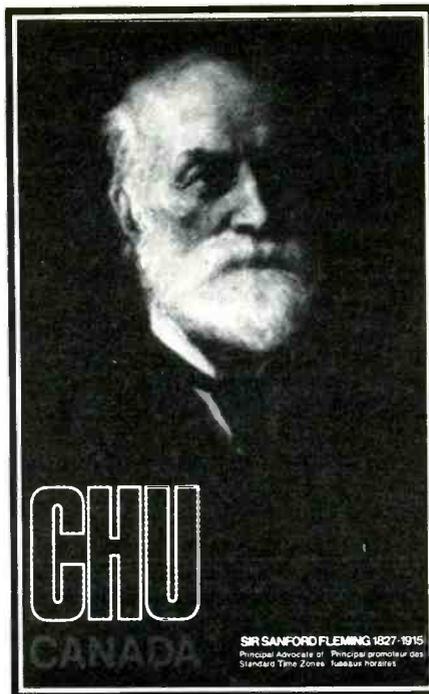
Each WWV QSL card carries an individual serial number.

Station CHU

The Canadian Government, via the National Research Council (NRC) in Ottawa, Ontario, provides high-accuracy standard time and frequency signals on three frequencies. Station CHU was established 55 years ago by the Dominion Observatory with frequencies near the 80, 40, and 20 meter ham bands. As time has proven, the use of the three particular frequencies selected has been fortunate since they do not conflict with WWV/WWVH or any of the several other standard time/frequency stations also on WWV/WWVH frequencies. The NRC points out that at times these stations interfere with one another while CHU remains in the clear on its own unique frequencies of 3.330, 7.335, and 14.670 kHz.

In 1970, the time service was transferred from the Dominion Observatory to the National Research Council. The NRC's cesium clock has a probable accuracy of 5×10^{-14} . In addition to their broadcast services, Canada's NRC also has telephone announcements of exact time. These are available by calling (613) 745-1576 for English and (613) 745-9426 for announcements in French. Long distance telephone rates are charged for calls outside of the Ottawa area.

In the sequence of CHU's radio transmissions, the first minute of each hour commences with a 1-second pulse of 1 kHz, followed by 9 seconds of silence, then a normal pattern of .3 second pulses of 1 kHz at 1-second intervals ("pips"). The normal pattern



CHU in Canada offers this QSL card.

for all succeeding minutes consists of a half-second 1 kHz pulse, followed by a special ("DUT1") code employing .3 second pulses where required. The pulse at 29 seconds is omitted. Following the pulse at 30 seconds, shorter .01-second pulses occur for 9 seconds, and an FSK time code is sent. The FSK is the standard 300 baud system with

frequencies of 2025 and 2225 Hz. The code is a modified ASCII. The pulses between 40 and 50 seconds are normal in length, and the final 10-second period of each minute contains a bilingual station announcement plus the time stated in Eastern Standard Time.

CHU provides very colorful and attractive QSL cards to listeners who send the station reception reports. The address is: Radio Station CHU, Ottawa, Ontario, Canada K1A 0S1.

Further information and details of the Canadian NRC standard time and frequency service are provided in the following NRC publications:

Canada's Time Service by A.G. Mungall.
Standard Time, Daylight Time, Times of Sunrise And Sunset by A.G. Mungall.

Cesium Atomic Clocks by A.G. Mungall.
Canada's Atomic Standards of Time And Frequency by A.G. Mungall.

For additional information, write to the National Research Council, Ottawa, Ontario, Canada K1A 0R6.

WWV/WWVH and CHU, the North American time/frequency standard stations have become useful long-term fixtures on the radio bands. WWV first took to the air in 1923, providing super-accurate reference signals and other vital information. At the very least, these stations will keep your communications operations established on accurate time schedules, and the propagation reports/forecasts offered by WWV are most useful to DXers. **PC**

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PIRATES DEN

BY DARREN LENO, WDØEWJ

FOCUS ON FREE RADIO BROADCASTING

An interesting "Public Notice" has been appearing on telephone poles, newspaper boxes, and almost everywhere else in the Philadelphia downtown area. Mr. G. Primavera sent us a copy of one of these bizarre notices, and it goes as follows:

"Public Notice"

"Arnold Toynbee's conception of the colonization of outer space as depicted in the movie *2001: A Space Odyssey* on the ability of science to bring every dead molecule of every human body in history back to life on the gigantic planet of Jupiter.

We beg the people of this community to accept us as we have been denied acceptance by media and press.

Please write us at PO Box 42678, Phila, Pa, 19101 and TUNE 6.25 MHz (48 meters) SW Saturday nights at midnight."

Mr. Primavera has stated he has been listening for this station on their advertised frequency at the specified time, but so far nothing unusual has been heard.

Letters From Pirates

Not long ago, I received a letter from Ron of WDAB, Daytona Beach radio. He wrote after receiving a past copy of *POP'COMM* which had a reproduction of WDAB's QSL and a short history of this pirate's activities. His letter follows:

"Dear Darren. This is to inform you of WDAB's intention of returning to the air!

Proof of who I am . . . Enclosed is a copy of your original verification request to WDAB in 1979. We never were able to get our signal beyond Minnesota, so you still hold the all time (reception) record. (ED—enclosed was a xerox copy of my 5-year-old reception report.)

It's been 4 years since WDAB's last transmissions, and you writers are to be commended for keeping the memories flowing. Speaking of memories, WDAB was the third pirate I've had the pleasure of building. My first was in 1967. Does anyone remember a WAKE in Houston, Pa? We ran 50 watts on 1610 kHz for a couple of years, but never dreamed such a small amount of power could ever carry very far. Consequently, we never put an address on the air for reception reports. Makes me wonder how many discouraged listeners there might have been, just waiting for somewhere to write.

My second pirate station was on FM, also in Houston, Pa, around 1972. Its call letters were WABE. We made the move to FM a couple of years after we were scared off the air on AM by a nearby commercial station who said the FCC was looking for a station with our call letters. WABE lasted another couple years until its operators went their separate ways—yours truly moving to Florida and establishing WDAB. To put all rumors to rest, none of my pirates, including WDAB, were ever "caught" by an on-the-air raid.

Be watching for the return of WDAB, complete with those original call letters, our original "oldies" format, at least one of the original jocks, and a very suitable transmitter. I can't guarantee

Initial Researches

Radio Alchemy



1/1/84 0400TC
1631.5 KHz. AM

Philosophers:
JALANDRIS
LAPIDUS

Hidden deep in the heart of things,
Thou carest for growth and life.
The seed becomes shoot, the bud a blossom,
the flower becomes fruit.
Tired I slept on my idle bed
in the illusion that the work had an end.
In the morning I awoke to find
That my garden was full of flowers.
Rabindranath Tagore

Thank you!

Miracles are not contrary to nature,
but only contrary to what we know about nature.
St. Augustine, A.D. 353

you the time, date, or frequency when we return, but I can guarantee this—there's something cooking in Daytona.

Signed, Big Ron"

I was also pleased to have heard from two more pirate stations shortly after I received WDAB's letter.

"Dear Darren,

Greetings from the staff of Radio Liberation. We are a new pirate station that will be on the air once or twice a month, from 0200 to 0500 GMT. Our format will include alternative newscasts, talk, and an international community bulletin board as well.

Musically, Radio Liberation will air Folk, Reggae, and sixties Rock 'n' Roll on 3885 or 3880 kHz. Our coverage area will include New England and New York state, or wherever the airwaves take us. Finally, we encourage old and new pirate stations to start using 75 meters

AM—it's wide open and there's plenty of room for other pirates.

Good listening, and keep your ears tuned to 75 meters for Radio Liberation—the station of alternative culture in Amerika.

Signed,
staff & management of Radio Liberation."

For those readers who may have been wondering, this is, I am quite sure, not the same Radio Liberation that was closed by the FCC several years ago.

This next letter surprised me, not because of what it said, but because of where it's from—Bismarck, North Dakota. Bismarck is a very nice town, and I have several relatives up there. However, the wide open prairies of North Dakota are probably the last place I would expect to hear an FM pirate. I guess it just proves that one never

knows when or where these stations will show up, and should definitely keep his or her receiver tuned attentively.

"Dear Darren,

I just thought I'd write and let you know that the UNIT 882 has been operating in stereo on 100.00 MHz FM in the Bismarck, ND area for about 13 months now. Our power output is 2 watts into stacked horizontal turnstyles.

The Pirate UNIT 882 specializes in continuous uninterrupted adult contemporary music, with the exception of the station ID. We have had a lot of favorable comments on the station's programming.

The UNIT 882 is planning to file for a class D educational license in the following months, but until then we will continue to broadcast at random times.

Signed, Pirate UNIT 882 management."

Pirate Loggings

Reader Ken Rohrer of Indiana heard a station indentifying itself as the Voice of Communism on 3885 kHz at 0325 GMT. The station was playing a parody of Radio Moscow. A news report stated that Siberia never got colder than 60 degrees F, and no warmer than 70 F, that wives were boiled alive in the U.S. when they refused to stay in the kitchen, and an American was heard to say he loved Moscow as a beating was staged in the background. The station was also offering one-way tickets to the Soviet Union.

Gary Hickerson of Arkansas pulled in KPRC one evening on both 6240 kHz SW and 1616 kHz MW. The MW frequency was

WDX

PIRATE RADIO 1620 AM

QSL CONFIRMING RECEPTION OF WDX AT 1620 kHz ON ~~FM~~ AT 6MT BY DARREN LEAD

DURING WDX'S SECOND TALL-TOWER BROADCAST

THANKS YOU FOR YOUR CONTINUED SUPPORT OF PIRATE RADIO EVERYWHERE. WDX WELCOMES COMMENTS AND SUGGESTIONS CONCERNING OUR TECHNICAL QUALITY AND PROGRAMMING, AS WELL AS QUESTIONS OF MEMBERSHIP AND OPERATIONS OF THE FUBAR ORGANIZATION. WE ALSO WELCOME REQUESTS FOR CIRCUITS OR TECHNICAL ASSISTANCE.

73's
Grates Mike Christian & Jack Slater

THE BEST IN THE WORLD



FUBAR CHARTER MEMBER

WDX OPERATES a homemade crystal oscillator and a low power (1) transmitter into an assortie array of antennas.

WDX'S ADDRESS has been changed to WDX RADIO % ACE MAGAZINE P.O. BOX 452 MOORHEAD, MN 56560

HOWRU?

PIRATE RADIO

HIGH FIDELITY

1620 KHZ

THE TALL TOWER PIRATE

WDX THANKS:

- FCC Dept. of Law Enforcement
- Pirate Vanguards
- ACE Magazine
- 1/4 wave vertical technology

Listeners will receive this QSL from WDX for a correct reception report. Send your report to PO Box 245, Moorhead, MN 56560.

an excellent catch, considering Gary is 1,400 miles from New York City.

Vic Janflone of Pennsylvania also heard KPRC from 0430 to 0710 GMT on all three frequencies: 6240 kHz SW, 1616 kHz MW, and 91.5 MHz on FM.

Remember, KPRC QSLs reception reports sent to PO Box 747, Exeter, NH 03833. Be sure to include at least three First Class stamps when writing any pirate.

KQRP was logged by John White of

Pennsylvania on 17950 kHz after 1945 GMT. The station claimed to be running between 10 and 20 watts.

Robert Brossell of Wisconsin also heard KQRP, but on 9935 kHz after 2100 GMT. Between the popular music songs, Robert caught this ID, "This is your announcer Mr. Rick, playing your favorites on KQRP, flea power pirate DX for North America." Philip Evans of New York also heard the same broadcast, and asks if we could print the sta-

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tion's address. Here you go, Phil. Reports for KQRP can be sent with return postage to PO Box 982, Battle Creek, MI 49016.

WDX, the tall tower pirate, made a series of transmissions earlier this year on 1620 kHz after 0400 GMT. Pirate Mike and Pirate Clark, the station's two personalities, delighted listeners with their "Friday Night Party" telephone call-in show, and according to Bill Martin of Delaware, many people seized the opportunity to participate. A*C*E reports that WDX has said they are planning to increase their activity in the future. If this is the case, perhaps you will have the chance to hear this fun loving station.

New Wave Radio Int'l is still playing those new music hits, according to Ted Gurley of Texas. Ted tuned in to this station on 7399 kHz from 0637 to 0001 GMT. Power was announced as 1100 watts. The announcer stated that verifications would be attempted for A*C*E members through the club's monthly bulletin, *THE ACE*. However, A*C*E has been printing loggings for all of those who have written to the station, including non-members. The musical format was dominated by groups like Berlin, Devo, Prince, The Police, Romantics, Fixx, etc.

New Pirates

Radio Alchemy was heard earlier this year on 1631 kHz between 0400 and 0610 GMT, and they took phone calls from listeners and even broadcast a portion of a documentary of Radio Haraki, a New Zealand offshore pirate that was dashed against rocks quite some time ago.

Station KNRD was heard on 7401 kHz USB from 0434 to 0532 GMT by Artie Bigley of Texas. An ID was heard as "KNRD, Wausau, WI. FM 88.1 and sideband." I would be interested in hearing from anyone in the Wausau area who may be able to confirm the FM frequency.

Radio Bag has been heard on 3465 kHz from 0600 to 0630 GMT by Grant Lochmiller of Iowa, and on 7420 kHz until 0700 by Mike Pollock of New York. The station announced that you could get a "QSL Bag" by writing them at PO Box 40554, Washington, DC 20016. Programming contained a great deal of satire and otherwise humorous remarks.

Resurrections

Rebel Music Radio, a New York area based pirate that had not been heard in quite some time, made a return to the air earlier this year on 1616 kHz after 0500 GMT.

The Voice of the Pyramids, given up for dead long ago, surprised many of us by returning to the air on 6230 kHz after 0600. Fred Roberts of Ohio heard the VOP playing heavy metal music and claiming 100 watts of power.

Radio VPR, a pirate that was active and last heard at least five years ago, has suddenly surfaced and will verify old reception reports, according to Scott McClellan. If you heard this station, send your report along with three First Class stamps to PO Box 982, Battle Creek, MI 49016.

Europe

Don Tomkinson is stationed with the U.S. armed services in Europe, and has been actively listening to the Free Radio stations on that side of the Atlantic. Here's what he has heard:

Radio Atlanta, Box 319 Edenbridge, Kent, 6240 kHz, 1000-1355 GMT. Were celebrating their 5th anniversary, and also had some German programming.

Radio Kryton, 134 Heastworth Road, Chertsey, Surrey, KT316 HDT, 6265 kHz, simulcasting with 7318 kHz. Heard after 1200 GMT.

Spectrum World Broadcasting, 6270 kHz, heard from 1000-1100 GMT. Broadcasting from England, but no specific location given.

Radio Westside, Ireland, 6280 kHz, 1030-1200 GMT.

Radio Dublin, Ireland, 6280 kHz, 1200-1315 GMT.

Radio Holland started transmissions by 1000 GMT but faded or off by 1130 GMT on 7315 kHz.

Radio Krypton, 7318 kHz, had a three second delay behind their parallel frequency of 6265 kHz, which suggests taped programs being relayed at separate sights.

Don says, "All these stations had very good audio, and played rock music. These broadcasters are definitely "alternative radio" here in the UK. I also listen to Radio Caroline on 963 kHz."

Radio Freedom Int'l generally broadcasts on the first and third Sundays of every month from 0900 to 1200 GMT on 6230 kHz. They also use 15040 kHz and it has been logged by several DXers in the United States. Terry Krueger of Florida heard RFI on this frequency after 1100 GMT and obtained a QSL card by sending a reception report to Radio Freedom Int'l, Dept. R, 67 Elms Row, Edinburgh, Scotland EH7 AAQ.

Laser 730

Fred Vobbe of Michigan says that a new pirate ship left Fort Lauderdale, Florida, late last year, and by now should be anchored alongside Radio Caroline off the British Coast.

Laser 730 is backed by American investors, and will feature only U.S. radio personalities keen to make an impression on the European market.

Its music will be CHR (Contemporary Hit Radio), also known as Top 40. Rumors of the venture had been circulating in the British radio biz for at least six months before the station arrived, but everyone has been taking it with a grain of salt.

The mast of Laser 730 is 354 feet high, and the station hopes to achieve an effective radiated power of 100,000 watts!

In related news, Radio Caroline, after its recent battle with student broadcasters over their joint occupation of 963 kHz, has offered to send engineers to help student stations switch to a different frequency. The frequency 963 kHz in England is much the

same as the 88.1-91.9 MHz band in the United States.

In Conclusion

Some of you may remember the suggestion I made that people interested in running a pirate radio station should first look into FCC Part 15 license free broadcasting (March, 1984 issue). Shortly afterward I was contacted by Mr. Arnold Timm, who runs a club that specializes in just this topic. HARK is an organization dedicated to FCC Part 15 subpart D broadcasting, and publishes information on companies that produce this type of equipment and more. Please write Arnold and send him an SASE for more information on this interesting club. Arnold Timm, Dept. PC, 2308 Garfield Ave, #304, Minneapolis, MN 55405.

Readers who are interested in obtaining the most useful and up-to-date information available on Pirate, Clandestine, and Spy-Numbers transmissions should contact the Association of Clandestine radio Enthusiasts. A*C*E publishes a bulletin each month that would probably be of great interest and use to you. Please send a large SASE for more information, or \$1.00 for a sample bulletin to: A*C*E, Dept. PC 6, PO Box 452, Moorhead, MN 56560.

And that's going to wrap it up for this month. Many thanks to all the readers who have been contributing information to this column. It's always nice to see some new names in among the "veteran" DXers who contribute faithfully. Mail to this column has increased substantially over the months, and I'd just like to say, "Keep it coming!" My address for contributions, QSL reproductions, photos, complaints, suggestions, etc., is The Pirates Den, c/o Popular Communications magazine, 76 North Broadway, Hicksville, NY 11801. See you next month.

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CIRCLE 80 ON READER SERVICE CARD

RADAR REFLECTIONS

RADAR DETECTORS AND THEIR USE

BY JANICE LEE

Wisconsin Woman Loses Speeding Appeal

An Ixonia woman, who, among other things, tried to prove that her speeding ticket was a result of a quota system by the State Patrol, was convicted recently of driving 74 mph in a 55 mph zone.

Carol J. Neumann was stopped by Trooper Thomas Machovich after he clocked her with VASCAR going 74 mph. Machovich testified that Neumann at first would not show him her driver's license. When she did, she only held it against the glass of the car door and refused to take it out of her wallet and give it to Machovich. Machovich said he tried for nearly an hour to get Neumann to sign the ticket. He was at the point of having another trooper break into Neumann's car and arrest her when she finally signed.

Neumann, who acted as her own attorney, said she had never been arrested in 28 years of driving and feared for her life when she thought her car was going to be broken into and she would be taken and arrested.

She tried to get into evidence a newspaper article that said the State Patrol had a quota system that forced troopers to write a certain number of tickets. Reserve Judge Charles Larson did not allow the article as part of the evidence but did allow Neumann to ask Machovich about the quota system.

Machovich said the patrol had a "measurable standard of activity" that it used in evaluating troopers, part of which was the number of contacts the troopers had with drivers.

Neumann, who said she would appeal her conviction, was fined \$54.80.

Ludowici, GA Loses Appeal To Use Radar

Ludowici, Georgia recently lost its first attempt to get back the city's radar guns.

The state Department of Public Safety recently announced it had turned down the South Georgia city's administrative appeal of a December 1st decision revoking Ludowici's license to use radar guns in traffic law enforcement.

The decision to affirm the revocation was made by Public Safety Commissioner Hugh Hardison.

Hardison and a State Patrol officer who investigated complaints about traffic enforcement in the Long County city heard the city's appeal of the revocation notice at a December 8 hearing in Atlanta.

Ludowici now can appeal the matter directly to the Public Safety Board, which is headed by Gov. Joe Frank Harris. Ludowici City Attorney Richard Phillips, who has



served as spokesman for the town, was unavailable for comment on whether the town will pursue further appeals.

If it stands, the revocation would be the first issued by the Department of Public Safety in recent memory, spokesman Bill Wilson said. Previously, a 90-day suspension of the town of Bogart's radar license was the harshest penalty meted out by the department for misuse of speed guns, he said.

Wilson said the revocation will last at least until May 1, when Ludowici may apply for reinstatement of the license.

The State Patrol investigation of complaints about Ludowici showed that the town's four-man police force was not qualified to use radar guns, and had not maintained the instruments properly.

It also showed a drastic increase in traffic bond revenues during 1983 and individual traffic bonds that were unusually high.

The radar license revocation was not the town's first run-in with state officials over traffic enforcement. In the '50s, '60s, and early '70s, Ludowici was known nationwide as a speed trap preying on Florida-bound

tourists who passed through the town before the completion of Interstate 95.

Judges Hand Down Ruling On Speeding

Three Lycoming County (PA) judges have ruled that police must clock drivers at least an eighth of a mile before making a speeding arrest if they use a stopwatch.

The judges (Thomas C. Raup, Clinton W. Smith, and Robert J. Wollet) said there was more chance of human error in measuring the speed of drivers over short distances. They also said the 1959 state vehicle code set the eighth mile limit, although there was no mention of it when the code was revised in 1976.

Two judges also ruled that, because of the distance requirement, two police officers must be involved in any speed check using a stopwatch.

In a separate statement, Judge Wollet added that he thought the eighth-mile requirement should include other speed detecting devices.

WASHINGTON PULSE

FCC ACTIONS AFFECTING COMMUNICATIONS

Proposal To Allow Coast Guard To Share Frequencies Not Adopted

The Commission determined that its proposal to allow the U.S. Coast Guard to use the frequencies 161.7 and 161.75 MHz on a shared basis with broadcast auxiliary remote pickup unit (RPU) stations should not be adopted.

The sharing arrangement was proposed in a rulemaking notice released May 16, 1983. At that time the Commission noted that the RPU frequencies were used by key stations in the Emergency Broadcast System (EBS) and requested comments on the compatibility of shared use with the proposed Coast Guard operation. The Commission said, however, that shared use appeared possible because of the low number of RPU users in the areas of Coast Guard transmission, the transmitter powers used, and the temporary nature of the use by the Coast Guard.

Almost all parties commenting opposed the sharing arrangements, citing difficulties of coordinating the use of the frequencies with the Coast Guard and questioned the compatible use of the same band by EBS and the Coast Guard. The Federal Emergency Management Agency opposed the shared use and stated it did not believe that two different emergency operation systems could be made compatible.

The Commission concluded that the shared use would be impractical because of the mobile nature of the services, the unpredictable nature of the broadcasts which precludes pinpointing events in real time, the difficulty of maintaining a data base of information regarding unpredictably occurring events and the infeasibility of frequency sharing by two emergency services.

In addition, the Commission noted, the Coast Guard has other means available to meet its communications requirements.

FCC Proposes To Ease Watch Requirements For Radiotelegraph Officers

The Commission is seeking comments on its proposal to allow merchant ship radio officers to perform maintenance and repair duties of electronic equipment while keeping an uninterrupted watch on 500 kHz.

Current rules require that the radiotelegraph officer on all ship stations using radiotelegraph on frequencies between 405 and 535 kHz keep watch on the international distress frequency, 500 kHz, during the ship's hours of service. Additionally, they must keep a silent watch, twice each hour, for three-minute periods known as the "silence periods."

At the request of U.S. Department of Transportation's Maritime Administration, the Commission proposed to allow the radio officer to perform maintenance and repair duties at the request of the master, at locations away from the station's main transmitter, provided he keeps a listening watch by suitable means, such as headphones, loudspeaker(s) or a portable receiver, except during the "silence periods."

Elimination Of Restrictions In PLMRS Proposed

On its own motion, the Commission is seeking comments on its proposal to eliminate the present restrictions regarding permissible communications in the Private Land Mobile Radio Services (PLMRS).

The PLMRS comprise the largest group of licensed radio users regulated by the Commission. Licenses are grouped into five main services according to their business or governmental activities: Public Safety Radio Services, Special Emergency Radio Service, Industrial Radio Services, Land Transportation Radio Services, and Radiolocation Service.

Under the current rules, licensees in these services are required to restrict their communications to matters directly related to their official or business activities.

The FCC said it believed the proposal is consistent with new statutory guidelines which require the Commission to reduce the regulatory burden on spectrum users, encourage competition and provide services to the largest feasible number of users, and increase interservice sharing between the private and other services.

Once they have met the basic eligibility requirements in a particular radio service, the FCC proposed to allow licensees to determine the proper mix of business and non-business communications. The only restriction would be that communications which were not directly business related could not interfere with the effective use of the frequencies by other co-channel licensees for their business purposes.

This proposal does not alter the present prohibition on transmitting program material for use in broadcasting or on rendering a communications common carrier service in the Private Radio Services.

CB User Forfeits \$1000

The Norfolk Office of the Federal Communications Commission recently collected a \$1000 forfeiture from Mr. R.G. Church of Richmond, Virginia. Church was assessed the \$1000 after an investigation by Norfolk FCC engineers revealed that he was operating on a frequency outside of the authorized Citizens Band channels. Such operation is

contrary to FCC rules and Regulations and constitutes operating an unlicensed station.

The new CB "blanket license" authorized operation in accordance with FCC Rules. However, an operator is considered unlicensed when operating with a modified or non-type accepted CB set, when operating with excessive power, when operating "out-of-band", or when causing interference to a third party while using excessive power. Forfeitures for these violations were increased dramatically when individual licenses were eliminated.

According to J.J. Freeman, Engineer in Charge of the Norfolk Office, FCC engineers will continue to pursue violators and inspect illegal stations in the Citizens Band Radio Service as well as other services for which the agency is responsible.

For further information contact: FCC Engineer in Charge J.J. Freeman, 870 N. Military Highway, Norfolk, VA 23502.

Grant Partial Stay Of Rules For Garage Door Openers

The FCC granted a partial stay of the rules adopted in 1981 in Docket 20990 as they apply to garage door opener controls.

The action was in response to a petition by the Door Operator and Remote Control Manufacturers Association (DORCMA), comprised of 21 manufacturers of electrical garage door openers and controls.

In the Docket 20990 proceeding, the Commission deleted special rules for garage door openers and produced a single set of rules for all radio control devices, including garage door openers and radio security alarm devices. The FCC also established a more stringent measurement procedure.

DORCMA requested a stay of the cease manufacture date (September 1, 1983 in Section 15.184) so that its members may continue to produce garage door openers under the rules in effect prior to adoption of the new rules in Docket 20990. It also sought a stay of the requirement to use the new measurement procedure.

The petitioner contended that despite considerable good faith expenditures of time, money, and engineering effort to meet the September 1, 1983 deadline for compliance with the rules, its members have not been able to design a viable transmitter consistent with the new rules. It said that because of their inability to meet the new requirements, its members are threatened with immediate and irreparable harm in that they are legally precluded from manufacturing products not in compliance with the new regulations. It noted that in the absence of a stay, they are faced with the grave danger that they may go out of business.

DORCMA also filed a rulemaking petition (RM-4637) seeking reinstatement of the former rules and measurement procedure.

The Commission said the stay would be granted pending an evaluation and decision on the rulemaking petition. However, it cautioned DORCMA and its members not to assume that this action implied a favorable finding on the petition for rulemaking. It stressed that the stay was being granted merely to permit it to assess the situation described in DORCMA's petition.

Additional Frequencies For Races

The Commission made additional amateur radio service frequencies available to the Radio Amateur Civil Emergency Service (RACES) when the President's war emergency powers are invoked.

RACES communications are conducted by amateur radio operators who provide emergency radiocommunications to local, regional, or national civil defense organizations. Ordinarily, all amateur radio service frequencies are shared with RACES. However, during a war, the amateur service could be completely suspended and the frequencies reassigned to the government. RACES, however, could continue on some of the amateur frequencies now shared.

At the request of the Department of Defense, the FCC on May 26, 1983, proposed more frequencies for RACES under war emergency conditions. The Federal Emergency Management Agency (which would manage RACES during a declared national emergency) supported DOD's request.

In allocating the new frequencies, the Commission noted that marshalling an array of civil communication facilities for use during wartime or other national emergency would serve the public interest.

Amendment Of Rules For Auto Alarm Receivers And Automatic-Alarm-Signal Keying Devices Proposed

The FCC proposed amending its rules to bring the requirements for radiotelegraph auto alarm receivers into conformance with the 10 kHz (495-505 kHz) guardband arrangement for the international distress and calling frequency, 500 kHz.

SAIT Incorporated, a manufacturer of marine telecommunications equipment, asked that the alarm receivers rules be brought into conformance with the 10 kHz guardband arrangement adopted by the 1979 WARC. At present a 20 kHz (490-510 kHz) guardband arrangement is the basis for design of radiotelegraph auto alarm receivers being type approved by the Commission for use on United States vessels.

The Commission noted that existing equipment would not be affected by these changes which will promote more efficient use of the spectrum without an adverse impact on safety considerations.

It said that because equipment require-

ments for radiotelegraph automatic-alarm-signal keying devices are obsolete as they apply to the keyer output relay current/voltage standards, these requirements should be considered for revision. It also proposed deleting the requirements for manufacturers' tests and the FCC laboratory test procedures from the Commission's rules. The design specifications found in the rules proposed for deletion would be incorporated into the basic technical requirements for the equipment. The Commission also proposed that the FCC laboratory test procedures be issued in the form of an Office of Science and Technology (OST) Bulletin.

Noting that it would provide an increased market to U.S. manufacturers without an adverse impact on safety, the Commission proposed providing for more standardized radar specifications.

Proposal To Eliminate The Developmental Classification Of The 13.2-13.25 GHz Band

Hughes Aircraft Company-Microwave Communications Products (Hughes), a manufacturer of microwave radio equipment, petitioned the Commission to amend Section 94.61(b) of the Private Operational-Fixed Microwave rules. It proposed the de-

letion of footnote 16 which restricts use of the 13.2 to 13.25 GHz band by private licensees to developmental operations.

The developmental provision for use of the 13.2-13.25 GHz band was originally intended to encourage development of radio equipment to be used in this band, and to increase use of this spectrum. This spectrum is used on a primary (non-developmental) basis by the Television Auxiliary Broadcast Service (Part 74), the Local Television Transmission Service (Part 21), and the Point-to-Point Microwave Service (Part 21).

Hughes pointed out that the state of microwave radio technology has advanced to the point that the developmental provision is now obsolete.

The Commission noted that, based on the relatively small number of private microwave systems authorized in this band, it appeared that restricting private use to developmental systems is impeding rather than encouraging the use of this band.

Therefore, the Commission proposed that footnote 16 in Section 94.61(b) be eliminated. The Commission said it would be in the public interest because it would enable private eligibles to be licensed to use the 13.2 to 13.25 GHz band on an equal basis with broadcasters and common carriers, and thus encourage more efficient use of the spectrum.



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CIRCLE 36 ON READER SERVICE CARD

Beaming In (from page 4)

and is satisfied with tuning in the more easily heard stations. A serious listener would be a person who listens regularly and seeks out rarely heard stations. I'm sure that there are exceptions to these general descriptions, just as I'm certain that by attempting to offer any definitions I'm probably going to be sorry for doing so.

Whether or not there are people who are so involved in monitoring that it occupies the majority of their waking hours, takes up all of their conversation, accounts for most of their funds, and is done with such a ferocity that it hardly seems to others that there is any room for enjoyment—well, yes, I imagine there are plenty of folks like that in communications. But there are also people like that in photography, sports car racing, numismatics, stamp collecting, and many other things. The guy who moors his boat next to mine is consumed by boating this way, and while I often wonder how he can possibly be enjoying himself, I don't begrudge him his level of involvement. Obviously he is getting pleasure or else he wouldn't be doing it to the extent he is. I only draw the line when he condescends to point out all of the equipment on my boat that he believes is "junk" or "poorly maintained."

About the only healthy way of relating to such a person is by establishing your own level of enjoyment and not worrying about the level the other guy has set for himself. I don't see myself as being a "communications zealot," but I'm sure that there are those who might view me in such a manner. I haven't ever gotten to the point where I'd practically kill for a much-wanted QSL, a factor which places me at least a short trip down the road from some of my friends in the hobby!

In all, I think that maybe we shouldn't get too hung up on any of these artificial labels. The listener who just switched his \$29 all-band transistor portable to shortwave for the first time realized that he has tuned in on the BBC, or Radio Sweden, or Radio Moscow, or any of the other powerhouse broadcasters beamed to North America may, indeed, be a casual listener, but he's no less a wel-

Radio:
Band:
Frequency:
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Signal:
Receiver:
Antenna:
Remarks:

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TO RADIO: NRD ON: QSD ON: 26 mtr					
DATE	GMT/AMZ	WITH	P.	MC	REMARKS
3.11.80	6:05	14945	5.9	14946	3900
PSE QSL VIA QARC FOR AWARD					
RX: U.S. DXV					
ANT: 3.5m					
ZONE: 14 DOK: G 14					

It's hard to tell from this listener's description whether he considers himself an amateur operator who only receives instead of transmits or if he is dedicated to receiving only amateur radio stations. Either way, it sounds pretentious.

come member of the monitoring fraternity than is the hobbyist with \$3,000 worth of hardware who has spent the last six months trying to hear the elusive broadcaster in the Falkland Islands. Ideally, we should come to recognize that whether a person is serious or casual, or a DXer, SWL, BCL, monitor, listener, buff, enthusiast, fanatic, or whatever—we are all part of the many-layered spectrum of this engrossing pursuit, and whatever this hobby has been or is now, or ever will be, is comprised of many participants with vastly different interests, specialties, degrees of involvement, complexities of equipment, available time and funds. When it approaches the time when we can no longer enjoy participation without cutting the ground out from others who are not using the "right" equipment, or who are "wast-

ing their time trying to hear easy stations," then maybe it's time to think about getting into another, more relaxing hobby.

I want to thank Bob Zeisloft for bringing up this matter and helping to focus in on something that I suppose I had never actually stopped to think about, but is certainly relevant.

A Recent Acquisition

Every once in a while you just happen to be at the right place at the right time and you really luck out. On an otherwise dreary day last winter I received a call from POP'COMM reader John Bowker, WA2WEN, of the RCA Frequency Bureau in New York City. John informed me that the RCA Frequency Bureau was in the process of moving to new facilities in Princetown, New Jersey and that they had decided not to bring along their large reference library of older communications directories. Basically these were, he said, probably the only remaining copies of some of the publications and he thought they needed a good home. He suggested that POP'COMM might like to be that good home. When he started describing what he had I readily agreed! They had, in fact, a veritable gold mine of historic archives consisting of "Berne" and "ITU" frequency guides—dozens of them dating back to the very early 1930's and running through the 1970's. These are massive books, some weighing as much as 20 lbs. each, which contain information on frequencies, call-signs, locations, transmitter power, etc. of virtually all radio stations—broadcast, maritime, aero, SWBC, military, experimental, government, public safety, press, and whatever, and covering frequencies between VLF and UHF! Moreover, the copies in their library were custom bound hardcover editions in mint condition. We needed a station wagon and a hand cart to gather up this material. It was mind boggling—like the people on the TV game shows who are given a grocery cart and can fill it with all they can carry away from the A & P! Needless to say, we ran like thieves in the night and carted off everything they let us have. Each volume is absolutely priceless.

POP'COMM is sincerely thankful to John Bowker and the other good folks at the RCA Frequency Bureau for their thoughtfulness and generosity and for their perception that POP'COMM would be a worthy custodian of these rare volumes.

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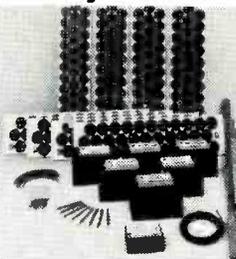
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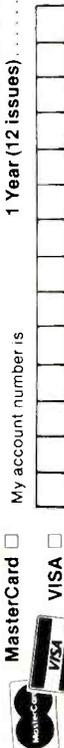
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AD INDEX

Ace Communications	17
All Electronics	31
Antenna Specialists Co.	73
Auburn-Wolfe Pub. Co.	68
Barry Electronics	75
CBC International	56
CCS Comm. Control, Inc.	60
CRB Research	19
Communications Electronics	2
DNE Inc.	56
EGE, Inc.	17
Electra Co.	Cov. III
Electronic Equipt Bank	1, 74
Electronics Book Club	7
Fair Radio Sales	75
G.I.S.M.O.	22
Ham Mastertapes	Cov. II
Ham Shack	63
Hamtronics, Inc.	63
Hustler, Inc.	4
ICOM America, Inc.	Cov. IV
Kalglø Electronics	31
MFJ Enterprises, Inc.	10
Magnum Distributors Inc.	23
Metz Communication Corp.	23
Micro Mart	5
Microlog Corp.	13
Morning Distributing	51
PopComm Book Shop	71
Radio West	63
Radio World	56
Spectronics, Inc.	54
SpiRo Distributors	63
Springhouse Energy Systems	75
Stano Components	43, 49
Survival Tomorrow	27
Unity Electronics	49
Universal Electronics	49
Universal Security	69, 75
Universal Shortwave Radio	33, 66
WRNO Radio	75
Westech Electronics	49
Western Radio	56

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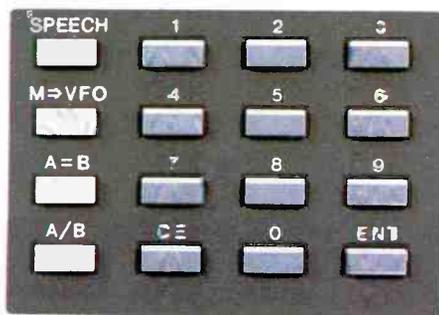
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