Air Force aircraft.
Propagation conditions were just right on the 30th to allow these intense war game communications to reach stateside. The activities began when the 26th Marine Amphibious Unit launched the attack from the helicopter carrier Two Jima.
The command "Splash" was often heard as the Marines made for shore. Straight fire missions (aircraft), and implementation of various plans were also monitored.
According to the May 14, 1984 Newsweek article Invasion/War Games, "As a result of intelligence-gathering ship's activity on the horizon, 800 Marines, backed by helicopters and F-16s, hit the beaches in amphibious vehicles and moved inland to secure an 'embassy.'"
All in all, April 30th was truly outstanding day for long haul skip. The Argentinian pagin station on 31.35 was heard till 2100 GMT, and the Dutch West Indies military operations on 33.65 were heard till 2210...over two hours past official sunset!

30.00
30.00, 32.15, 37.10
U.S. aircraft and port operations located in southern California coast. The frequency 37.10 is used for general operations including aircraft (Sugar Bear and Dragon) and landing zones (LZ-1 and LZ-2).
For the 30.00 MHz channel is air-to-air, and 32.15 is a land strip with tower and aircraft comes. The land strip is located some distance from port, but Sugar Bear and Dragon aircraft are often heard using it. Can anyone tell me which military facilities it's hearing?

ATTENTION DXERS CLUB OF SAN FRANCISCO MEMBERS

A YEAR AGO, LARRY BROOKWELL, PRESIDENT AND FOUNDER OF THE SAN FRANCISCO-BASED CLUB, PASSED AWAY UNEXPECTEDLY. THROUGH A SPECIAL ARRANGEMENT WITH WARD BROOKWELL, LARRY'S SON AND EXECUTIVE OF THE ESTATE, MONITORING TIMES IS BEING SENT TO COLUMBUS TO PROVE UNEXPIRED SUBSCRIPTIONS TO THE CLUB NEWSLETTER.
PRESENT MT SUBSCRIBERS WHO ARE ALSO MEMBERS OF THE FORMER SAN FRANCISCO CLUB WILL HAVE THEIR SUBSCRIPTIONS EXTENDED AUTOMATICALLY.
WE ARE PLEASED TO OFFER THIS GESTURE IN LARRY'S MEMORY AND TRUST THAT IT WILL PROVE A SATISFACTORY ARRANGEMENT FOR ALL.

TO GROVE ENTERPRISES CUSTOMERS

THE OFFICES OF GROVE ENTERPRISES AND MONITORING TIMES WILL BE CLOSED DURING THE HOLIDAYS, DEC. 24 THROUGH JAN. 1, SO THAT OUR EMPLOYEES MAY ENJOY THIS JOYOUS SEASON WITH THEIR FAMILIES.

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Monitor your world! (That's what the name says.)

...The results of the poll were interesting. Just over half (57%) of the respondents did not want computer control of new equipment while the remainder (43%) favored computer control.

We interpret this to mean that a substantial number of equipment users remain convinced that what to do on an on-board computer, they would like to make a few decisions themselves when tuning their receivers. This presumptuous over-design was evident in the ICOM R70 receiver, but relaxed in the R71A.

The considered comments from our readers have been taken seriously and we thank you for your input. Some exciting things are on the way and, as always, MT will be the first to tell you about them!

UNIDEN CR-2021

FADES INTO HISTORY

Unquestionably, the Uniden CR2021 at its close-out price of under $100 was one of the greatest values ever made available to SWLs. Unfortunately, the stock is now depleted and only the Radio Shack DX400 (at $299) will continue to be made by Uniden. No replacement is expected.

Viewpoint

Monitoring Times' commitment to readers' thought and ideas cannot be outdone by any other publication. So keep up the excellent work; it's greatly appreciated on this end.

I read with interest the letter of reader L.M. of Massachusetts concerning his or her thoughts on a column for CB operators. I favor a small column on this subject if you find enough room in Monitoring Times and enough reader interest. But I'd like to pass some information for L.M. and any other reader interested in this subject; there is a publication put out for CB'ers and it is called THE ELEVEN METER TIMES & JOURNAL. A sample copy can be obtained for an SASE in the U.S. or $5.00 outside the U.S. The address is:

THE ELEVEN METER TIMES & JOURNAL
P.O. Box 19728
Bâgmont Station
Golden, Colorado 80401

Dennis Richards
New Haven, CT

A tip of the hat to you. Your new format, which provides better continuity, is very welcome. Your old format caused endless page flipping, and had me ready to let my subscription lapse.

On a different subject - A reader who, it may be noted, did not wish to identify himself, requested a column for those fine folks who have "modified" (read "illegal") CB rigs which operate "above 27.405" (read, "I know I should not be there, but I wish to be there, so I am there!").

ABSOLUTELY NOT. Please do not condone the use of the airwaves for transmission of signals by anyone who wishes to get on them, just to please themselves. Yes, you have a column on pirates. Personally, I wish you didn't. Monitor them if you must, but don't urge them on. We have all heard what is being said and done on the CB band. Do we have a need to monitor THAT?

It is illegal for the CB fans to be anywhere but on the portion of the airwaves which has been given to them. They are only there, because they want to be, not because they need to be. Please do not urge them on with tips such as, "Turn Your CB rig into a Super-Scanner on 5150 kHz. With Just A Few Adjustments!" You out there in monitoring land may well pay dearly for such articles, for the fellow next door has somehow read it to him and he will give it a try—wiping out the front end of your equipment in the process.

Your publication is about monitoring, not about how to transmit. Please keep it that way. Let the CB fans do operate illegally do whatever they must, but not with any help from your fine publication.

Ros Sowlinski
Coral Springs, FL

Reader suggests topics for writers.

I imagine there are many different rates on the ham bands that work with a particular area; maybe a listing of these rates in MT would be of interest. And the man who just crossed the Atlantic ocean in a balloon...did he use HF communication for long range?

Around-the-world boat races, I would guess, use HF radio. Is there a rule of thumb for the frequencies used and probable times for schedules?

When I go on vacation I like to look at equipment stores with monochrome sale. Perhaps some reader has a comprehensive directory of such stores he would be willing to share. I have a feeling I might not be the only one who would enjoy a copy of this list!

Zel Eaton
Kimmswick, MO

In response to the many complaints about the format of (your) your publication, I would like to defend the current system. I would rather have a monthly publication which is delivered on time than a monthly sale of old news. Of course I am also interested in getting as much as possible for as little cost.

I am currently using a system, recommended in a past issue by an innovative reader, which makes use of computer printouts of binders (available from any computer

---

Computer Poll Results

A couple months back we asked our readers whether they would like more computerization in their radio equipment; some readers mistook the question to mean, "Would you like more computer coverage in MT?"

There are more than enough computer publications out there; we will never become another "me, too" magazine. But microprocessor control is becoming firmly entrenched in communications control and cannot be ignored.

Since MT is a wholly-owned publishing arm of Grove Enterprises, we occasionally ask our readers what they would like to see in new equipment. That way, readers get the unique opportunity to have a hand in designing new products, and Grove Enterprises gets a head start on the competition!
30.02 Paging, Canada. Next to the Argentinean paging operations the Canadian paging stations are probably the most consistently monitorable. Everyone knows about the U.S. pagers on 30.22, 35.58, 43.22, and 43.58, but the Canadian stations make wide use of guard tones and open carriers on their paging business frequencies to eliminate skip interference from stations using the same frequency. Unfortunately, this technique presents drawbacks for the scanner user.

First, the continuous carrier will cause the scanner to "lock up" on the frequency. Second, any other skip which one might hope to receive on that frequency will meet with heavy interference due to interaction with the carrier or guard tone. In the U.S. only the mobile telephone frequencies, 35.26 to 35.66 and 43.26 to 43.66 in 40 kHz steps, may be assigned guard tones. These so-called "idle tones" are used by paging services which are allowed to use the mobile telephone allocations on a non-interference basis.

Locating these Canadian businesses is easy since your scanner will lock up on the carrier! Paging emissions are often in the AM mode, and power varies up to 250 watts with 25 to 50 watts most common.

30.05, 30.10, 30.15, 30.20, 30.25, 30.30, 30.35, 30.40, 30.45, 30.50, 31.05, 31.93, 31.96, 31.98, 32.00, 32.30, 35.15, 35.50

All these frequencies have been logged carrying DES-Fed scrambling. The origin of most of these transmissions is probably inside the U.S. DES-Fed scrambling sounds similar to DVF scrambling, a high-pitched tone burst is heard, followed by "static." This static is the digitized information which may be the human voice or data flow.

30.06 Ferry or ship-to-shore transportation. Probably a U.S. Government (non-military) operation, maybe New York. This is "Channel One."


30.15 This is a military radiotelephone-base station thought to be located on the eastern U.S. coast. A continuous carrier with high-pitched guard tone is always heard, even during conversations.


30.17 Ft. Rucker, LA, 198th Attack Helicopter Co. Multi-use range control is on 30.50. Also, DES-Fed scrambling has been heard regularly on 31.80 during Ft. Rucker training exercises.

30.17 Paging, Minneapolis, Minnesota Veterans Administration Hospital.

30.20 Military navigational beacon (?). The letters W & R are repeated in Morse code non-stop.

30.22 Paging, Canada.

30.225 Radiotelephone, San Francisco, CA, maybe the GAO (General Accounting Office). A relatively new allocation, and more bases and mobiles are currently coming on the air.

Note that this channel is skewed 5 kHz off the "standard" U.S. channel spacing. Most likely this is an attempt to avoid skip interference from the military.

30.25 Military personnel were heard using Cipher (DES-Fed type scrambling). A continuous high-pitched guard tone was also logged on 30.15 at this time.

30.30, 30.50, 32.30, 32.70, 33.10 and 46.55

Canadian military. For the most part the Canadian military uses a 100 kHz spacing between channels, although a 50 kHz spacing has also been noted.

30.34 Canadian ships on west coast of Canada.

30.35 Camp Pendleton Marine Corps base safety net, California. Range control "Long Rifle," "Crest Line," "Red Eye," "Range 107," and "Short Pistol." Many 30.00 to 30.55 channels are used on a temporary basis. Other frequencies could prove active. 38.45, 40.35, 44.61, 47.30, 65.10 and 249.9 (Aircraft). During the fall, winter, and spring F2 skip season it's not unusual to hear these operations almost daily here in mid-America.

30.39 and 32.95 Buffalo Base (U.S. mil)

"Sky King" mentioned the frequency 387.9 MHz. Probably SAC operations.

30.58 Canadian nationwide mobile telephone and paging.

30.84 and 31.15 More Canadian mobile telephone.

31.42, 31.43, 31.44, 31.45, 31.46, 31.47 DES-Fed scrambling; apparently an automated data ruly communications system. It's only heard when the long haul F2 skip is bringing in Central and South America.

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Introducing the Z series scanners from Regency. Four exciting new programmable scanners that offer you a variety of options to fit your personal needs.

First, there's the Z10, a basic ten channel scanner that covers the six public service bands. It lets you hear your choice of over 15,000 frequencies at the touch of a finger. Or, if you prefer, locate new, active frequencies using the search function.

If you like the Z10 but need more channels, step up to the Z30. It gives you all the same features with a thirty channel memory and, surprise, a programmable alarm clock that stays on even when the power switch is turned off.

For the guy who wants to tune into the aircraft and tower transmissions, we've got the Z45. It's got the same coverage as the Z30 with the addition of the aircraft band with forty-five total channels.

And then there's the top of the line Z 60. It covers all the public service bands plus aircraft and FM radio broadcasts with sixty total channels.

Common to all the Regency Z scanners is a contemporary simulated wood grain cabinet and a bright, easy-to-read vacuum fluorescent display with prompting messages. They even come preprogrammed with frequencies so you can scan "right out of the box".

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Regency stands behind the Z family with a full one year parts and labor warranty. And a tradition of building great scanners. So stop in your Regency dealer today for a demonstration, or write us at the address below for a full line color brochure.

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FLORIDA NATIONAL GUARD
31.65 U.S. war games, aircraft.
31.66 and 31.92 Paging, Canada.
31.70 U.S. military, "Roadmaster"
31.85 U.S. military aircraft, Washington, D.C. area. Also Mexican State Police repeater output (32.20 MHz input).
32.00 Embassy transportation, may be New York.
32.20 Aircraft, Fort Campbell, Kentucky

32.22 A New York taxi service. Heavy Caribbean accents, but location information made it clear they were operating in the Big Apple.

Were they issued an experimental license by the FCC? Or might they have brought their radios into the U.S. from their homeland, not realizing that the frequency 32.22 is in the federal band? Or are they simply "pirates"?

The next day, around noon, German operations were heard on 31.30! These coms may have been coming from a ship in port or off the east coast of the U.S. Multi-hop F4, skip from Germany was unlikely during this low point in the sun spot cycle. 31.30 is allocated to state conservation in the U.S.; it seems doubtful that German conservation officers were out stomping through our state forests!

32.23 ("Alpha") White House/Camp David comms.
32.25 (Channel 1), 32.75 (Channel 2) Range control, San Francisco area.

32.36 Canadian phone patch, Ontario. Other radiophone operations thought to originate in Ontario include 33.46, 34.82, 37.06, 37.86, 39.90, 41.82 and 41.86.

32.42 Paging, Canada.

32.53 VIP taxi service, maybe New York or Washington, D.C.

32.60 (Alpha Channel), 32.75 (Bravo Channel)

AWACS or NORAD training missions. Bases include Headmaster and Dobbins, possibly located in the desert west. Guard tones, carriers and DES-DESCRAMBling have all been heard on these two channels during training.

32.65 U.S. military.

32.70 U.S. military "Pathfinder Control," southern U.S.

32.70 Ft. Erwin range control net.

32.70 U.S. military; Ft. Bragg, North Carolina was mentioned.

32.85 U.S. military "Langley 4"

33.42, 33.62, 33.92, and 33.96 Paging, Canada.

34.00 Repeater (36.00 input) Canadian tracking, Burnaby, British Columbia. A 2 MHz separation is often noted between repeater input and output on Canadian low band repeaters.

34.15, 47.00 Illinois National Guard.

34.60 Nellis AB and Nuclear testing Range, Nevada.

36.33 Antenna relay-keying channel, Nevada. Tones similar to those heard on common pushbutton telephones are used to switch microwave antennas. The technicians can also be heard talking on this frequency. An identical tone keying system is used to switch antennas at March AFB, California.

36.69 VIP taxi service; two bases heard, probably Washington, D.C. area.

37.04 Repeater (37.34 input). French-Canadian shared business repeater, about 150 miles northeast of Quebec City.

37.60 March AFB, California, aircraft.

38.10, 41.10, 46.70 U.S. military range control, maybe northeast US. 41.10 is the Medivac frequency.

38.15 U.S. military range control.

38.27, 49.79 Telemetry, probably U.S.

38.30 Wheeler SAC operations.

39.30 Camp Merrill, GA, range control.

41.00, 41.95 Holland DCSO, Red Devil range control.

41.70 McGregor range control.

41.80 Range control, Camp Grayling training site, Michigan Air National Guard.

41.90 Aircraft Control, Camp Grayling.

42.00 Fire fighting, Camp Grayling.

42.10 Fugers, Camp Grayling.

42.40 Maintenance net, Camp Grayling.

46.60 to 47.00 Military in the U.S., Natural Resource fire services (conservation) in Canada. The frequency 46.70 is a province-wide fire channel in Ontario, and 46.74 is a Canada-wide fire channel.

46.80 to 50.00 Military in the U.S., hydroelectric operations in Canada (starting at 47.00 MHz).

49.90 Canadian military nationwide allocation. U.S. military range control operations also.

49.93 Ohio MARS net.

Chuck Robertson
Route 2, Box 850
Creal Springs, IL 62922

Known as the Department of Defense Surplus Sales, this service, unlike some other federal programs, is a model of simplicity and reasonable practice that is open to anyone and ready to serve them.

A few hobbyists have come to buy some (or all) of their military surplus direct from DoD Surplus Sales to save middleman costs in acquiring high quality milspec materials.

HOW TO GET ON THE LIST
There are a few procedures Surplus Sales participants follow: First, request a new bidder application form from DoD Surplus Sales, P.O. Box 1370, Battle Creek, MI 49016.

A card or letter reaches the Defense Property Disposal Service of the Defense Logistic Agency at Battle Creek, which will respond with forms to be complete indicating geographical and equipmental choices inside and outside the U.S.

There are many categories to select, but bear in mind that auction catalogs (known as invitations for bid, or IFB's) are drawn up from just three general categories: vehicular and power equipment, electronic and electrical components and miscellaneous.

Inside the U.S., IFB's are generated monthly by Defense Property Disposal Offices in Columbus, Ohio; Memphis, Tennessee; and Ogden, Utah. When the Battle Creek center has processed your application, you'll start to receive IFB's relevant to your geographical/equipmental interests.

The Battle Creek computer continues to send the indicated IFB's as long as one returns the bidder list extension form that is on the back of all IFB's from one of each five IFB's you receive, or bid in one of every five sales you're notified of.

Contrary to some scuttlebutt, all DPDS sales are open to everyone, and no bidder gets any special favors.

WHAT'S THE NEXT STEP?

Let's say you've gotten friendly with the Battle Creek computer and you maintain your name on it. At last year's quarry, a small lot of AR/PQD-2 manpack pneumonia meters, shows up on the auction block. Their point of sale at Robins AFB is close enough to your Okefenokee home to make transport feasible, and you decide to bid.

Established selling prices can be researched from lists of successful bids of previous similar IFB's which are available on request from the regional DPDS offices which generated those IFB's. A bid deposit of 20% in a cash instrument is required with each bid (returned uncashed if bid is low).

Assuming your bid is nailed in time to reach the regional contracting officer before the opening day indicated on the AFb and you're contracted by DPDS as high bidder, you must pay off and collect your lot or forfeit your deposit.

Payoff can be done within thirty days by mail or in person when you collect the lot at the base within the same period. And if you can't spare the time to collect the lot, note on the contract form that the

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are helpful (in-person) auctions. Sales are indicated unavoidable, surplus of regional DPDS officer problem. If delays appear to be unavoidable, phone the regional DPDS officer who is indicated on the first page of the IFB to coordinate a storage extension with holding facility personnel. A small storage fee is charged.

DPDS people are as helpful as possible, but the Surplus Sales program does intend to move the merchandise.

The bulk of DoD Surplus Sales are sealed-bid (mail-lo) auctions, although there are also some local spot (in-person) auctions. It's been my experience that the best of surplus electronics show up in the sealed-bid sales.

Most sealed-bid IFB's carry fifty to five hundred lots of equipment, a significant fraction of which weigh less than one ton and which are tailored to hobby interests. Most of these sorts of lots sell well under $500, and first-class electronics are gotten for pennies a pound. While most tales of $38 jeeps are baloney, $38 R390 receivers are common fare.

Since most military electronics are too specialized to resell in volume, dealers become inundated with "junk" and their overheads prevent them from inflating the direct surplus market. Poke around in the field; I doubt you'll come away empty handed.

A LOOK AHEAD

Three indicators forecast a boom in surplus radio hobbies in the next couple of years. First is the technology explosion as it relates to current military electronics; second is the IC's coming of age, marked by its first exposure in military surplus; third is the current low level of direct surplus exploitation by hobbyists, keeping prices down on the best electronic components.

Good service on military equipment manuals is available from:

MIKE CONSALVO, 7218 Roanne Drive, Oxnor Hill, MD 21775

TAYLOR SPECIALTY CO., 329 Merritt Street, Harrisville, CN 31038...

TUCKER ELECTRONICS, P.O. Box 601060, Garland, TX 75046

WINDSOURCE CO., P.O. Box 280, Wamsutter, WY 82336

Specific questions on DoD Surplus Sales can be directed to...

JOAN NIGEL, DPDS-MMS, Defense Logistics Agency, Federal Center, Battle Creek, MI 49016.

Winning bids are a matter of public record. Here we see how an invitation for bid was won by a prominent surplus dealer and became an item in his catalog.

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UNSCRAMBLERS which let you hear the coded messages of police, fire, medical or emergency channels, shortwave, etc.

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D-12 Base
D-12 Deluxe Base
P-20 Hand held or mobile

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Winning bids are a matter of public record. Here we see how an invitation for bid was won by a prominent surplus dealer and became an item in his catalog.

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In case you are interested in updating some of your reference books, two new Reader’s Digest publications are now available. The "WIDE WORLD ATLAS" is a fine presentation of maps plus a helpful gazetteer section. It has large-size pages, 13" x 14", thus providing maps with lots of details but yet not cluttered up.

The other Digest book is the "READER’S DIGEST 1985 ALMANAC AND YEARBOOK" which lists a chronology of 1984 events, descriptive details on the nations of the world, plus a wealth of facts on numerous subjects. The books can be obtained from the Reader’s Digest and are also found at some bookstores.

In an effort to conserve space in the listings section I find it necessary to use some abbreviations. Most of these are consistent with the listings presented in the June and August 1984 issues of MT. Next month I will give you a list of some additional abbreviations used for designating various elements of information.

Please bear with me regarding format changes for the listings because I am trying to arrive at the most efficient use of the allotted space while including desirable details.

LAST OPPORTUNITY!

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**COMPLETELY SELF-CONTAINED -- NO COMPUTER OR INTERFACE REQUIRED. PLUG INTO YOUR RECEIVER’S EXTERNAL SPEAKER JACKS AND WATCH NEWS BULLETINS, WEATHER REPORTS, PRIVATE TELEGRAMS, GOVERNMENT COMMUNICATIONS AND OTHER UNFOLD BEFORE YOUR EYES ON A BRILLIANT 32-CHARACTER FLUORESCENT DISPLAY.**

INSTANTLY DISPLAYS TEXT OF MORSE CODE, RADIO TELETYPE (60, 80, 75 AND 100 WPM) AND COMPUTER ASCII (110/300 BAUD).

RUGGED METAL CABINET ASSURES MINIMUM RECEIVER INTERFERENCE; LABELED DIALS PROVIDE INSTANT RECOGNITION OF SETTINGS.

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1-800-438-8155 ALL SALES FINAL
Interplanetary Paging Proposed

On Page Enterprises of Sudbury, Massachusetts has applied to the FCC for a license to send one-way radio messages to the Sun, the Moon and "any of the planets in our Solar System". The application for "specialized extraterrestrial communications" requests operation on 903.0125 megahertz.
<table>
<thead>
<tr>
<th>HIGH SEAS cont'd</th>
<th>TIA-TL2</th>
<th>CENTRAL AFRICAN REP</th>
<th>TMA-TM2</th>
<th>FRANCE &amp; TERR</th>
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*MT RATES INCREASE JANUARY 1 - RENEW TODAY FOR 36 INFORMATION-PACKED PAGES AT THE CURRENT RATE!*
This month we will start looking into communications satellites around the world. The first part of the series will cover the Soviet and military applications are following the U.S. to higher frequencies. In 1979, Aviastion Week and Space Technology quoted an Air Force official who said that it is difficult to distinguish between military and civilian systems. This is because of the interference ability of their systems and the uncertainties associated with attempting to tie down particular mission of a particular satellite in an ever-changing operational approach by the Soviets.

Some of the veil of Soviet secrecy has been lifted due to the fact that all nations have to file geostationary positions and frequencies with the International Frequency Registration Board of the ITU.

The first system I will discuss is the Statonary (Russian for "stationary"); this is the name of the Soviet Union's global satellite system, similar to Intelsat. Statonary satellites are used by (among others) the Intersputnik, which is the international satellite cooperative of the communist countries established in 1971.

There are 14 countries in the Intersputnik satellite system: Soviet Union, Bulgaria, Hungary, Czechoslovakia, Poland, East Germany, Romania, Mongolia, Viet Nam, South Yemen, Cuba, Nicaragua, Syria, and China.

The Soviets have filed with the ITU the following Statover positions:

<table>
<thead>
<tr>
<th>Frequency</th>
<th>Location</th>
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<tbody>
<tr>
<td>35E</td>
<td>Statover 2</td>
</tr>
<tr>
<td>40E</td>
<td>Statover 12</td>
</tr>
<tr>
<td>45E</td>
<td>Statover 9</td>
</tr>
<tr>
<td>53E</td>
<td>Statover 5</td>
</tr>
<tr>
<td>60E</td>
<td>Statover 1/13</td>
</tr>
<tr>
<td>85E</td>
<td>Statover 3</td>
</tr>
<tr>
<td>90E</td>
<td>Statover 6</td>
</tr>
<tr>
<td>93E</td>
<td>Statover 14</td>
</tr>
<tr>
<td>99E</td>
<td>Statover 1</td>
</tr>
</tbody>
</table>

As of this writing each Statover position could contain a variety of satellites and transponders; this month we will discuss the Gorizont (Russian for Horizon) satellite.

The Gorizont satellites are the most active in the Soviet Statover system for broadcast radio and TV transmission. A variety of programs are carried throughout the Soviet Union. Gorizont satellites have been located at Statover positions 7, 4. Gorizont signals can be received on TVRO systems in the States and abroad. Channels frequently seen are:

- **FRQ 1**
- **TYPE**
- **MODEL**

<table>
<thead>
<tr>
<th>Frequency</th>
<th>Type</th>
<th>Model</th>
</tr>
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<tbody>
<tr>
<td>3675</td>
<td>Spot</td>
<td>Global Beam</td>
</tr>
<tr>
<td>3725</td>
<td>Zone</td>
<td>Global Beam Occasional video</td>
</tr>
<tr>
<td>3750</td>
<td>Zone</td>
<td>Global Beam Occasional video</td>
</tr>
<tr>
<td>3753</td>
<td>Northern</td>
<td>Hemispheric Occasional video</td>
</tr>
<tr>
<td>3825</td>
<td>Zone</td>
<td>Global Beam Occasional video</td>
</tr>
<tr>
<td>3875</td>
<td>Northern</td>
<td>Hemispheric Full line Soviet TV</td>
</tr>
<tr>
<td>3925</td>
<td>Zone</td>
<td>Global Beam Occasional video</td>
</tr>
</tbody>
</table>

It is my belief that the Soviets have 5 channels below the coverage of normal TVRO receivers -- 3425, 3475, 3525, 3575, and 3625 MHz -- but I have no verification of this or the type of programming carried.

The Gorizont satellite most frequently viewed in the U.S. is Gorizont 7 (Statistic 4, 14K); this bird should be visible to most viewers east of the Mississippi River, Gorizont 7 carries several channels of Soviet TV and Intersputnik programming.

The breakdown of the channels is as follows:

<table>
<thead>
<tr>
<th>Model</th>
<th>Frequency</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>3675</td>
<td>1st TV program from Moscow</td>
<td></td>
</tr>
<tr>
<td>3775</td>
<td>SPCD Telephony</td>
<td></td>
</tr>
<tr>
<td>3825</td>
<td>2nd TV program from Moscow and O.I.R.T.</td>
<td></td>
</tr>
<tr>
<td>3875</td>
<td>1st program and Intersputnik TV program exchange as well as Intervision news and UPITN News.</td>
<td></td>
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</table>

Viewers can expect to see Soviet life, space missions and a variety of other TV programs by watching Gorizont 7. Programming of the 1st program starts at 0400 UTC and runs on average till 2400 UTC. There have been programs noted as late as 0200 UTC for late night Moscow residents.

With the Gorizont system continuing to launch satellites at the rate of 1-2 per year, those of you in Europe, Asia, Australia and the Pacific region will continue to watch Soviet programming for years to come.

**Soviet HF satellite watch, Len Merkoske in Thunder Bay, Canada, has received Soviet satellite signals on his Drake R7. Len noted PDM-type signals, FSK but using coarse tones, like the "gurgles" of Cosmos 1443. Len is still using a longwire and the R7's preamp.

Best results were obtained in 1978, 1.8 kHz filter. Len first discovered the signals on September 27 from 1530-1540 LOS with a 5-W signal. Based on observational data Leon pinpoints the period of the spacecraft to be 107 minutes.

My early conclusion is that he has received Cosmos 1579, a mission with characteristics of the Soviet nuclear reactor powered radar ocean surveillance satellite. Normally the satellite has a period of 89.9 minutes. But toward the end of the mission the Soviet nuclear reactor leaves the rest of the spacecraft and boost it into the high orbit to slow down the decay of the nuclear material.

More than likely Len monitored the reactor section shortly after it was boosted into orbit and the Soviets had the beacon on for tracking information to insure that another Cosmos 954 incident did not repeat itself. Cosmos 1579 was launched June 29, 1984 from Tyuratam on an F-1m booster rocket. Many thanks to Len for his (what I believe to be first Canadian) observation of Soviet Ocean recon activity.

As you can see satellite monitoring is possible and fancy equipment is not needed. I have listed possible Soviet frequencies in previous issues and will continue to do so. If you collect and try and be sure to report you signals to Signals from Space.
SHUTTLE TRANSMISSIONS

While the majority of space shuttle communications are conducted at S-band (2.3 GHz), some UHF backup activity is still reported. During the final mission (October) we monitored the voice communications of astronauts Kathy Sullivan and Sally Ride on 259.7 MHz AM with a three-element Yagi and a Regency MX5000 and a Grove ANT-58 OMNI antenna.

Considering that the communications take place over Arkansas and we are in North Carolina, that's good DX!

The alternate UHF frequency is 296.8 MHz; 279.0 is also used from space suit to orbiter, but its 1-watt transmitter is too weak to be heard directly. However, those communications are repeated on the other two frequencies when they are used.

The two UHF channels are used only intermittently, most often in association with EVA (extravehicular activity) assignments. And don’t expect to hear any direct transmissions from the shuttle if they are in the equatorial orbit and you are in the northern states; the low altitude of the shuttle and the curvature of the earth puts the line-of-sight radio signals over the horizon.

Remember, the shuttle completes one full orbit every 90 minutes—that's 4 degrees every minute, so it will be in radio range for only about 3-4 minutes.

During polar orbits, there are times when every location on the earth is in a favorable position to monitor the space shuttle communications; such missions will be more and more frequent. Get your equipment ready for the next launch.

HAM NETS CARRY SHUTTLE TRANSMISSIONS

While it is increasingly difficult for SWL's to pick up HF space-related NASA communications, two amateur club stations regularly rebroadcast shuttle communications during their missions.

Goddard Space Flight Center at Greenbelt, Maryland, and Johnson Space Center at Houston, Texas, both have active ham radio clubs, authorized by the FCC to rebroadcast the NASA audio links. Listen for the transmissions on 3860, 7185 and 14295 kHz single sideband during space shuttle flights.

For direct NASA communications, prospective listeners might wish to tune to 5810 and 10780 kHz upper sideband, NASA’s Cape Kennedy primary call-in frequencies for support ships and aircraft.

And rocket booster recovery ships are commonly heard on 7765 kHz upper sideband, and countdowns are reported there as well. The HF activity peaks an hour or two before liftoff, but disappears immediately thereafter.

For a complete list of NASA HF frequencies and identifiers, consult Bob Grove’s SHORTWAVE DIRECTORY ($12.95 from Grove Enterprises).

BEHIND THE DIALS

THE TI-1 TUNING INDICATOR

The TI-1 tuning indicator presents an economical ($119.95) alternative to more expensive oscilloscope devices for accurately tuning in radioteletype signals.

Eminently simple to operate, the TI-1 plugs into the speaker jack of the receiver or transceiver and mark/space tones are displayed on an LED light bar.

Three positions of common shifts (170, 425 and 850 hertz) and their respective frequency offsets are switch-selectable from the front panel. A 12 volt power supply is required.

An internal speaker may be switched in for audible monitoring of the signal during tune-up if desired; parallel audio input jacks allow the addition of an external speaker if desired. This way, the unit may be left on line at all times, whether powered up or not.

A DC cord for attachment to your 12 volt supply and a 3.5 am (1/8") audio plug are provided.

A LOOK INSIDE

The circuit is very straightforward. An EXAR 2211 FSK demodulator feeds its detected two-tone signals to two LM3914 LED light bar drivers.

Attached to our ICOM R-71A receiver, the TI-1 proved reliable and extremely easy to use. For additional information, contact one of the amateur radio equipment suppliers in MT or your local amateur radio dealer.

VLF CONVERTER FROM LF ENGINEERING

Interested in extending the lower frequency range of your general coverage receiver down to 1 kHz? Then give serious consideration to buying the new I-101 VLF converter ($49 from LF Engineering, 17 Jeffry Rd. Dept. MT, East Haven, CT 06512).

A two-FET circuit in a small (4" x 2" x 1-3/4") utility box provides excellent gain, sensitivity and image/intermod rejection.
Connected to our R-71A test receiver, a 100 foot random wire antenna was able to pick up 10 kHz Omega navigational signals loud and clear.

Best of all, there was absolutely no trace of front-end overload from two local AM broadcasters, one on 600 kHz, right on the top end covered by the dirty little converter.

In actual measurement, the rejection of the broad-caster was 45 dB, showing the steep cutoff characteristics of the three-section low-pass input filter.

Another neat feature: When the unit is switched off, the antenna is automatically re-routed back to the receiver so that the converter does not have to be taken out of line. An internal battery delivers nine volts at only 2 milli-amp. hours, assureing long life even under extended use. An LED signals the converter's "on" status.

A crystal-controlled oscillator, accurate to 0.0025% (100 Hz), assures excellent stability.

Circuit design follows good engineering practice and quality of construction is excellent, utilizing glass epoxy board and solder plating.

The L-101 is equipped with RCA phono jacks for antenna and receiver connec-
tions, easily adapted for commercial. Receivers filters also allow the attachment of an external oscilloscope for X-Y displays.

The rear apron exposes a wide assortment of jacks for interfacing the clever accessory to the equipment of your choice. A plug-in wall transformer is included, as are several plugs to affix to your cables.

The unit comes complete with a printed overlay for the C64 keyboard. An interfacing cable is included.

While the vast majority of the progs can be run on the C64 alone, the use of a cassette or disk I/O is recommended to realize the total potential of the AEA package.

The SWTEXT allows text display on your C64 screen of RTTY (6, 67, 75, 100 and 132 WPM), ASCII (110, 150 and 300 baud), TOR (FEC and ARQ, amateur and commer-
cial), and Morse code (5 WPM and above).

But the multmode capability is just the frosting on the cake; just take a look at the following list of additional perks: text editing, word wrap, automa-
tic data I/O, text, line and page manipulation, ASCII dumping and retrieving, RTTY unshift on space (UOS), buffer on/off, keyboard audio feedback, dedicated function keys, screen color selection, bit inversion and transposition for RTTY encryption and decoding, RTTY timing analysis, RUSSIAN third-shift Cyrillic RTTY, and Russian and Japa-
ese Morse reception!

Program documentation for the CP-1 is available from AEA, the SWTEXT comes with a printed overlay for the C64 key-
board. An interfacing cable is included.

The CP-1 Computer Patch plugs into the receiver's headphone or external speaker jack and converts audio signals into TTL level and RS-232 signals in order to be understood by your computer. A variety of plug-in firmware is available for many of the home computers on the market today.

Controls on the CP-1 include a filter selection (170 hertz fixed, or contin-
uous-tuning variable shift) for the many types of RTTY systems encountered as well as CW tones. In the variable mode, center frequencies from 100-1000 hertz may be selected.

Another neat feature: When the unit is switched off, the antenna is automatically re-routed back to the receiver so that the converter does not have to be taken out of line. An internal battery delivers nine volts at only 2 milli-amp. hours, assureing long life even under extended use. An LED signals the converter's "on" status.

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Program documentation...
The first no-crystal hand-held scanner.

Now you can have the one scanner you've always wanted—a no crystal, fully synthesized hand-held scanner. The incredible, Uniden' Bearcat' 100.

Push button programming.

The Uniden' Bearcat' 100 works just like the full size, no crystal Uniden' Bearcat' Scanners. Push button controls tune in all police calls, fire calls, weather warnings, and emergency information broadcasts, the split second they happen. Automatically,

All the features you want.

16 channels for storing frequencies. 8 band coverage—including high, low, UHF and "T" public service bands: both the 70 cm and 2 meter amateur bands; plus, for the first time ever, both the military and federal government land mobile bands. Both automatic and manual search, lockout, scan delay, direct channel access. Even a liquid crystal display. Flexible antenna, earphone, AC adapter/battery charger and carry case are included.

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SCAN's 30,000 members know what others miss! Insider news. Frequency info. Tech tips. Awards. SCAN Magazine... and more! Send $12 for 1-year membership to the Scanner Association of North America, 240 Fenc Lane, Hillside, II. 60162.

Uniden Corporation of America, Personal Communications Division 6145 Castleway Court, Indianapolis, IN 46210

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To find out more about where to buy the Uniden' Bearcat' 100 or other Uniden' Bearcat' Scanners, call 1-800-S-C-A-N-N-E-R toll free.
**NEW ARRIVALS**

One excellent source for an effective adapter is Centurion International (P.O. Box 82846 Dept MT, Lincoln, NE 68501; phone 402-467-1491). Their model BC-BN is a special adapter which terminates in a standard BNC connector suitable for attaching the new Grove ANT-3 full-length telescoping whip for extended range, or coax from an external antenna. The list price of the BC-BN is only $7.50 plus shipping. Contact Centurion for additional information.

**UPDATE ON NEW SCANNERS**

A few surprises will be in store for scanner enthusiasts in 1985. Several Uniden Bearcat models are expected to be shown at the Consumer Electronics Show in Las Vegas this coming January, as will new products from Fox Marketing (their new Tracer series). News from Regency is that the anticipated DX-20 will be delayed until after the first of the year. Problems with spurious signals ("birdies") are suspected by industry spokesmen.

**CLUB CORNER**

I've very quickly developed a backlog of information from DX organizations which have sent me items, so let's get right to the good stuff.

ANARC, of course, is the umbrella organization for North American DX Clubs, and its counterpart in Europe is the European DX Council, or EDXC, which includes about 30 clubs in and outside of Europe.

Nineteen of these are member clubs and 11 are observer member clubs, with six broadcasting organizations sponsoring EDXC: Adventist World Radio Europe, the BBC, Austrian Radio (ORF), Radio Nederland Internationale, Radio Sweden International, and Spanish Foreign Radio (REE).

Various publications of interest to DXers and SWLs are made available by EDXC, including their Land List adopted by many DX clubs. It publicizes its own contests and gives Clubs publicity to its member clubs through "Euro DX," published 10 times yearly, and various programs broadcast over international radio stations.

The EDXC Progress Report is broadcast every other month on Shortwave Listeners Digest over Radio Canada International. EDXC's next Annual Conference will be held in Madrid May 24-27, 1985.

Secretary General Michael Murray notes that the renewal date for the newsletter is January of each year, with the current year extended to the 28th of February in North America, although with a possible postage hike coming up it would be best to ask for a sample copy and current subscription rates. Send 3 IRCs to P.O. Box 4 - St. Ives Huntingdon - Cambs PE17 4RE - England.

If you are learning a European language other than English, you could practice your reading techniques and gain valuable information by subscribing to a DX bulletin, and EDXC's club list will guide you to the right clubs.

A North American club which arose, phoenix-like, from the ashes of the old North American Youth DX Association of DX Reporters, now in its third year of publication of "DX Reporter." Based in Baltimore, AOX covers all bands except perhaps Longwave and, as a general-purpose club, is an excellent one to join if you are interested in more than...
one band and can’t afford to join more than one or two clubs.

In addition to the usual DX reports, "DX Report" contains a mailbag section with letters, questions, comments, and other items from around the world. DX clubs occasionally contribute features, milestones, or special columns to the magazine, such as "Morse Code" for members who use that mode. Rarely, there may also be a "DX QSL Corner" section, where DX’ers can write to each other and share QSL cards.

The magazine时常 includes sections on DX club conventions, DXpeditions to various countries, and other stories related to DXing and amateur radio.

The DX World Magazine is published by The DX WORLD Foundation, Inc., a non-profit organization dedicated to promoting DXing and amateur radio. The magazine is distributed worldwide and available in print and digital formats.

WHAT IS DXING?

DXing is the practice of communicating with other radio amateurs located in remote areas or countries, often using shortwave radio. DXing involves listening to the radio, identifying stations, and communicating with them. DXing is a popular hobby for amateur radio operators worldwide.

DX World Magazine is a publication for DXers, containing articles and columns written by DXers, providing information and tips for DXing. The magazine is available in print and digital formats.
THE BEST OF MONITORING TIMES: 1982 and 1983, edited by Bob Grove (8-1/2" x 11"), 56 and 80 pages respectively, softbound, $8.95 and $10.75, or $10.00 and $12.00 plus free book rate shipping from Grove Enterprises, P.O. Box 98, Brasstown, NC 28902.

Approximately 100 of your favorite articles to appear in the pages of MT in its first two years of publishing, updated where necessary. The most popular articles we have ever published and still in high demand—technical topics, programming scan lists, out of band, monitoring Air Force One, laws about listening, monitoring the space shuttle, military communications, insights into international broadcasting, TV and communications satellites, drug smuggler communications, ship to shore and aircraft radio, equipment modifications and home-buil projects, antennas, equipment reviews and much, much more.

CONFIDENTIAL FREQUENCY LIST by Oliver P. Ferrell, 6th edition (6" x 9"), 304 pages, softbound; $13.95 plus $1.00 shipping from Gilfer Associates, P.O. Box 279, Dept. M, Sanger, CA 93656.

Posthumously published, this last edition of Perry Ferrell’s CIR PM returns the integrity of his previous works. Better yet, it also contains the RTTY guide which was previously published as a separate book.

All data are arranged in frequency order, from 4 to 28 megahertz, and includes mode, call sign, frequency, rate, location, service, power and remarks to further identify the listed user.

Services in the aeronautical, military, government, maritime, common carrier and industrial are included.

THE HIDDEN SIGNALS ON SATELLITE TV by Thomas P. Harrington and Bob Cooper, Jr. (170 pages, 4-1/2" x 11"), paperback; $14.95 including shipping from Grove Enterprises, P.O. Box 98, Brasstown, NC 28902.

The most carefully guarded secret of satellite TV is now out. Hidden between the entertainment channels is a world of two-way communications intrigue and special subscriber services.

Stock market reports, long distance telephone, news and press teletype, business teleconferencing, scientific dialog, special sports events, background music and National Public Radio—all regular listening fare if you are properly equipped. And this book tells you just how to do it!

If you have satellite TV setup, or plan to install one, you can’t afford to be without this information-packed book which will open a new horizon of monitoring for you.

MONITORING AMERICA edited by Rick Prelinger (5-1/4" x 8-1/2", 592 pages, paperbound; $14.95 including book rate shipping from Grove Enterprises, P.O. Box 98, Brasstown, NC 28902)

Comprehensive both in depth and breadth of content, MONITORING AMERICA delivers what its title promises: an intense, concise listing of the most productive frequencies in use across the country, both for scanners and AN/AM/FM radios as well. Let’s take a look at Florida as an example.

Law enforcement frequencies and channelization plans; turnpike unit numbers and post identifiers with channels, dispatch signals; State agencies, educational institutions, amateur repeaters, hotel and shopping mall security, airports, AM and FM broadcasting frequencies and program formats, Cape Kennedy space shuttle operations, Walt Disney World, and more—all conveniently arranged by location for optimum referencing. (See adjacent ad.)

Special nationwide tables list frequencies for CAP, HEAR, Red Cross, racing clubs and sports teams, entertainment tables.

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Send your order today!

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Natick, MA 01760

Page 17

Library shelf cont'd

39 ONE- EVENING ELECTRONIC PROJECTS by Robert J. Traister (172 pages, 5" x 8", softbound, $9.95 from TAB Books, Dept. MT, Blue Ridge Summit, PA 17214).

"Are your soldering iron hot? If you’re ready to learn some basic techniques in electronics and finish up with clever, (almost) foolproof one-evening projects, then this little handbook is for you.

Test circuits, crystal oscillators, simple radios, audio oscillators, power supplies and converters, miniature transmitters, dummy loads, audio amplifiers—just a taste of the tantalizing simple projects in this affordable book from TAB.

FOX SCANNER RADIO LISTINGS edited by Norm Schrein (130 pages, 8-1/2" x 11", softbound, $9.95 from Fox Marketing, 4318 Taylorsville Rd., Dept. MT, Dayton, OH 45424.)

Yes, our own "Tune in Canada" Norm Schrein has been busy again. These latest two scanner directoraries from Fox cover the Columbus, Ohio, area (most of southern Ohio) and Fort Wayne, Indiana/Lima, Ohio area.

As always, the listings have been meticulously researched, verified by on-air listening whenever possible. And as with all Fox directoraries, listings are cross-referenced by frequency, licensee, and type of service.

A special Alaska directorary has just been released from Fox, containing 205 pages of previously-unpublished data. A wealth of hot information from our coldest state.

WORLD STATUS MAP (11" x 17"), double-sided, glossy; subscription $36 per year from WSM Publishing Co., P.O. Box 2533, Dept. MT, Fairfax, VA 22031).

For those listeners—and travelers—who wish extremely timely information regarding State Department traveler advisories, war zones and danger areas, disease areas and quarantine information, passport and visa hints and other pertinent data, this is a handy publication.

Suitable for posting, the three color map shows world country borders with comments of current interest. A single sample is $4.50

LONG WAVE UPDATE Edited by Ken Stryker (12 pages, 5-1/2" x 8-1/2", paperbound).

In the late 1980s the late H. John Clements published his last edition of the popular Beacon Guide, a comprehensive list of 190-512 and 1550-1921 kHz navigational beacons to be heard worldwide.

Ken Stryker has since taken on the laborious responsibility of tying together all of the loose threads to periodically update the directory, and this latest publication shows his success.

Thousands of listings are cross-referenced by frequency and call letters (in the guide and updater), and additional information such as location and nature of beacon are included.

For a copy of the BEACON GUIDE and updater send $7 to Century Print Shop, 6059 Basix Street, Dept. MT, Riverside, CA 92504. And for additional information on monitoring the low frequency bands, write to the Longwave Club of America, 45 Wildflower Rd., Levittown, PA 19057. A subscription to their newsletter, LOWDOWN, is $10 per year.

DISCOUNT AMERICA GUIDE:
DIRECTORY OF COMMUNICATIONS EQUIPMENT DISCOUNTERS ($1 pages, 8-1/2" x 11", paperbound; $3.30 from Discount America Publications, 51 East 42nd St., Room 417T, New York, NY 10017).

Most Americans live far from major metropolitan areas where cut-throat discount rules the day. Mail order then becomes a way of life. A series of discount source directories covering tools, travel, automobiles, printing, publications, music, hobbies, appliances and other needs are available from this publisher.

We sampled their communications directory and found well over 100 mail order discount dealers listed with products and services for the radio hobbyist. A helpful section on consumer laws to protect the mail order recipient was also included.

SHORTWAVE FACSIMILE FREQUENCY GUIDE by Joop Balneger and Michiel Schaay (8" x 12"), 64 pages, softbound; $14.95 plus $1.75 shipping from Universal Electronics, 1280 Alda Drive, Dept. MT, Reynoldsburg, OH 43068).

Anything written by Netherlands' Michiel Schaay is bound to be carefully researched and accurate; this latest publication is no exception. With sample facsimile photos, letters from the agencies monitored, and an introduction regarding equipment, the FAC DIRECTORY additionally provides frequencies and schedules for dozens of facsimile stations worldwide. A comprehensive listing by frequency is included.

MONITOR AMERICA
The Communications/Travel Guide • 85-'86

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Numbers • Sports & Entertainment • National Parks • Events and Monuments • Maps • Weather/Severe Storms • NOAA Weather

Major World Areas

www.americanradiohistory.com
HANK BENNETT ON SHORTWAVE

ECHOES FROM THE PAST - CONTINUED

Last month we began a series of questions of nostalgia and interest we're continuing this month. Readers will recall that in the October issue I mentioned a duck salesman and you'll also find this as the first question in the November column.

While there hasn't been sufficient time to receive replies on the November questions, we did receive an interesting letter from Donald L. Sass, somewhere in the air (he was flying at the time but his home is in Tigard, Oregon). He correctly identified the duck salesman as Joe Fenner, a comedian from many years ago who had as his pet line "Ya wanta buy a duck?" to any unsuspecting soul.

There was another one but time has faded our memory. Perhaps someone can assist - Do you remember another radio personality named Phil Cook? He, too, may have been a comedian. By the way, to correct any possible thoughts about the source of our stumpers, we have not made reference to any existing publication on any of our questions. They're all "home-brewed."

Here we go with this month's batch and again we ask you to send in your replies numbered as we have numbered the questions. All replies, please, to Hank Bennett, P.O. Box 3333, Cherry Hill, New Jersey 08034.

31-What is the presently-announced location of WOW-TV, channel 9?
32-What was the beer, supposedly plugged by comedian Henry Morgan, that was said to have the foam on the bottom?
33-On what show was the Kingfisher?
34-Who played the part of Snooks?
35-Eddie Cantor introduced many people on his radio program. Name a lad with a high singing voice and the initials BB and a lass with a beautiful voice and the initials DB.
36-Who brought in New Years Eve on many years?
37-What old radio show had names of playing cards in its title?
38-A very popular male singer of many years ago had the initials MD.
39-What on station (or stations) were the Adams Singers once heard?
40-Who was Eddie Startz?
41-A very popular female singer, along with Winston Churchill, were once claimed to be the two people who kept England afloat during World War II. She is still in great demand today. Who is she?
42-Another very popular singer, now deceased, has the name of Harry Louis... Who was he?
43-Two singers who often teamed together on popular and semi-classical music on the old Arthur Godfrey Show. Who were they?
44-Who was the announcer on the Garry Moore show?
RA was founded in 1939. "Australia Calling," with broadcasts in English, Dutch, German, Italian and Spanish. By 1941 it was decided to concentrate on Asian nations, along with Papua New Guinea and the Pacific area. Currently, English, French, Neo-Melanesian, Japanese, Thai, Vietnamese, Indonesian, and Chinese languages are used.

The name "Radio Australia" was adopted in 1945 and the A.B.C. has operated the service since 1950.

English programs are broadcast around the clock (24 hours a day) to Papua New Guinea; for 23 hours daily to Papua New Guinea; 2-1/2 hours to Africa; and the following schedule for North America:

- **0200-0300** 17795 kHz
- **0200-0400** 15320 kHz
- **0300-1600** 9580 kHz
- **0300-1600** 17795 kHz
- **0200-0400** 15320 kHz
- **0200-0400** 13595 kHz

Radio Australia operates from Burwood East, Melbourne, where they have 18 studios and news and control booths. A staff of 170 functions here with more than 50 persons employed in the news and public affairs section. Programs from this section have an unrivaled reputation for accuracy and reliability.

PROGRAMS

- **INTERNATIONAL BROADCASTING SCHEDULE: 1 UPDATE**
  - **BRITAIN:** BBC
    - 1100-1330
    - 1230-1400
    - 1500-1630
    - 1730-1900
    - 1930-2100
    - 2130-2300
  - **ECUADOR:** HCJB
    - 1200-1430
    - 1430-1630
    - 1630-1900
    - 1900-2100
    - 2100-2300
  - **USA:** VAQ
    - 0000-0230
    - 0230-0430
    - 0430-0630
    - 0630-0830
    - 0830-1030
    - 1030-1230
    - 1230-1430
  - **SOUTH AFRICA:**
    - 0200-0256
    - 0615-0620
    - 0930-1000
    - 1000-1020
    - 1020-1040
    - 1040-1100
    - 1100-1120

INTERNATIONAL BROADCASTING SCHEDULE: 1 UPDATE:

- **BRITAIN:** BBC
  - 1100-1330
  - 1500-1630
  - 1730-1900
  - 1930-2100
  - 2130-2300
- **ECUADOR:** HCJB
  - 1200-1430
  - 1430-1630
  - 1630-1900
  - 1900-2100
  - 2100-2300
- **USA:** VAQ
  - 0000-0330
  - 0330-0630
  - 0630-0930
  - 0930-1230
- **SOUTH AFRICA:**
  - 0200-0256
  - 0615-0620
  - 0930-1000
  - 1000-1020
  - 1020-1040
  - 1040-1100
  - 1100-1120

This 237-page photo-illustrated autobiography reads like a novel, reflecting often on his radio hobby, sprinkled generously with wry wit. NOK18

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**EQUIPMENT REVIEWS**


**1983 SUPPLEMENT WITH 350 PAGES**

Dozens of receivers, tuners, antennas, speakers RTTY equipment and other radio accessories thoughtfully examined and critiqued. Includes Sony, Yaesu, McKay Dynex, MFJ, Grove, Kenwood, Magna, Panasonic, Radio Shack, Datong, Evesdropper, Sherwood, Drake, GE, Hammarlund, Grundig, ICOM, Bearcat, Regency, and many others.

Includes many fine articles on broadcast and utilities monitoring along with frequency lists.

BRK2 $5 (33 IN STOCK)

Same as above but with two updates totalling 289 pages.

BRK3 $4 (43 IN STOCK)

Same as above but no updates included.

BRK5 $5 (55 IN STOCK)

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24 hours a day frustrated many veteran DX'ers to the point of giving up and turning to shortwave and other bands.

Gone was the time when a DX'er could pick a given frequency and listen to the stations sign off the air at a local midnight Monday morning across the continent, finally leaving a 1000-watt (or lower power) station in the clear on the west coast. Then, after it signed off, they could expect a signal from Hawaii or even the South Pacific to come up from the noise level.

Nevertheless, better receivers, antennas, and above all DX techniques, have enable the broadcast band DX'er of the '80s to dig out DX just as rare as his father did decades previously.

Although some DX'ers (whose value number in the thousands) are still logging new stations at a regular rate which will one day be followed by DX'er with decent DX, so that he doesn't have to rush out and invest in a new radio. I own six of eight DX-grade radios and I paid the grand total of $385 for all of them; only two were new.

The portables include their own antennas, and performance could be improved with an outboard antenna. The communications receivers will need to be connected to a random-length wire, a beverage antenna, an amplified loop, an amplified box loop, or an antenna to an antenna. All are readily available.

Finally, the DX'er will need information on stations, other equipment, and many other topics of interest to him through commercial sources, or better yet through such clubs specializing in broadcast band DX'ing such as the National Radio Club or the International Radio Club of America.

These clubs can provide printed material on DX techniques, equipment, station lists, and timely bulletins listing new DX stations that have recently been heard...and how. Best of all, through the clubs, one can get to know other DX'ers who have been through it all, and instead of attempting to reinvent the wheel a friendly conversation with another DX'er can open up pubtions for the beginning broadcast band DX'er.

Although QRM is indeed at all-time levels, and more noticeable on the LW and BCB bands than others, programming has changed markedly, making listening to broadcasting stations more enjoyable. Rock and country are still available, but now all forms of music, from easy-listening to ethnic can be heard.

And with the decline in the number of stations which reject wall-covers, re-modulated music, adjacent-channel DX'ing with little splatter covering up distant reception is becoming possible.

If you stay up late at night...or into the grey hours of the morning...and then hear faint stations in the usual areas between 10-15 kHz and standard 10 kHz frequency segments, you may be hearing stations from Central and South America, or even Europe, Asia, or Africa.

You may hear KFI on 640 or KSL on 1160; WBZ on 1030 or WSB on 750. If it's Saturday night, you can hear the Grand Ole' Opry on WSM's 650. And almost anywhere in the United States you can hear WLS on 920 still playing records. Look below on 870 with country, or WHO, 1040, with talk programs and WCN, 720, with anything from classical music to sports.

These three-letter call stations are all part of a DX'ers dream, scrolled by hooked on broadcast band DX'ing by the time you've finished listening to them, you probably don't like anything else.

Interested in getting your ham ticket?...

 Amateur Radio Now Accessible to Everyone

By Gordon West, WB6SAO

The Federal Communications Commission is now officially out of the ham radio test-taking process. So you are planning on becoming an amateur radio operator, the test you take will be from a fellow ham operator.

Public Law 97-259 amended the Communications Act of 1934 that allows the FCC to accept the voluntary service of licensed radio amateurs in preparing and administering the amateur radio service exam.
NO SECRET QUESTIONS

The FCC has also published every single question with exact wording that may be found on any amateur radio examination. Your choices will be multiple choice and will be taken from the following question pools:

Class Actual Questions License on Exam
Novice 20 selected out of 200 by a single volunteer examiner. 5 wpm code sending and receiving test.
Technician 50 questions selected from 500 by FCC. No further code test if you hold Novice license.
General 13 wpm code sending and receiving test. No theory test if you hold Technician license.
Advanced 50 questions selected out of 500 by the FCC. No further code test if you hold General license.
Extra 40 questions selected out of 400 by FCC. 20 wpm code sending and receiving test.

While you may initially select any license class, you may wish to start with the Novice license—the entry level ticket. The code is easily learned at 5 wpm in 30 days or less. The written material can be digested by reading books, but it’s much better to get involved with a ham radio club.

Many amateur radio clubs sponsor free ham radio novice classes. Go to your local ham radio store or library and look on their bulletin board for ham club information.

The novice test is given by your instructor. You’ll first take the code test, sending and receiving; next you’ll take the 20 question multiple-choice exam. The instructor will tell you how well you did.

The instructor then sends away for your call letters, which you will receive in about three weeks from the Federal Communications Commission in Gettysburg, Pennsylvania.

The novice license allows you worldwide code privileges on four amateur radio bands. You are not permitted to use voice with a novice license at the time of this writing; however, there may be a move to allow novice operators some voice privileges on the 220 MHz band next year.

UPGRADING

Three volunteer examiners, appointed by a volunteer exam coordinator, will administer all other tests beyond the novice. The technician and general class licenses are your next steps up the amateur radio ladder and will take approximately 60 to 90 days of book study. Since all questions are published, there is no chance of getting any question that you didn’t know was coming.

Several organizations are publishing the multiple-choice answers that will be on the FCC tests. Check with your local amateur radio store for testing material.

The technician class license allows voice privileges on VHF frequencies above 50 MHz, and code on novice bands. If this is all that you’re looking for, you won’t need to increase your code speed beyond 5 wpm. The technician class license allows use of the 2-meter repeaters as well as taking advantage of the orbiting amateur radio satellite. If you’re into computers, radio teleprinter, slow scan television, and talking with handie-talkie radios, the technician class license with only a 50-question test may be just the thing for you.

SWL HEADQUARTERS

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Page 21 However, if you want to talk to the world, you will need to pass the general class 13 wpm test. This takes about the same amount of time as the technician written, and you study both at the same time. An ideal classroom situation would be tech theory for two hours, and general class code for one hour. About three months of this and you are ready to pass your general class 13 wpm sending and receiving code test.

The local FCC field office will tell you whom to contact for taking an amateur radio examination. The American Radio Relay League, Newington, Connecticut 06111, can also be contacted for information about volun-

www.americanradiohistory.com
ter examinations in your immediate vicinity.

The general class license allows worldwide privileges on all amateur radio bands. Recent band expansions give you plenty of room to take full advantage of this coveted license. The general class license is "the biggie" that you should shoot for.

The advanced and the extra class licenses give you more exclusive frequencies in addition to general class frequencies. These hams don't give you any new bands, just a little bit more elbow room to communicate.

LOCATING HAM CLASSES

Most amateur radio clubs and community colleges will offer ham radio licensing classes. You could go to a ham radio store and a ham radio club in your area. If you can't find one, stop by the house of the fellow down the street who has that huge tower. Chances are he will know of a ham club in your area and be able to tell you where classes may be given.

The American Radio Relay League (Newington, Connecticut 06111) can also assist you in finding volunteer examiners who will tell you about upcoming classes, tests, and courses. The ARRL also has an excellent information sheet about the amateur radio service. If you are good at studying on your own, you might take advantage of the many ham radio home study courses that are available. Radiosport College Drive, Costa Mesa, California 92626) offers a $65.00 home study course that will easily lead you to your novice class license.

The Radio School course consists of tape cassettes and a fully illustrated text book. Also included are the 200 novice class questions as well as all 500 technician/general class questions. They give you all of the information on how to contact any local ham to give you the novice test. There is a special package expressly for the volunteer ham to give you the test—even including the 5 wpm code test.

Also included in the $65.00 mail order program is an expensive Morse code oscillator key and tone oscillator, completely assembled including the battery. This will help you send and receive Morse code easier as you practice with the tapes.

BUT YOU DO HAVE TO PASS!

Volunteer examiners are under close scrutiny by the exam coordinators as well as the FCC. Any impropriety of test-giving could result in the extra class operators losing their own license. No one is given an amateur radio license who doesn't actually pass all the test elements.

If you've always been interested in getting your ham license, but were afraid of the code or the test, put away those fears and get started now. The more relaxed atmosphere of testing will surely make the code easier to learn. You'll be less jittery when you start sending out those first few words.

There are only 425,000 licensed hams in the United States—until now the ham radio service has been reserved in its entirety for those with a tough test prepared to answer. Now, with every test question published, it's easy to prepare for passing any element in amateur radio licensing.

Welcome to the world of amateur radio, and don't hesitate to drop me a note here at Radio School if you should require more information about the testing process.

THOSE NEW HAM BANDS

The World Administrative Radio Conference held in Geneva, Switzerland in 1979 (WARC '79) created several new amateur radio allocations; only the 10.1-10.15 MHz band is presently authorized in the United States. Pending approval of the Notice of Proposed Rule Making (PR Docket 84-960), the following measure could be enacted.

30 METERS The band 10,100-10,150 MHz may be used inclusively (there was a hole at 10,112 MHz protecting a military RTTY frequency which now has been moved) for CW and RTTY, 200 watts maximum power (no voice), general class and higher. It is shared with the foreign fixed service.

17 METERS To be shared with the fixed service, the band 18,068-18,168 MHz will not become an amateur band until July 1, 1989 because of continuing use by the U.S. federal government. General class and higher.

12 METERS Scheduled to be released to U.S. amateurs on or before July 1, 1989, the 24,890-24,900 MHz portion of the spectrum will be divided into two subbands: 24,89-24,910 (CW/RTTY) and 24,900-24,990 MHz (all conventional HF modes). General class and higher.

The FCC is anticipating the decision will have on amateur television (ATV) networks extensively used in the larger cities, many of which border Canada, utilizing that band. An FCC waiver is a possibility.

MICROWAVE MOBILIS: The explosive growth of 806-960 MHz also includes a new amateur portion: 902-928 MHz (except Colorado, Wyoming and U.S. possessions in Region 3 where defense installations use the band), shared on a secondary basis with government, microwave ovens (part of the "ISM"—industrial, scientific, and medical, communication), and automatic vehicle monitoring systems (AVM). All amateur privileges, technician class and above.

GROVE RECEIVES AWARD

To: Bob Groves, Editor of Radio Communications Society of the World

Bob Groves, editor of Monitoring Times and president of Grove Enterprises, Incorporated was recently presented an honorary life membership by the Radio Communications Society of the World.

The Society presents these awards to individuals who, in their judgement, make outstanding contributions to better worldwide human relations through the medium of radio communications.

PIRATE RADIO

by John Santosoosso

CENTRAL AMERICA:

For obvious reasons we have to be very vague about this, but one leftist Central American clandestine has now set up an office in the United States and is soliciting material for its operation. Among the items wanted are a stereo mixer, 1000 watt signal amplifier, a transceiver for the 41 meter band, radio technician tools, and a variety of other useful things.

This is an unusual development and may be the first time anything of this nature has been attempted. What sort of response the station will receive remains to be seen. However, the Central American revolutionaries movements probably have more support in this country than is commonly believed.

PROGRAMMING PERSPECTIVE by John Arthur

"From the dark deserted streets of a city destroyed" comes Tangerine Radio to
provide relief from radio indignation. The only known North American anarchist station, TR combines selected, relevant music, not so subtle comment and anti-establishment activity. Raunchy Rick tells you to "Be super smart in your computers, billing cards and plants music from "Imagine" to "Lynch the Landlord." *Programs are "produced in a commercial studio in downtown Miami and flown to the Bermuda Triangle transmitter site in unmarked airships. TR originally had problems getting out, but they have been heard in Kentucky and Tennessee, so problems may be fixed.

TR has a specific tangerine-colored QSL card available if you hear their 20-watt signal. To get one send a complete and detailed registration of three cent stamps to Box 5074, HiLO, HI 96720; tapes and fresh tangerines accepted. Watch for the soft Tangerine glove. If you have a mind's eye, a sure sign you have tuned to Tangerine Radio.

Look for the station on 7372, 7430, and 14535 kHz on the first weekend of the month and the night of the full moon. Europeans may be able to hear the station relayed by stations in their area. There may even be a few shows in German.

**ANARCHIST RADIO:**

From Tangerine Radio's Raunchy Rick comes news of the growth of anarchist radio in Europe. The current resurgence of anarchism has led to the creation of several anarchist clandestine stations. "Radio Liberal" has been testing in Portugal. "Radio Libertaire," an FM station in Paris, started out as a pirate but became legal when FM radio was somewhat deregulated there.

"Our Radio" in London has no legal registered operations. "Radio Kiel" in Valencia, Spain, was closed twice by the authorities, but there was such a public outcry that the governor was tolerating the station—for a while, anyway. Squatters in Amsterdam also have a station and Rick points out Tangerine Radio in North America's "anarch~pirate." Our thanks to Rick for his help. We wish more stations were as helpful in keeping us up to date on their operations and general pirate news as is Tangerine Radio.

**Canadian Confidential:**

Readers in major metropolitan areas of Ontario may want to look around the dial for a new-FM pirate. He likes Bruce Springsteen music and does take phone calls. He cannot tell you out any additional details.

MAILbag:

From Alberta, Canada, we have heard again from Bill Dang, who is having considerable success bagging pirates. WINP was heard August 13 from 0500 to 0545, with rock music and letters on 7410. Radio Heartland checked in September 1 from 0330 to 0349 on both 7427 and 6280 kHz. We heard from 0305 to 0615. Programming included an old time "The Shadow" segment. It is interesting to hear a station increasingly going to dual frequencies for their broadcasts. The operators are obviously becoming more sophisticated.

In Florida David Crawford has heard a variety of things. On September 15 he came across the return of the mysterious "Voice of Tomorrow" with its usual anti-Semitic programming. The frequency was 7410 at 2220 GMT with a solid QRP signal. Also heard was QRP on September 17 on 7432 signing off at 0045 but returning 15 minutes later. An unidentified pirate was logged on 7431 the same date, with a very weak signal fading out at 0115.

Dave also heard the new anti-Sandinista clandestine Radio Monimbo on September 17 on 6230 for 0000 to 0100 and 0200 to 0300. He notes the signal was quite strong. The Baghdad Masses program has been logged by Dave at 1930 on a variety of frequencies. These are 9685, 9689, 11695, and 13700. A different program, but using the same ID, is on 9745.

QSL ADDRESSES:

Here is the final portion of the latest edition of John S. Lynch's QSL address list. All of the following can be reached via Box 5074, HiLO, HI 96720: VEAK, WROT, KEX-105.9, KFAT-1560, KBRO, KNTL-750, KGBS, KSUS-880, KTEL, Radio USA, Rolling Thunder Radio, Secret Mountain Laboratory, Tangerine Radio, WABC, and Voice of the Rainbow.

The following can be reached via Box 40554; Washington, DC 20016: WBST-606, Pirate Radio New England-1616, and Radio Bag.

Other addresses are Voice of Redemption, Box 1411, Calumet City, IL 60409; KHAN and KMA, Box 3192, Joliet, IL 60434; and Fantasy Broadcast Station, Box 23792, Phoenix, AZ 85063.

Some of the FM and medium wave stations listed above can also be heard on short wave. Remember to include three 20-cent stamps with your report, and let us know what you are hearing.

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**A Pirate's Life...**

The Victor J. Alcorn Story

By William J. Martin

**PART TWO**

CONCLUSION

The WBUZ-FM Bust

Victor Alcorn's second run-in with the FCC occurred in September of 1981, when a Central Islip listener contacted the FCC Watch Office to complain that an unlicensed FM broadcasts station was operating on 103.9 MHz and utilizing teclo-loop lines.

On September 3, 1981, engineers Suffa and Hansbuck took one of the Commission's MADF vehicles and drove to the Sayville area. At 6:29 p.m. they monitored the unlicensed transmissions from a station using the call letters "WBUZ" on 103.9 MHz. By 6:50 the engineers had contacted theirDispatch and determined that WBUZ's signals originated from a house on Alfred Street in Sayville.

Using the equipment in the MADF vehicle, Suffa measured the station's field strength as 1,585 microvolts at 350 meters west of the house on Alfred Street...leading the engineers to conclude that the station was transmitting with nearly 4,000 times the RF power permitted under the FCC's Part 15 rules for low power wireless microphones.

As the engineers approached the house, they were advised by a neighbor that the upstairs tenant of the two-family house was Victor Alcorn. Mr. Alcorn had erected the prominent VHF collinear antenna on the roof of the house during the past month.

At the time the engineers knocked on Alcorn's door and asked that he permit them to inspect his transmitter. Although Alcorn again refused the FCC permission to see his station, he did speak with the engineers and admitted operation of WBUZ. Alcorn was apparently using a modified ARC-3 military surplus transmitter at the time.

According to the engineer's report, Alcorn also admitted at that time that he had operated WPOT and WBLO in the past, and that although he had been the operations on the 108.5 MHz frequency due to the risk it created in the radio navigation service, he would probably resume operations on other FM frequencies since he was not causing anyone harm and the FCC would never grant him a commercial broadcast license.

Alcorn indicated to Noel and Suffa that he didn't expect to do anything to prosecute or fine him, since nothing had happened as a result of his earlier busts.

Nonetheless, the local FCC office was getting quite perturbed by Alcorn's antics. Engineer-in-Charge Alex Zimmer submitted a report to Washington with respect to the case, made it very clear that his office was recommending that the severest penalties be imposed against Alcorn. After summarizing the history of the enforcement actions taken by the FCC...
against WPOT, WBLG, and WBUZ, Clizzy wrote: "This case is concerned with repeated unlawful operation of a radio transmitter, with payments of an administrative fine. The case does not involve any interference to Commission licensees on the FM broadcast band, as well as demonstrated harmful interference to the Aviation Radio Services. Furthermore, unless the Subject (referring to Alcorn) is subsequently restrained in his unauthorized activity, he will again and again repeat his unlawful operation from different locations, thereby putting a heavy toll on Commission manpower and equipment to track him down and stop, if only temporarily, his potentially dangerous operation."

As a result to the September 1981 bust, a Notice of Apparent Liability (NAL) was issued against Alcorn and a $750 monetary forfeiture imposed. Alcorn, however, refused to pay this fine.

WBUZ-FM CONTINUES TO CHALLENGE THE FCC

Incredibly, Alcorn continued to broadcast over WBUZ regularly on 103.1 MHz in the U.S. and formerly published his pirate radio operations. In a detailed story in the April 24, 1982 edition of The New York Times, Alcorn—using the pseudonym "Steven Rook"—was featured and a photograph of him in his bedroom studio was prominently displayed. According to that article, the WBUZ transmitter was, at that time, rated at 18 watts and was sometimes on the air as much as 20 hours a day. When asked why he persisted his transmissions despite the repeated FCC fines and warnings, Alcorn reportedly said, "I always wanted to be a disk jockey. This is the only way I can do it."

The continuing broadcasts and publicity generated by Alcorn had not escaped the FCC. Their repeated warnings, in July 1982, when FCC field officers and federal marshals surprised Alcorn in the midst of a broadcast and arrested him.

ALCORN'S CRIMINAL PROSECUTION

The specific details of the Alcorn criminal case are not available; however, we do know that— as its "standard operating procedure"—the FCC Field Operations Bureau itself does not handle criminal prosecutions of unlicensed broadcasters. The Field Operations Bureau, once it determines that a violation of the Communications Act of 1934 warrants criminal prosecution rather than administrative sanctions, recommends such criminal charges to the Department of Justice.

An Assistant U.S. Attorney is then assigned to the case and he or she makes an independent analysis of whether the case is serious enough to warrant criminal prosecution. In fact, in several recent cases such as the highly publicized "Commandante David" case in Miami, the U.S. Attorney's Office has decided against prosecuting unlicensed broadcasters despite the recommendations of the FCC.

In Alcorn's case, the Assistant U.S. Attorney was faced with a situation where Alcorn (1) had admittedly caused harmful interference to the radio navigation services; (2) had continued his operations despite repeated warnings from the FCC; and (3) had apparently changed his call sign in each instance to avoid detection. Unlike Commandante David, Alcorn did not have thousands of anti-Castro political supporters lobbying for his release. The Department of Justice decided to press the criminal charges against Alcorn.

At his trial in U.S. District Court in New York, Alcorn pleaded guilty to the four counts, though it is not known whether a plea bargain was struck between the government and the defendant. The defendant was handed out by the Court—18 months probation and a $750 fine—was relatively light in view of the maximum penalties of up to four years imprisonment and up to $40,000 in fines which could have been imposed.

The story of WPOT, WBLG and WBUZ. Other pirates are sure to continue to be heard from Long Island, though it is unlikely several recent cases such as the highly publicized "Commandante David" case in Miami, the U.S. Attorney's Office has decided against prosecuting unlicensed broadcasters despite the recommendations of the FCC. In Alcorn's case, the Assistant U.S. Attorney was faced with a situation where Alcorn (1) had admittedly caused harmful interference to the radio navigation services; (2) had continued his operations despite repeated warnings from the FCC; and (3) had apparently changed his call sign in each instance to avoid detection. Unlike Commandante David, Alcorn did not have thousands of anti-Castro political supporters lobbying for his release. The Department of Justice decided to press the criminal charges against Alcorn. At his trial in U.S.

You'll be darn lucky if your simple loop gives you anywhere near a +0 or -0 degree error when RDFing "numbers" transmissions in the short-wave spectrum.

Even the smallest percentage of sky-wave when mixed with ground-wave gives advantage in this with the 180 degree ambiguity and you've got big problems! There are even times when the FCC has trouble with the 180 degree ambiguity!

This is not to imply that simple loops are of no value. They can be very relatable any will ever cause, without! AM broadcast frequencies during the day and when you are receiving ground wave signals close to the transmitter site.

I'll have more on RDF in a future issue.

SOVIET HIGH-TECH

There's a Soviet version of the American WACs now in the developmental stages. This aircraft—the I-10 Skyhawk—was designed in the Netherlands encountered navigation problems that caused it to drift to about 15 minutes flying time of the highly sensitive and strategic Kola Peninsula.

Had it not been for the quick thinking of two Norwegian fighter pilots now Kola Peninsula flanks the northern borders.
of Finland and Norway, the site of sensitive Soviet arms sales and Air Force installations.

SPYING AND MORE SPYING

A general notion these days seems to be "top-heavy" with spy adventures and misadventures of all types. The California case is especially interesting in the fact that "code books" were found with other spy-type paraphernalia.

Unfortunately that the "code-book" find was omitted from most newspaper accounts. It's my opinion that "code-books" imply radio transmissions of some type—even even some of those obscure "numbers" like transmissions that are reported on rare occasions.

MUY SUCIO Y MUY LIMPIO

Wonder why the 5-digit Spanish transmission are "muy limpio" (very clean)? I also wonder why the 4-digit Spanish transmissions are so "mu limpi" (very clean).

This is all very curious. When some knowledgeable sources strongly believe both types of transmissions are related. Maybe it's a city cousin and country cousin type of relationship.

REDUNDANCY

6848 KHz is a HOT FREQUENCY to watch! There seem to be no end to the various types of "numbers" transmissions to be monitored there. I've recently noted British military transmissions mixed with "numbers" transmissions of the CI02 type. Very curious.

Let me know what YOU hear on this frequency.

TRIVIA TIME

Remember when some Spanish "numbers" transmissions used to intro with "music-box" sounds? It hasn't been that long ago.

THE NSA AND TELEPHONES

The New York Times reported that the National Security Agency has proposed that the government as well as private industry be equipped with as many as 500,00 or more telephones that can be secured against interception.

Seems that the phones proposed by the very very secret NSA would be used by the CIA, DIA and the DOD. Usage by private industry would include private phone service contractors and banks.

Guess the Soviet Glen Cove mansion and their consul in San Francisco have the "super-spooks" of NSA just a little upset. I would imagine they're even more than a little upset about other Soviet intercept sites within our borders. Those intercept sites are everywhere these days.

WHAT THE XF#1 IS GOING ON IN FLORIDA AND CUBA

Cuba prepares for an imminent invasion by the United States and a Florida "think-tank" spokesman comes down with Fidel being in the terminal stages of LEUKEMIA! That's pretty heavy stuff.

The Cuban defense plans could add something to Cuban Intelligence (DGI) psychological warfare. The same might also be true of the Florida statement.

A usually reliable source that's close to the Florida exile community tells me of a "hush-hush" type of EVERGLADES BRIGADE that's in training in several TOP SECRET Florida locations. This source also indicates that this mysterious group uses frequencies around 45 MHz for its training communications. Next time skip roll your way you might give a listen.

CUBAN FM... AM BROADCAST MONITOR

A very reliable Cuban AM broadcast monitor says that there has been a very marked increase of Cuban AM transmissions in defense type broadcasts.

Parts of this story I've heard so often...

INTERCEPTS AND UNUSUAL INCIDENT

THIS SECTION IS UP TO YOU. Your reports are most welcome. How about a few of YOUR intercepts?

THERE'S NO MYSTERY

I often see reports of mysterious "tickling" sounds behind Cuban AM broadcast stations and questions of what or why. What's happening? It's simply transmissions of Radio Reloj with 24 hour "clock-like" second pulses. The time is given every minute. This is often reported on 570 KHz.

If you want to try for a QSL you might try this 

CALLE, Caracas, Calle P y 23, Vedado, Dc, Havana, Cuba.

TRADECAST

Worried about your phone and the possibility of a tap? NEVER discuss anything of even minor importance over your phone. Always assume that you are being monitored.

If you want to part with a few dollars you can rush down to Radio Shack and buy their latest device that flashes a red LED when the line is clear. When this LED is off it only means that someone in your home or office has picked up an extension phone. It—or any of the other advertised low priced devices on the market—will not detect a "professional tap." A little device is useful if you just happen to be talking to your girl friend...

APOLGEO

That unique crypto system that I promised still isn't face bugs and want to clean it up just a bit before publication. You'll see it next month for sure.

CARDS AND LETTERS

Always remember that these two items are very welcome. Let's hear from more of you.

HAPPY HOLIDAYS

Time now for a Yeate and...

Adios,
Havana Moon y Amigos

CIPHERS:
As Old As History

By Bob Bus

Almost as soon as man invents a form of writing, he becomes afraid that what he has written might get him in trouble. So man must then find a way to hide the meaning of his written words, and cryptography is born.

Once he learns how to hide meaning, other men then find a need to know that which is hidden. And cipher experts are born. These men are a rare breed. They must have special qualities to be good at their work.

First, they must be able to see patterns where most see chaos. Then, they must have patience, for many days may pass without reward.

This writer was surprised how frequently ciphers are used. Political figures are forced to use them, as are military and economic leaders.

But you do not have to be in the six o'clock news to need ciphers. Medical doctors use some form of cipher when they write your diagnosis on their files. Or you hope they do. And Mama used a simple code when she wrote you to come to Camp Mosquito, that first summer you went away from home.

XXXX()()XXXX

SLIDING INTO CIPHER

Except for the puzzling glyphs on some Egyptian tombs, the oldest means of hiding meaning probably is the "alphabet slide."

Here are several examples of this in the words written by Baruch, at the dictation of Jeremiah.

Since the temple at Jerusalem was about average as temples go, it's quite possible you were guessed that slide ciphers were probably quite widely known and used wherever the Semitic traders had carried their alphabet.

We find this method centuries later, when Caesar wrote "O" for "A", in Latin. In fact, every expert knows the one slide by his name. Graybeards like me know it by the modern variation—the Orphan Annie code wheel—which would be too easy to get; younger kids ate wheaties toward a later version.

Many complex modern ciphers are, in fact, elaborations of the slide. Learn how a slide works and you are ready for bigger fish.
CALIFORNIA SCANNING

Contributed by Ken Jillson, Coulterville, CA
35.960 Dodge Ridge Ski Resort
36.750 USFS Northern CA
149.370 Mather AFS Com-
149.750 Castle AFB Com-
155.400 Inter-county Emer-
158.235 Pacific Gas & Electric
163.415 Dept. of Water
163.485 McGeechan AFB
163.600 USA Military
166.385 USFS North Zone Net
166.625 USFS North Zone Air Net
166.325 Bureau of Reclama-

168.200 USFS Crew Net
168.625 USFS Forest Net
170.000 USFS ground to air
171.475 USFS Forest Net
172.425 Bureau of Reclama-
tion New Melones
453.875 State of California
460.490 Calif. State Police
465.200 Fire Dept.
467.500 Sheriff
468.220 North County

NORTH BALTIMORE
155.280 E.M.S.
451.200 Hancock Wood Elect

TIFFIN
39.580 P.D.
46.060 Fire Dept.

MISC
154.935 L.E.R.R.N. Hwy
patrol all stations

CENTRAL OHIO MONITORING

Contributed by Barry Kader, Postoria, OH
FINDLAY
47.340 State Hwy Dept
45.260 O.S.P. mobiles
153.760 City crews, water, streets depts
155.430 Repeater hear both
155.430 simplex
154.300 Ohio Power base
137.700 Ohio Power mobiles

FOSTORIA
155.730 P.D.-Putnam City
146.575 Fire Dept
461.950 E.M.S. mobiles only
126.100 Airport
146.520-146.500 2 meter FM
Ham
BOWLING GREEN
47.220 State Hwy Dept
453.070 State Police
155.070 P.D.-Sheriff
155.310 Ohio University
WOOD CITY
133.890 -West Milgrove
156.950 Local govt net
155.820 Sheriff
153.950 C.D.
HANCOCK CITY
156.950 Parks
453.150 Road Maintenance
155.535 Sheriff
154.250 Fire Dept.

NSA Beefs Up Security

President Reagan has signed a classified direc-
tive ordering top-secret National Security Agency to
coordinate the efforts of major private carriers to
thwart communications espionage.

While inside experts agree that robbing waste-
baskets and bribing computer operators is still the least
expensive and widely-used method of obtaining informa-
tion, the government is showing growing alarm at
satellites' abilities to sweep and evaluate in-
cepted communications.

Upward of 500,000 secure telephones are
expected to be ordered as well as other equipment to
protect intrusion into data banks and correspondence
transactions.

Five vendors (Motorola, RCA, ITT, AT&T and GTS) are
competing for the telephone bid, expected to be awarded
around press time.

Last April President Reagan created by executive
order the National Commu-
nications System (NCS), headed by the Secretary of Defense,
to "serve as a focal point for joint industry-government
national security and emergency-preparedness tele-
communications planning."

That same month, Mon-
toring Times' lead article featured the NCS communica-
tions complex near Warrenton, Virginia and its role
in the mysterious "Spy numbers" broadcasts.

Late in September, President Reagan issued
another classified measure, his National Security Deci-
sion Directive 145 in which he stated that electronic
eavesdropping equipment was being used extensively by
foreign nations and could also be used by terrorists
and criminals.

This formal document
was the first time in
history that a president had
admitted the vulnerability of
security in this elec-
tronic age. It was drafted
to establish a new System
Security Screening Group
which is now composed of the
three secretaries of State,
Defense and Treasury, the
Attorney General and the
Director of the Central
Intelligence Agency (CIA).

The September order
changes NSA with the respon-
sibility to monitor
official government commu-
nications to determine their
"vulnerability to hostile
interception and exploita-
tion."

It is expected that
the government will pursue
the possibility of building a
massive trunk-line encryp-
tion system, the enormous
cost of which would be
partially borne by NSA.

TUNE IN

by

Norman H. Schrein

In last month's issue
of MT I began a special
three-part column regarding
scanner monitoring between
Baja California and Alaska;
This month will concentrate
on frequencies monitored on
the Canadian portion of the
Border.

From San Diego we
went by Rent-a-Car to the
Los Angeles International Air-
port and back again. This
time we took a flight to the
Seattle Airport (frequencies
monitored from there will
appear next month). After
arriving in Seattle we drove
up Interstate 5 to the Cana-
dian border. We drove
between Sumas, Washington
and Abbotsford, British
Columbia.

The Abbotsford airport
had a fair amount of activi-
ty including the ATIS sta-
tion on 119.800, tower on
119.400 and 121.000 with
ground control on 121.800

Mhz. The RCMP was on 139.350
MHz (simplex), while the fire department was on
150.055 MHz (simplex).

The Royal Canadian
Mounted Police serve as the
city police and/or county
police for most of British
Columbia's and Alaska's
smaller cities. Larger
cities such as Vancouver,
Victoria and Calgary have
their own police depart-
ments.

From Abbotsford we
traveled Route 1 east to
Chilliwack where the RCMP is
on 139.770 MHz (dispatch),
139.215 (Tac 2), 139.290 (Ch
8) and 140.640 (C Unit),
the fire department is on
154.190 MHz. Airport activi-
ty can be found on the
UNICOM frequency of 122.800
MHz.

Route 1 traverses
a large amount of country and
passes many little towns
and a lot of beautiful country,
including such cities as
Hope where the fire depart-
ment is on 154.335 MHz and
the RCMP is on 139.350,
139.470, 140.100, and
140.900 MHz. The next
city was Boston Bar
where the RCMP operates on
TUNE IN CANADA cont'd

139.470 MHz (simplex) also 139.305/139.350 MHz. Fire department on 143,895 MHz. The airport can be heard on 122,200 MHz.

The next city of any size is Revelstoke, where the fire department can be found on 169,500 and the RCMP can be found on 138,945 MHz. I was also able to activate two amateur radio repeaters: VET ROK can be heard on 146.850 MHz and VE7 KAR can be heard on 146.940 MHz.

A listener can be heard on 122,100, 126,700, 121,900 (ground), 125,700 tower, and 115,700 for the VOK (YKA).

The winter public works department for both the District of Salmon Arm and the municipality of Salmon Arm can be heard on 154.070 MHz, while outside airports can be heard on UNICON frequency 122,900 MHz.

Finally, for those who will monitor anything the Salmon Arm Ready Mix Company can be heard on 165,000 MHz using call sign VGD 251.

Further to the east one can find interesting communications on 159.560 in Revelstoke. You can also listen to the Revelstoke airport on 122,800 and Kamloops FSS on 126,700. For even better reception I would suggest a trip to the top of Mount Revelstoke, where you could overlook the entire area and get even greater reception.

If you go east long enough you will cross over into Alberta, and such was the case with us. While in Lake Louise I primarily used my amateur two meter radio on 146.220 MHz, and got surprisingly good communications. Our motel at Lake Louise was across from the RCMP detachment.

The RCMP operates on 142.035/138.045 (XJD 712), 154.905/155.395, 155.640/155.460, and 155.670 MHz (simplex). Lake Louise itself was on to Banff where the RCMP uses 155.670 (simple), then on to Calgary.

The Calgary Police Department uses UHF repeaters; any with an "M" indicates that I heard activity on that frequency; "R" indicates repeater.

HELPFUL HINTS

ICOM, KENWOOD and YAESU USERS

We would like to call our readers' attention to a broad-based service center for ICOM, Kenwood and Yaesu equipment. Robert Pohorence of International Radio, Inc. sent us recent literature which is quite impressive. Repair and modification facility is accessible to all brands of amateur radio equipment and includes alignment and performance testing as well.

International Radio also carries new and used books and publishing new letters featuring modifications and updates on the three major brands of equipment.

An ICOM users' net is conducted on the air each Sunday: Tune in around 14317 kHz at 1600 UTC or 21440 at 1800 UTC.

For additional information, write International Radio, Inc., Suite L. Dept. MT, 1532 SE Village Green Portland, Oregon 97202 or call 305-335-5545 weekdays 10:00 AM to 5:00 PM weekdays.

PAYING THE BILL

DO-IT-YOURSELF: GET RID OF THOSE LOW FREQUENCY GRELINS

By Joe Thompson

The SWL hobby has been a part of me since I was about 13 years old. Finding the old Zenith radio, replacing a couple of cracked tubes and getting it on the air was, to say the least, quite a milestone in my life. The overseas broadcasts, ham, and military receptions of the fifties provided a unique, interesting and often addictive pastime.

As the years grew the hobby somewhat faded, and until about five years ago I had very low profile and it meant little to me. It was then, around 1979, the old memories resurfaced and brought me back into the wonderful world of the SWL.

Today my den is quite a communications room, as most of yours are. The scanner, the short-wave radio, the CB and various AM and FM radios accompany my home computer in their own fraternity.

The antennas strung throughout the backyard, the wires leading into the window bring occasional questions to those who happen to observe them. Just a typical SWL'er—that's me. I'm in it again and I love it.

From 1.6 to 30 MHz, the maritime emergency frequencies to Radio Australia, Coast Guard to air navigation, it's all there, and it's all mine. But static was fierce. Every evening when I went into the den and turned on the radio it was there. It was as if there was some intentional jamming on my low bands, from 1.0 to 3.0 MHz. On AM it was unbearable; on side-band it was still bearable but not ideal. Where was it coming from?

There are no major power lines nearby, so I ruled that out. I'm not near any major appliance that wasn't even a hospital. Was it coming from the antenna or the power source?

My radio was equipped with a good high-pass filter so I placed the radio on battery power. No difference. The static on the low band was still there. Must be an external radiation. Could it be coming from something in the house? I continued to pursue the gremlins.

I walked throughout the house unplugging everything that was plugged in—the TV, the cable TV box (often a source of interference), the clocks (ridiculous), everything. Nothing helped. Everything was unplugged but the interference was still there.

I went to the fuse box (Yes, the "fuse box"). It's a very old house so I considered the wiring as a possible source of the gremlins. The volume on the radio was turned up so I could hear it. One of the last at a time, I un-screwed it, then replaced it. All the digital clocks were blinking, the microwave oven beeping and the living room went dark for a moment. And then the static on the radio went away. I went into the den. The radio was still on, but the static was gone. Which circuit was THAT fuse on?

It was the outside FLOODLIGHT. I had that light, but not the static. It appeared about the time I installed the light-sensor on the flood-light, that screw-in reflectacle-sensor that automatically turns on and off the outside light. That was the source of my interference. If you want your low-frequency gremlins out of your radio, check around your house first. You may be creating your own by not knowing it. Keep your radio interference to a minimum and enjoy the wonderful world of the SWL.

Those schematic diagrams... Where did the symbols originate?

While all of us have seen or even used schematic diagrams, the origin of the symbols is not so easily observed. Reader Don deNeuf sent this informative collection of sketches which
HELPFUL HINTS cont’d

shows radio components in common use around the 1920’s which influenced the art-
work.

ANTENNA

LOOP ANTENNA

“+” BATTERY UTILITY CABLE

“-” BATTERY UTILITY CABLE

METER

“+” BATTERY VOLTAGE FUSE

“-” BATTERY VOLTAGE FUSE

CONNECTION

CONDENSER

CONCENTRATOR

RECEIVERS

HEADPHONES

VOLT. METER

CRYSTAL DETECTOR

CONDENSER PLATE

CONDENSER PLATE

JACK PLUG BOARD CONTACT

JACK PLUG BOARD CONTACT

NO CONNECTION

JACK PLUG BOARD CONTACT

OTHER

SUB-AUDIBLE SQUELCH SYSTEMS

By Larry R. Antonuk

Have you ever listened to your scanner and wondered how four or five companies can share the same channel without driving each other crazy! The answer is simple — they never hear each other.

The key to the system is the fact that any given receiver will only recognize signals from transmitters within its own group, ignoring all others. This allows several companies to share a common frequency, yet hear transmissions from members of their own company. The system that makes this possible is called sub-audible coded squelch.

It was during the early days of two-way radio (yes, even before transistors!) coded squelch wasn’t used. As more users were licensed, more and more channels were allocated. It soon became apparent, especially in the larger cities, that companies would have to share frequencies.

TECHNICAL TOPICS by Bob Grove

Q I would like one of the new 85-700 MHz converters to get the 800 MHz band, but can’t afford it. How about a converter for this range to add on another scanner? (Paul Longeway, Rege Barlow, MI)

A An 800 MHz converter is available from Hamtronics, 65 Maui Rd., Milton, NY 10908. They are an MT advertiser, so send for their catalog.

Q What can I do to increase my scanner’s “listening power”? Does a signal splitter like the Grove CP-1 multicoil weaken signal? How can I reduce ignition interference? (Padghan, Jeddah, Saudi Arabia)

A If you are in a remote area plagued by strong metropolitan signals, put up a good directional beam antenna. The addition of a mast-head preamplifier will give greater range, especially at UHF; otherwise, use an indoor preamplifier for VHF.

Don’t forget to use a good grade of coaxial cable; RG-6/U or RG-8/U low-loss, foam dielectric is recommended.

A signal splitter will ideally reduce incoming strengths by only 3 db, barely perceptible on even the weakest of signals.

Mobile ignition interference is very difficult to diagnose; most of it comes from radiation from the high voltage lines, so use either resistor plugs or resistor ignition wires.

Try bonding the leads to the frame with a heavy-gauge woven wire like the shielding from a piece of coaxial cable. This is easiest done near the hinges.

Bypass capacitors on the regulator and ignition coil might help depending on the make of the vehicle.

You may wish to contact a local two-way radio service company for additional ideas.

EXPEDITIONERS

Coded squelch was developed for two reasons. First, it cut down on the confusion created by having several non-related fleets of vehicles on the same channel. Second, it gave each fleet a feeling of privacy — all anyone in the fleet heard was business among their own group.

In actual use, a radio channel may have several different companies using it, all happily going about their business, only hearing their own vehicles and thinking that they have a private channel.

"Wait a minute," you say, "if none of these companies can hear each other, what prevents them from transmitting when another company’s station is already on the air, thereby screwing up both transmissions?" Good question.

The answer is that, by law, before any station transmits, the operator must disable his coded squelch decoder and listen to make sure that the frequency is not in use. On most radios this consists of a button (usually marked "Monitor") that lets the receiver pass all the signals on the channel, regardless of squelch coding.

For mobiles the button is often placed on a special microphone holder that automatically disables the coded squelch when the mic is
picked up, forcing the operator to listen for a clear channel. So all receivers have two modes of operation — carrier squelch (like a scanner), and coded squelch.

TECH TALK
Useful information (voice, code, etc. "modulation") is impressed upon a radio signal and transmitted to a distant receiver where the information is extracted. The radio signal is called the "carrier," and the range of modulated frequencies is called the "baseband." Since we are transmitting the human voice, our baseband will extend out to about 4000 Hz. After the baseband is demodulated at the receiver, it's filtered by the audio stages, producing a frequency response at the speaker of about 500 Hz to 3000 Hz to allow for a natural-sounding voice without unwanted noise.

CARRIER SQUELCH
Noise pulses have a frequency of about 6000 Hz. When a carrier comes on frequency it will quiet the noise. All we need, then, is a squelch circuit that recognizes 6000 Hz on the baseband. If it sees 6000 Hz, the circuit will know that it's just noise and will shut the speaker off.

Frequencies less than 6000 Hz will be recognized as information, and passed through to the speaker. The squelch control lets us select just how noisy a signal can be and still "open the squelch."

CTCSS
If carrier squelch operates on noise (or no noise) at the high end of the baseband, why not design a circuit that looks at the low end of the baseband? We will only listen to 300 Hz to 3000 Hz; could we use specific frequencies in that 0-300 Hz slot, corresponding to squelch circuits that look for one and only one tone? We sure can. This system is called the continuous tone coded squelch system (CTCSS) and is in use in thousands of radios across the nation. There are 37 different tones in the 67 Hz to 210 Hz range. One of these tones is transmitted continuously along with the voice modulation, opening the squelch of those radios designed to respond to that same squelch code. Since the tones are below the frequency range that is heard in the speaker, they're referred to as sub-squelch.

DIGITAL ENCODING
CTCSS radios make use of sine wave tone to identify various groups of users. But there is a better way: digital coded squelch. Rather than tones, the digital system uses a binary word (along with parity bits and a little redundancy) that is transmitted in the 0 Hz to 67 Hz portion of the baseband. The main advantage of a digital system is the larger number of codes — 178 compared to 37. This system is also more reliable under weak signal conditions, and is more economical than older tone systems. If you've followed me this far, you understand that the 0 Hz to 300 Hz portion of the baseband is a separate entity, independent of the voice modulation. This fact makes for some interesting applications.

Imagine a busy taxi company. They use their frequency constantly, and don't share the channel with anyone else. Can they use their 0 Hz to 300 Hz slot for anything? Of course! One of the easiest applications is tone-only paging (no voice messages; only a beep). Pager's tuned to the taxi company's frequency listens for the specific tone or tones that will set it off, instructing the user to perform a pre-arranged function — return to the shop, call the office, etc.

The same idea can also be used for controlling various devices such as remote lighting or alarm systems in places where it would not be feasible to run control wires. The advantage of sub-squelch and control is that the majority of the equipment is already paid for; the sub-squelch system is simply added to an existing two-way operation.

Sub-audible coded squelch is one of the major advances of two-way FM radio, providing many other uses of the radio spectrum; additionally gives a feeling of private communications and can be inexpensively retrofitted to older two-way systems or monitors. It's that kind of simple idea that makes people say, "Hey, why didn't I think of that?"

MODS FOR THE PRO-2001 SCANNER
By Jean Pronovost
P.O. Box 454
St.-Jean, Quebec, Canada J1B 6S9

This article concludes a series of modifications for the Realistic PRO-2001 scanner. Before, if you owned a different type of scanner, you can most probably perform the same conversion. Consult your service manual, and have a technician help you if in doubt. In this last segment, we have combined together several minor conversions and tips to improve the performance of our scanner.

ADDITIONAL SCAN DELAY TIME
The scan delay time of the PRO-2001 scanner is two seconds; a toggle switch on the front panel selects between this delay and no delay at all. But two seconds is just not long enough in the search mode when you are looking for unknown stations. I like to scan while doing other chores at my desk and I found it very difficult to press the "MONITOR" key within two seconds to stop the scanning. And once the...
scanning has resumed, it is a rewarding and frustrating job trying to figure out on which frequency the scanner was previously.

Look at the schematic diagram that revealed the scan delay switch merely grounds an electrolytic capacitor. This capacitor is charged when a station is received; when the signal disappears, the capacitor is discharged keeping a transistor switch circuit closed. Increase the scan delay time all we have to do is to increase the value of this capacitor. (See diagram)

An easy way to do it is to add another capacitor/toggle switch circuit as shown. We can increase the total capacitance and add the delay, by closing one toggle switch, or the other, or both.

The original capacitor value is 100 uF for a delay of two seconds. The new added 400 uF capacitor will yield a six seconds delay, and both capacitors are switched in, the total delay will be eight seconds.

**FIGURE 'A' - ADDITIONAL SCAN DELAY CIRCUIT**

**CI:** 400 uF/10V  
**SI:** ORIGINAL OUT/DELAY SWITCH  
**SE:** S.P.B.T. TOGGLE SWITCH

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**ANTENNA CONNECTORS**

The Realistic PRO-2001 scanner comes equipped with a Motorola type antenna jack as do virtually all other scanners. These connectors are mainly used on AM-FM car radios and suffer from the same performance at VHF and UHF.

Several alternative types of connectors are switchable for service purposes and our choice will depend upon the size of the coaxial cable used and our personal preference for a particular type.

The UHF series of connectors are certainly the most popular with SO-239 receptacle and the PL-259 plug. They can be used with either small or large diameter coaxial cable. However, they have a frequency range of 0-300 MHz and their performance is questionable on UHF.

BNC connectors are widely used by the military and have tight specifications. Their frequency range is 0-6 GHz (that's 0-4000 MHz). On the other hand, except for one type, BNC connectors are available on only small diameter coaxial cable.

**Type N** is another line of connectors used commercially and by the military; these connectors and both inputs inside the PRO-2001 scanner to a common receptacle. A signal generator and "s-meter" readings of sections proved there was no degradation of sensitivity on VHF or UHF.

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**MT INDEX 1984**

Although previous issues of 84 MT are now out of print, the 1984 "Best of Monitoring Times" will be available in January. Articles coded with an asterisk are slated to be included in that anthology.

**JANUARY 1984: Features**

**EMP:** Effects on Comm.  
**THE RADIO SPECTRUM-II-VHF**  
**LIBYA:** AGGRESSION ON AIR  
**SEE SHUTTLE VIA NASA SAT**  
**LOG:** New Jersey/Canada  
**BRENDA INVASION COLUMN**  
**PIRATE RADIO:** Grenada  
**LISTENED WORLD:** Middle East  
**H.S.A.S.:** CA  
**SIGS-SPACE:** Getting Started;  
**TV Satellite Reception**  
**ENGLISH:** Reliable Boris  
**RTTY/FOX:** Russian RTTY  
**BITS:** Documentation  
**REAR THE DIALS:** RS PRO-2003; PRO-30; Sony AN-1, Electro Freedom Phone;  
**NEW ANTENNAS:** MFJ digital clock  
**NEW ARRIVALS:** Grove OMNI II  
**GETTING:** Set/25: Exact Freqs  
**EXP.WORKSHOP:** Cordless Phones  
**TUNING LAM:** "Ancient Mod."  
**HELPFUL HINTS:** S.A.Utilities

**FREQUENCIES**

**AMATEUR HAMCALLS PREDICT LOW BAND SKIP**  
**LISTENERS LOG:** Springfield, MA; Charlotteville, VA; Toledo, OH area; West Point & UN  
**RADAR AIRCRAFT**  
**TUNE IN CANADA:** Salmo, BC  
**ESSEX Co, Ont**  
**AUSTRALIAN CB SERVICE**  
**TV CHANNEL ASSIGNMENTS**

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**FEBRUARY:** Features

**TUNE IN USAF COMMS W/ ELECTRA DX-1000**  
**SW RECEIVER PHOTOVOLTAICS**  
**THE RADIO SPECTRUM II:**  
**GETTING THE OIL**  
**LISTENED RADIO:** Conv.  
**AM RADIO & GRENADA INVASION COLUMN**  
**SCANNING:** Chasing Choppers  
**HIGH SEAS:** Gibrilin  
**SIGNER FROM S.W. ASIA ENG:** Language: Europe  
**RTTY/FOX:** A RTTY Primer  
**BTL Select:** A Great Deal  
**BEHIND THE DIALS:** DX-6000 Digital VOM; SRP-01 Solar Port-A-Pak; Handie-Talkie Rodioap  
**NEW ARRIVALS:** ESP Lightning Protection  
**GET/STARTED:** Set Up A Listening Post, Part I  
**EX.WORKSHOP:** Build A 225-400 MHz Receiver; Receive Protection From Transmitter Overload Component HINTS: Select Bande Ant.  
**FREQUENCIES**  
**MARCH:** Features

**SIGS:** Rockingham Co, NC; Atlantic City;  
**BOISEMAN, MT:** Minneapolis TUNE IN CANADA: Ottawa, Edmonton, Sahtars, March  
**TECHNIK:** Transmitter Mt. Dora  
**BAM/CSI:** An English Response  
**EXTRA HINTS:** Two WWV Receivers  
**GES:** Non-Transmitting, Non-Sensitive Frequency  

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**ENGLISH:** Africa  
**LISTENED WORLD:** State-Owned R Bits: Commodore  
**NEW ARRIVALS:** New Scanners  
**GET/STARTED:** Set Up AListening Post, Conclusion  
**EX. WORKSHOP:** Mount Your Preamp On The Antenna; Audio Switchbox for Your Monitoring Post  
**HINTS:** RF Interference Filters  
**CLUB CORNER:** Mt. Dora  
**LOW:** New Jersey/New York  
**NEW ARRIVALS:** New UHF Meters, Ottawa  

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**APRIL:** Features

**U.S. NUMBERS STATION FOUND!**  
**GROUPER COMM:** Secure Independent News Watch  
**RADIO SPECTRUM IV:** Canadian Edition  
**TUNE IN CANADA:** Getting Started  
**THE PACIFIC AM BROADCASTERS**  
**TUNING RUSSIAN BROADCASTS**  
**MULTIPLE VIDEO ON THE 6060**  
**SCANNING:** Interstates  
**HIGH SEAS:** Tune Up Down Under  
**ENG.LANGUAGE:** National Music  
**HINTS:** RF Interference Filters  
**LIBRARY:** Build Your Ham License, Answers  

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**FREQUENCIES**

**LONGWAVE LOG:** Amarillo, TX; Philadelphia, PA; New Jersey; NC Nat'1 Guard  
**CANADA:** Quebec;New Brunswick; Whitehorse, Yukon  
**RTTY/FOX:** Fax Log, cont'd

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**MAY:** Features

**ICOM 871A:** MAGNIFICENT!  
**TUNE IN SECRET SERVICE**  
**RADIO SPECTRUM V:** Marine WX DOING IT DOWN-UNDER  
**NOAA WEATHER SERVICE CHANS**  
**PRO:** Outfitter  
**WORLDWIDE CB**  
**GET/STARTED:** Your Own Club Columns

**HIGH SISAS:** AMVER  
**ENG.LANGUAGE:** Asia  
**LISTEN TO:** Canada  
**BITS:** Hammes;TS-80 Freq File  
**NEW ARRIVALS:** CompuScan Software; Dial Up Your Computer  
**LIBRARY SHELFL:** ARRL books  
**GET/STARTED:** Preamps & Tunes  
**EXTRA HINTS:** Surplus to Scanner; **SHORTWAVE**  
**FREQUENCIES:** Amplified Preselector  
**HINTS:** Get Your Ham License, Answers  

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**LONGWAVE LOG:** Romania  
**ANTENNAS:** Russia  
**TUNING RUSSIAN BROADCASTS**  
**MAY:** Features

**FLY WITH HURRICANE HUNTERS**  
**TUNE IN:** Radio Spectrum  
**WORLDWIDE CB**  
**DOUGLOW**  
**DEcoding HURRICANE WX**  
**DIALS:** Amateur  
**EXTRA HINTS:** Surplus Equipment  

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**HINTS:** AM/PM & Kilo  
**NEW HINTS:** RF Interference  
**EX.WORKSHOP:** Broadcast Loop Antenna  
**TUNED:** Vertical  
**GET/STARTED:** RCvr Specs;  
**HINTS:** Get Your Ham License  
**EXTRA HINTS:** Low Band  
**FREQUENCIES:** Long Distance Indus Comm  
**RTTY/FOX:** Faxes Log, cont'd

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**JUNE:** Features

**Get/Started:** AM/FM & Kilo  
**NEW HINTS:** RF Interference  
**EX.WORKSHOP:** Broadcast Loop Antenna  
**TUNED:** Vertical  
**GET/STARTED:** RCvr Specs;  
**HINTS:** Get Your Ham License  
**EXTRA HINTS:** Low Band  
**FREQUENCIES:** Long Distance Indus Comm  
**RTTY/FOX:** Faxes Log, cont'd

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**JULY:** Features

**Get/Started:** AM/FM & Kilo  
**NEW HINTS:** RF Interference  
**EX.WORKSHOP:** Broadcast Loop Antenna  
**TUNED:** Vertical  
**GET/STARTED:** RCvr Specs;  
**HINTS:** Get Your Ham License  
**EXTRA HINTS:** Low Band  
**FREQUENCIES:** Long Distance Indus Comm  
**RTTY/FOX:** Faxes Log, cont'd

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**JULY:** Features

**Get/Started:** AM/FM & Kilo  
**NEW HINTS:** RF Interference  
**EX.WORKSHOP:** Broadcast Loop Antenna  
**TUNED:** Vertical  
**GET/STARTED:** RCvr Specs;  
**HINTS:** Get Your Ham License  
**EXTRA HINTS:** Low Band  
**FREQUENCIES:** Long Distance Indus Comm  
**RTTY/FOX:** Faxes Log, cont'd

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**JULY:** Features

**Get/Started:** AM/FM & Kilo  
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**TUNED:** Vertical  
**GET/STARTED:** RCvr Specs;  
**HINTS:** Get Your Ham License  
**EXTRA HINTS:** Low Band  
**FREQUENCIES:** Long Distance Indus Comm  
**RTTY/FOX:** Faxes Log, cont'd
**VIEWPOINT from p-2**

store) and index tabs are glued to each issue so that I can get to a month easily.

My only suggestion is that you print a yearly index in the December issue that would recap what major articles and what areas freq.

index was given for, for each month. The index would show quickly what month to go to when info is needed.

Keep up the good work, I always anticipate the next issue!

James Eberhart
Mt. Vernon, NY

(ED.NOTE: No sooner said than done! See index of features and reviews above.)

What I read:

1. English language - (sooks, feeqs)
2. Aide

What I listen to:

1. Mostly overseas, ARRL, VOA, R. Australia
2. Time signals: WWV, WWVH (best in the world)
3. A few minutes now & then in poking around

*Equipment:*

- Kansas B600 (purchased ARS Seattle store)
- Antennas—15 ft of wire hanging on the hook of a eewy lamp. Gets all I need.

Conjecture about MT: The Russian Embassy (KGB) has twenty subordinates to MT. What a gold-mine of anti-American intelligence information! How much intelligence info on the Russians do I see in MT? Silly.

How about a feature on Russian tactical/strategic communication? (for WP, WPV, UHF, satellite?)

Robert S. Johnson
Gig Harbor, WA

Thank you for the article on SAC. It helped allay some misconceptions in listeners and was an interesting timely topic in general. Is there any way MT may be able to get a similar series on NORDAD?

I became a utility DXer thanks to Grove Enterprises when I bought the Uniden CR-2021. Today, for example, I monitored the space shuttle's preparation for and landing. Havana Moon has been a very useful column for my uses! I have also noticed an increase in overall traffic (may be related to the NATO wargames).

I would like to praise the excellent service Grove Enterprises for your fantastic service. I would also like to compliment you on the "Expanded Second Edition" 1.6-30 MHz. It is a superb aid to utility DXers like myself and naturally I'll mention you and this publication to my friends!

Bruce Johnston
Schencady, NY

RTTY/FAQ: Get Started II

ENG-LANG.: Religious Belief
LISTEN-WORLD: "Way Up North Bites: BASIC; Games for 64
GETSTARTED: Old Reception
HELPFUL HINTS: Safety First
EX-WORKSHOP: A Discriminator Meter for your receiver;
*Button the Beep on your MX-5000!

October features:

- FCC SEZILES ILLEGAL C8 GEAR
- SAC: COMMAND POSTS
- WHAT'S NEW IN TV
- (ALMOST) EVERYTHING ABOUT THE MX-5000!

NCB on 11 METERS
FAST MONITORING
- THE PRESENCE OF PDCIN
- HELP SNAKE SMUGGLERS

Columns:

- SCANNING: JIL DXS-500 Receiver
- HIGH SEAS: coastal stations
- SCAST: Russian: Radio Russian World
- DIALS: Russian: Radio Russian World
- NEXT: An Account of Locating HF Transmitters
- GETSTARTED: Verification Report
- EWS: The Problem of Unwanted Stations

December: Current Issue

**COMING NEXT MONTH:**

A SIMPLE FILING SYSTEM FOR ML ARTICLES

**NATURAL POWER ARTICLE:**

Bruce Johnston
Schencady, NY

I would like to comment further that the October format is a significant improvement to an already excellent publication; you and your staff are, to be complimented in all respects.

Regarding the computerization of radio receivers, I would like to see a sensing of this trend or at least a more balanced approach. Even the Space Shuttle was retained a "stick" for direct pilot intervention. The idea of having to "enter" codes or detailed operating instructions to initiate each and every function appears self-defeating when viewed from the point of simplicity of operation not to mention operation for "national security.

Too, the additional complexities to achieve this auto-

mation have not necessarily resulted in overall improved performance as regards long term equipment reliability the lack of which gets us back to the satisfaction factor.

Gerald Quake
Willingboro, NJ

Thank you for the information on the issue of MT which you included with my order (Oct. 84). I enjoyed it very much especially John Henault’s article about monitoring while in the hospital. I was hospitalized two years ago (I was 13) for 3 weeks. I had only had my scanner for 4-1/2 months at that time. I didn’t want to be parted from it so I kept it with me. The nurses enjoyed it. It was especially funny when the fire alarm went off in the hospital. We learned on the scanner that they’d burned some toast in the kitchen.

I also got to know my doctor better, because he also like scanners (he has 5). He goes on ambulance calls when he can and is very active. The best reason to have a scanner in the hospital is very simple —-BE SURE! Please pass on to John with my best wishes for a speedy recuperation.

Susan M. Moll
Sanford, MI

Enjoying your ML articles more and more. Just bought my second MX-5000, and very good, but I’m writing to him about his Microwave Recep-

tion Formula (Dilayed Freq.-

2001). After seeing an article in the 800-894 MHz band (371 different freqs logged, so far) with the MX-5000, 02685 and RCNA 868 MHz I’m going ground plane antenna in my area, I thought
STOCK EXCHANGE

PERSONAL
NOTE: Monitoring Times assumes no responsibility for misrepresented merchandise.
SUBSCRIBER RATES: $1.10 per year, paid in advance. All merchandise must be non-commercial and radio-related. Ads for Stock Exchange must be received 45 days prior to the publication date.

JOIN A RADIO LISTENING CLUB. Complete information on major North American clubs for 252 and SASE. ASSOCIATION OF NORTH AMERICAN RADIO CLUBS, 1500 Bunbury Drive, Whittier, CA 90601.

KENWOOD TS-430S all matching eqc. NC-60 desk mike. PS430 power supply. IF, SSB, IF filter installed. All lit. 4 mos. old, $850 complete. Call 11221 E. Brooks (919)855-5334 or 703-728-4631. No collect calls.

ESTATE SALE:
1. AUTREX RESEARCH QF-1A SSB/CW/AM Filter - $20
2. MIZUHO preselector SX-7 $80.
3. KS preselector - $60
4. CV483C/URF-17 converter, frequency shift supply 115v(oscilloscope) - $75
5. LAFAYETTE deluxe cassette recorder model SK-46A - $35
6. MICROCENT 12v power supply $5
7. SIGNAL CORPS. used freq. meter HC-221 FSC507A-4805 - $25
8. TORRESTONIC digital freq. display model WTK-1 - $25
9. OA-100 DYNEK active antenna - $50
10. NKOK tube tester model 600A ser. #74-1485 - $25
11. CV483C/URF-17 surplus miliitary RTTY demodulator E-780 afg. - $35

Ad enough for shipping costs. Ward Brookwell, 1826 Cypress Street, San Diego, CA 92154-1134 USA, (619)429-8720.

********
1984 WORLD TV RADIO HANDBOOK, $10 plus postage. Call: Ron (412)532-5070

********
FOR SALE: INFOTECH M600A, RTTY/TON/CW Demodulator plus my RTTY Lists, $600 (includes postcard back check). Only Todd Morgan, P.O. Box 1364, Boone, NC 27001.

RCA Vacuum tube volt ohm meter $20. BROWN BROTHERS Keyer Paddle $30. Sell or swap. Ken Band, WB2EUF, P.O. Box 708, East Hampton, NY 11937.

********
COMMERCIAL
$25 payment must accompany ad. Send 2 inch wide x 2" long camera-ready copy or we will type copy (35 words maximum).

ROCKY MOUNTAIN SHORTWAVE SPECIALISTS
Kenwood, Yaesu, Sony, Icom, Panasonic, Uniden, MFJ & B&W. Regency, Bearcat, Info-Tech Antenna, Books, Accessories. Low Discount Prices

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4253 South Broadway Englewood, Colorado 80110

MICE: NEW BEARCAT 20/1, V/ AIRCRAFT, 16 ch. progr. Great scanner companion. Now only $189.99.
Need cheap programmable? BC 150, 16ch. only $50. BC160 16 ch only $543 CD1800 50ch superscanner $242. Write for flyer. Many other units.

J.C.5 RADIO SHOP
36-3 318
Ongood, IN 47037

INFORMATION PLEASE
Monitoring Times will print at no charge (as space permits) announcements and questions of a non-commercial service nature.

Anyone have information on the Air Force's "CWV" or ground wave emergency network? Would be very happy to share information with others on this subject. Michael Hawke, P.O. Box 73, Uniondale, NY 11553

Assistance Please: Would like to learn how to program a computer (Epson 90) to receive RTTY via an appropriate modem or terminal unit and the RS232 port. Familiar with BASIC and Pascal but not Assembler. Need plans for the UT and programming examples for the various codes and protocols. David Crotty, 414, Eason.

All equipment is new or in mint condition with all accessories, manuals and crystals where required. All prices firm. UPS shipment on receipt of postal money Order. No checks. Add $5 shipping. BEARCAT BC-150, 16 ch; 30-50, 144-174, 420-512 MHz--$100. BC160 acts-720 16 channel, digital aircraft scanner--$200. BC1000 10 channel mobile R-106, 3 band scanner--$100. MIDLAND 4 channel hand-held scanner--$50. RADIO SHACK DX160--$100. R.B. Carter, P.O. Box 418, Vass, NC 28394.

Highland Park, MI 48203.

********
NEEDED: Anyone with access to a high speed cassette duplicator willing to assist the blind and visually handicapped in duplicating cassettes of Monitoring Times and other material for the blind. Will supply cassettes and all related material. Phillip N. Dampler, 317 Elmwood Avenue, Rochester, NY 14618-2533 U.S.A.

********
WANTED: Lists of weather ships and their frequencies; do they use standard weather codes? Also need almanacs to share with Australian DX club. Please write Chuck Reville K3FJP, 2812 Christopher Ave., Baltimore, MD 21214.

********
WANTED: Need information how to go out of band on the following scanners. Regency D-100, Regency M-400, Bearcat 250. Please send this information to the address below. Also would like to hear from other shortwave listeners and scanner listeners. Please write to Kenneth R. Macleod, WX1KEE, P.O. Box 4125, Westboro, MA 01581.

********
INFORMATION NEEDED: I have a Hammarlund HQ-140-XXA I would like info concerning the ear his-receiver was manufactured and its list price when new. Also: I am going to Kunsan Air Base, South Korea in December, anyone wanting to use me as a "point of contact" concerning SWL'ing in the far east, please feel free to write me.

Paul G. Williams/WLHD-XIA, c/o 478 Camellia, Shaw AFB, S.C. 29132

********
WANTED: Service-restoration manual for a National #75 SW receiver. Also a military SSO USM70 signal generator.

Kevin Neal, Route A, Box 221A, Springfield, AR 72634

********
I would like to exchange scanner freq. lists with...

GROVE ENTERPRISES
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Brassmont, CA 98202

RUSH!
NEWS VALUE
BULK RATE
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PERMIT No. 4
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98202

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VIEWPOINT cont'd
that perhaps David had really discovered something. As he related, Dusied Freq-750 does not work on any of my logged 800-894 MHz freqs. Perhaps, it’s an item that should work in theory, but does not in practice.

On the plus side, Dan Mulford’s SSB scanner reception article while using a 2nd scanner as a Sig/Gen. [BP0] does vary. In most cases, but the 2nd scanner must have Sig/Gen capability as all scanners do not do this. If unable to use a BC101, BCP20BC, BC560 or MX-8000 as 2nd scanner Sig/Gen. However, I have used either my BC110 or SW-9000 inter-changeable as 2nd scanner Sig/Gen on the p. previously mentioned scanners and succeed in picking up SSB very intelligently.

Enclosed chart which describes the test freq. coverage and the two different antennas one might be of interest to you and BC110 & SW-2000 omens who might wish to try out Dan’s column.

Bene Borde, Sunnyvale, CA

Go with the Kits! You only need to warranty the component parts of the kit, not the finished product. If you were to offer some of the kits you mention in your article I would be tickled pink! (Especially filter audio processor, and frequency converters.)

I really believe there is a large segment of us out here that want that kind of equipment, but cannot afford to purchase it already assembled. There are also those of us who enjoy sitting down to the old radio desk in a cold, rainy winter evening and engulfing ourselves in a simple, but effective kit. DO IT!

Mike Chinakos, CasaV., WA

anyone in Watertown, NY, Battle Creek, MI, or Quincy, IL Kevin Trickey, 312 Jackson St., Delta, OH 43315.