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info@winradio.com
Monitoring Times
Vol. 23, No. 11 November 2001

On our Cover
9-11 Infamy Revisited
By Bob Kozlarek

On September 11, the World Trade Center towers were demolished by terrorists using hijacked commercial planes as missiles. Among the horrified onlookers was the author, watching and listening from his location in Northern New Jersey. He reports public safety communications worked remarkably well considering the circumstances and the fact that a good portion of the cities' broadcast and communications systems had been located atop the WTC.

In a twist of irony, the author had been working on a communications story for MT about the World Trade Center when it was first bombed in 1993. This time, the city wasn't so fortunate. See the full story plus federal and local frequencies for the ongoing rescue and recovery efforts on page 19.

Photos on our cover, this page, and in the article are by Mike Coppola, Unit 301 of Metro Fire Radio, a two-way radio notification group.

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By Alan Henney
As the nation's capital struggled to grasp the enormity of what was happening in New York City, Washington experienced tragedy first-hand as a plane crashed into the Pentagon. The author notes that here, as in NYC, communications ability had greatly improved since the area's last major disaster. Listed are federal and local frequencies expected to remain active. Photos by Bob Pugh of BlindSpot News Services.

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By John Mayson
Many U.S. interstates offer great scenery to entertain travelers. Interstate 20 is no exception. Scanners buffs have another way to help the miles pass more quickly and stay awake: listening to public safety comms. Here is a guide to frequencies in Louisiana, Mississippi, and Alabama plus some tips to programming your scanner ahead of time so you can keep your eyes on the road.

The History and Future of Radio ............................... 21
By Dr. John Catalano
Last month Dr. John looked at the evolution of radio theory. Now he turns to the technology most critical to the radio of the present and future -- the growth of computer technology. He also interviews Bob Grove about radio trends, and does some speculating of his own about the radio of 2010.
Reviews:

In the first of two parts, John Catalano looks at software to control the do-everything BC 780XLT Trunk Tracker. This month he compares Scanner Master's WinScan 780 by Pzilla Software and TrunkStar780 by Signal Intelligence (makers of the ScanStar products) (p.82).

In the final installment of our series on mobile shortwave listening, Ken Reitz looks at preassembled and kit-built converters for your car radio, especially the LFB 4-Band Converter and the Ramsey Converter. Sources are also given for converters from MFJ and Vectronics. Ken also summarizes the strong and weak points of all the alternates discussed in this series – and throws in a new option for good measure: satellite radio (p.84).

Bob Grove reviews several pieces of radio equipment this month: an inexpensive Sangean pocket portable receiver, a more affordable spectrum display unit from Avcom Ramsey, and an AM broadcaster filter for VLF listeners from PAR Electronics (p.87).

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The Digital Satellite Revolution Comes to Broadcast Radio.

Satellite-based broadcast radio has been nearly ten years in the making. It all began in 1992 when the FCC allocated spectrum in the "S" band (2.3 GHz) for the nationwide broadcasting of satellite-based Digital Audio Radio Service (or "DARS").

On April 2, 1997, the FCC auctioned off two DARS licenses. CD Radio (now called Sirius Satellite Radio) submitted a winning bid in the amount of $83 million for the 2320-2332.5 MHz portion of the frequency band and American Mobile Radio Corporation (XM Satellite Radio) paid $90 million for the 2332.5-2345 MHz spectrum slice.

Hundreds of millions of dollars have now been poured into satellite broadcast radio and these two companies are now fighting for a share of the tens of millions of potential listeners trapped in their cars for several hours a day.

By the time you read this, these two companies – Sirius Satellite Radio and XM Satellite Radio – each will be delivering up to 100 channels of crystal-clear coast-to-coast music, news, information, and talk-show programming via satellite.

Most radio signals begin to fade 30 miles away from their source. Not so with satellite radio! You could drive from Tacoma, Washington, to Washington, D.C., without ever having to change from the satellite radio station! Some of the DARS channels will be commercial free.

The XM service will be available by paying a $9.99 monthly fee. That is, after you purchase the $200 to $400 radio hardware. XM Radio began service to the Dallas Ft. Worth and San Diego area on Sept. 12th; the entire southwest in October with nationwide expansion is planned for November. The big question is, will you have to change from the satellite radio station to Washington, D.C., without ever having to change from the satellite radio station? The XM Satellite Service will also be manufactured by Kenwood, Panasonic, Clarion, Sony, Jensen, and others and available at retailers such as Circuit City and Best Buy.

Because satellite radio is addressable, Sirius and XM will eventually offer car "telematics" services. They will be able to remotely unlock car doors if the owner locks the keys inside, remotely start the engine on cold mornings, or even deliver custom content.

The National Association of Broadcasters has turned thumbs down on satellite radio's request to operate terrestrial repeaters to fill in areas where their satellite signals cannot reach, such as in between tall buildings, underpasses or in tunnels.

The NAB wants to preclude digital audio radio (DAR) companies from turning satellite-delivered radio into a local "terrestrial" service. In comments to the FCC, the NAB said "If XM and Sirius want to provide traditional over-the-air radio service, they should apply for overhead licenses like everyone else."


FCC to Implement Federal Registration Numbers

Effective December 3, 2001, you will have another "FCC Number" to deal with. The FCC is requiring all applicants and licensees doing business with the FCC (including amateur radio operators) to provide a (ten digit) FCC Registration Number (FRN). The FRN is required under new FCC rules in Part 1, Subpart W. It's a uniquely identifying number obtained over the Internet through the Commission Registration System (CORES).

When CORES became operational in 2000, licensees in the Universal Licensing System (ULS) were automatically assigned FRNs. To discover whether you have been assigned an FRN and what the number is, go to http://www.fcc.gov/whb/uls/ and click on the Licenses link. Click on Continue and enter your call sign into the form and click on Search at the bottom of the page. When your name comes up, click on your call sign and then the second Licensee Information link at the top of the next page. Look for the box labeled FRN.

If you do not have an FRN assigned, you may obtain it through CORES. Go to http://www.fcc.gov/omd and click on the CORES link, or by filing. This number will be required whenever making any application or payment to the FCC. Without it your application or renewal will be returned or dismissed.

For more information on registering for an FRN, contact the CORES Administrator toll-free at 1-877-480-3201 or by email at CORES@fcc.gov.

Preparations for WRC-2003

Since radio waves do not respect international boundaries, it is at the World Radio Conferences of the International Telecommunications Union that the various nations of the world meet to agree on telecommunications matters. The next WRC is to be held June 9th to July 4th, probably in Venezuela. In preparation, study groups on both the civilian and governmental level take place to formulate the recommendations to be brought to the Conference. To follow the U.S. and international amateur radio preparations, here are some key website addresses:

ITU Study Group 8 (SG-8): http://www.itu.int/bcconf/rag/wrc-cpm-process/index.html Click on Study Groups
ITU-R Radiocommunications Sector: http://www.itu.int/ITU-R
FCC International Bureau: http://www.fcc.gov/wrc-03
United Kingdom Regulatory Agency: http://www.radio.gov.uk Click on International link
Asian Pacific Telecommunity (APT): http://www.aptrc.org
Inter-American Telecommunications Commission (CITEL): http://www.citel.oas.org
European Conference of Postal and Telecommunications Administrations (CEPT): http://www.CEPT.org
Australian Communications Authority (ACA): http://www.aurstel.gov.au
National Telecommunications and Information Administration (NTIA): http://www.ntia.doc.gov/osmhome/wrc99pre/ntia.htm
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Perspectives on Israel

We usually stay away from non-radio debates, especially on such a sticky problem as the Middle East debate; excerpts from these two letters (written prior to Sept 11) show how differently two knowledgeable people can view the same situation.

"I read [Listening in on the Middle East by Dave White]. Please don’t insult my intelligence by reporting Israel as ‘one of the few democracies in the region’...... Israel is a fascist state dedicated to a racist policy of apartheid against the Palestinian people. I have lived and worked in the Middle East for many years and have seen the suffering in the refugee camps. Israel is the main culprit in the region and they are funded by our tax dollars. Ever hear of “no taxation without representation”..... something which the terrorist George Washington and his band of terrorists, the Continental Army fought so hard against.”

– C. Link NAZIR

“There is only one country in the region with an acceptable level of freedom, and that is Israel. When I go to the Middle East and visit Syria or Lebanon or Egypt, there is no question that I am in a police state. And believe me, working as a journalist in a police state is no fun. By contrast, when I am in Israel, I feel that I am in a free country.

“So, why is the media always critically focused on Israel? It is one of the few places you can take a television camera with virtually unlimited access. Why can’t we take camers to Syria when the president there decides to destroy an entire town? Simple: we are not allowed.

“When I engage in debates with Arab-Americans, I constantly raise this. Their families came to the United States for freedom and opportunity, just like mine did. So, why, when they look at the Middle East today, do they side with the regimes that perpetuate the oppression that their parents or grandparents fled? Why do they think that they are standing up for Arabs when they justify the murderous actions of someone like Saddam Hussein?”

– Joseph Farah – Arab-American, founder of the Western Journalism Center and founder, and CEO of the Internet news site WorldNetDaily.com. He invites readers to visit http://www.americancoalition.org

By the way, author Dave White wrote the New York Port Authority” with a picture of the World Trade Center! Had no idea that this story become an dramatic actually just a week later. Sorry my english is not good enough to describe my feelings. Still mourning.”

– Björn Gerlach, Germany

“Just wanted to let you know Monitoring Times deserves an award for a timely magazine cover in its September issue.”

– Donald Byerly

Computers no Panacea

“Today’s events of terrorism in the US have shown the fallibility of relying upon ‘newer technologies’, such as the Internet, in broadcasting to the public. Virtually all US news sources on Internet were jammed and even the attempt to get the BBC updates from their web page reported ‘Services to News may be slow due to the weight of traffic. Please bear with us.’

“The beauty of shortwave radio is that, aside from the band congestion we are already used to, there is a limitless number of people who can be tuned in and listening at any time, and in real time. Hopefully the BBC will learn from this lesson and return to full-time broadcasts to North America.”

– M. P. Reece, AA0GL

(Ditto: I also experienced this difficulty regarding the Internet - ed)

“I’m always amused by the various discussions of how computers will change the radio hobby. Computers were a good thing when they (essentially... through programable logic ICs) made programmable scanners and radios possible. Now computers are coming into question because they may be replacing radio as it has traditionally been.

“That’s progress, I guess, but things really haven’t changed that much. I remember being a kid and driving around the lake and listening to the clear channels like WBZ, WABC, or WLS. There was a strong signal and there then was fading. Now I can connect through RealAudio and guess what? Net congestion and buffering! Kinda the same thing from a listening standpoint. Funny how you can dial 760 kHz or wjr.com and end up with the same result. It may not be the same as DXing an unknown station, but trying to listen to a familiar station far away is quite the same.

“Radio is a hobby that has various fascinations to various people. Some people restore old radios, some people crave the state-of-the-art radios. Computers are here to stay, like it or not. But whether one chooses to listen to the BBC on SW or satellite or the internet, who cares? If people are enjoying what they are doing, then they should have
A Safety Issue
Geoff Gidman, KA1EFP, and Jerry Smith were two observant readers who wrote regarding the September 2001 “Shortwave Equipment” article by Douglas Harrigan which illustrated the use of adhesive backed Velcro to affix a shortwave receiver to the dashboard of his car. As Jerry commented, “Obviously, this author has an older vehicle with no air bags! I would strongly suggest that a user who thinks this is a great idea make sure that he does not mount his radio with Velcro to the passenger side airbag compartment lest his radio be launched out the rear window of the vehicle or worse.”

Point well taken! Now that’s out of the way, we’ll address another question that came up about the same article:

Zener Diode Circuit
In the Sept. Monitoring Times on page 83, D. Harrigan tells of using a zener diode to convert 12V to 4.5V. What would an actual schematic look like of such a setup? How about two or three zeners in parallel for more amperage?

- Anthony Glen

Simple DC Voltage Reducer Circuit

\[
V_{\text{out}} = \frac{V_{\text{in}}}{1 + \frac{R}{V_z}}
\]

Choose \( V_z \), equal to desired output voltage, \( V_{\text{out}} \).
Zener power rating must be \( > P_{\text{diss}} \times V_z \).
\( R \) = \( \frac{V_{\text{in}}}{V_z} \) (or nearest smaller value).
\( P_{\text{diss}} \) = \( \frac{V_z^2}{R} \) in watts, \( I_z \) in amps, \( P_i \) in watts.

Douglas G. Harrigan sent MT the requested reverse-bias zener dc voltage reducer circuit. Following are some of his notes about the circuit:

“This circuit uses a a reverse-biased zener diode to provide a reduced dc voltage equal to the zener voltage at the output.

Choose the closest zener diode with a zener voltage close to, but not too large, for your particular application. While this circuit was used to provide dc power for my Sony ICF-2010 portable shortwave receiver from the automobile’s nominal +13.8 Vdc electrical system, the circuit and formulae provided will work with any dc source and output requirement (as long as the source has a higher voltage than the output requirement)! In my case, I needed 4.5 Vdc, with a max current requirement of 600 ma. Digikley lists 4.7 Vdc zener diodes, which should work for a nominal 4.5 Vdc requirement, as fresh alkaline batteries in the radio will often provide slightly more than 4.5V without harming the radio.

“For higher power requirements, the designer of the circuit does NOT recommend multiple diodes in parallel; the concern is that thermal runaway could occur in one of the diodes, with most of the current trying to get through the runaway diode, thus frying it. A single zener of appropriate power dissipation rating is the way to go.

“Lastly, if a zener of the appropriate voltage for your needs is not available, the user would probably better off fabricating a power supply based on one of the many variable-output voltage regulators, which allows the user to dial in the desired output voltage.

“The original circuit design was provided to me over 20 years ago, when voltage regulators were far more expensive than they are now. This circuit really has no real advantage over the modern variable-output voltage regulators, unless you already have the parts lying around in your parts bin, or cannot find one that meets your particular voltage and current requirements.”

- Douglas G. Harrigan

We welcome your ideas, opinions, corrections, and additions in this column. Please mail to Letters to the Editor, PO Box 98, Brasstown, NC 28902, or email mteditor@grove-ent.com. Letters may be edited for length and clarity. Happy monitoring!

-Rachel Baughn, KE4OPD, editor

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November 2001  MONITORING TIMES 7
September 11 Radio Honor Roll

Our hats are off to all the Amateur Radio Operators who volunteered their services and equipment; fire, police and emergency radio dispatchers who helped bring some order out of chaos; broadcast and telecommunications engineers who helped restore communications to a desperate city; media personnel who volunteered time and services; and the many companies who donated communications equipment and services. We dedicate this issue to the victims who were able to reach family, friends, or just friendly strangers by means of radio waves in the last moments of their lives, most especially to those on United Flight 93 who learned the true nature of their hijacking and decided to do something about it.

NYC TV Scrambles for Antenna Sites

The transmitters of nine of New York’s analog television stations, five DTV stations, four FM radio stations, and many communications channels were all located atop the World Trade Center (WTC), and many video fiber paths were located below it. When the north tower went down, so did most off-air New York TV. Six transmitter engineers, two of whom were hams, are presumed to have lost their lives in the collapse. “The broadcast community is in absolute shock,” said Hudson Division Vice Director Steve Mendelsohn, W2ML, who works for ABC News. “We all knew transmitter engineers, we all knew people who worked up in those towers and gave it all to save their loved ones.”

When the WTC was bombed eight years ago WCBS was the only station able to switch on United Flight 93 who learned the true nature of their hijacking and decided to do something about it.

IDEN multifunction phones to various federal, state and local government agencies. Motorola also sent three trailer-mounted 900 MHz and 800 MHz radio systems to New York City, plus an 800 MHz, 15-channel communications system to serve as back-up for the Empire State Building communications site, now that it has become the primary system.

Telecoms Respond to the Crisis

Here are a few of the tremendous efforts made by telecommunication companies to help in the recovery effort:

* A wireless emergency response team combining technicians from prominent telecommunications firms was put together to locate possible survivors of the attack on the World Trade Center. The technicians detected some 50 cell phones present under the rubble, but no active transmissions. It did clear some missing persons reports when calls were determined to have been made from outside the area.

* Verizon deployed portable cell sites in Manhattan and New Jersey, at the Pentagon, and in Shanksville, PA. They also made 5,000 phones available for emergency officials.

* BellSouth reported three times and AT&T reported twice the normal volume of long-distance calls. Cingular Wireless reported attempts to make a call increased a thousand percent in the next two days.

A New Hero

From The Dallas Morning News: Among the innumerable heroes to emerge from this week’s tragedies is a device that many have loved to hate: the cellular phone.

Phones, two-way pagers and other wireless devices have been credited with providing invaluable information about the hijackers, helping rescue efforts, reassuring loved ones and giving people the opportunity to hear their spouses’ last words.

Unsung Heroes

Ham radio operators responded to the New York emergency by staffing more than 30 Red Cross shelters and other sites. Local clubs and repeater groups volunteered gear, frequencies and operators.

The emergency area is now contained to the Manhattan. However, it could be months before hams are no longer needed. Hams have been operating in two shifts daily with 30 to 50 operators needed for each shift. To see whether volunteers are still needed, check into the Division web site and the NLI page at http://www.arrlhusdon/nli

At the scene of the Pentagon attack near Washington, DC, a crew of about two dozen amateurs staffed six Amateur Radio stations and provided logistical support between the Salvation Army’s relief and recovery effort on site and the agency’s Arlington headquarters.

At the Somerset County western Pennsylvania crash site, Kevin Custer, W3JKC, arranged preliminary repeater communication into and out of the crash site to help the Red Cross, Salvation Army, Pennsylvania State Police, the FBI and other state and federal agencies on the scene.

The ARRL reminds hams to be aware of what they say on the air, as there are a lot of people listening in on scanners as well as on amateur radios. Hams should self-monitor what they say on the air, as there are a lot of people listening in on scanners as well as on amateur radios. Hams should self-monitor what they say on the air and not allow racist anti-Moslem rhetoric. “That’s not the American way. That’s not ham radio!”

BULLETIN BOARD

Nov 2-3: Odessa, TX
West Texas Amateur Radio Club hamfest at the Holiday Inn Center (6201 E Hwy 80), 5-7p.m. Fri. 8a.m.-5p.m. Sat. $3 admission; Talk-in 145.470, 444.425, HF 3.922. Mike Glen K5EG, 3104 Dumont, Odessa, TX 79762 (915) 362-1428, K5EG@comrek.net

Nov 4: Litchfield, IL
Sixteenth Annual Central I/T Area Amateru Television Banquet to be held at Ariston Restaurant. For information, contact Scott Millick K5SM, 217-532-3837 or smillick@callnet.com
COMMUNICATIONS

US Secret Codes Compromised?

According to a report from DEBKA Intelligence Files, anti-American terrorists might be in possession of all or part of the codes used by the Secret Service, Drug Enforcement Administration, the National Reconnaissance Office, Air Force Intelligence, Army Intelligence, Naval Intelligence, Marine Corps Intelligence and the intelligence offices of the State Department and Department of Energy.

After two hijacked planes struck the twin towers of the World Trade Center in New York, the U.S. Secret Service reportedly received a message using that day's White House code, saying "Air Force One is next." Immediately, Vice President Dick Cheney was hustled down to the president's emergency operations center, a bunker built to withstand a nuclear blast.

Holding the White House code and a whole set of top-secret signals would have made it possible for a hostile force to pinpoint the exact position of Air Force One, its destination and its classified procedures. In fact, they could also pick up and decipher the presidential plane's incoming and outgoing transmissions.

The implications shocked everyone in the president's emergency operations center: Is there a mole, or more than one enemy spy in the White House, the Secret Service, the FBI, the CIA or the Federal Aviation Administration? The DEBKA report suggests the trail may go as far as back as 1993, when Aldrich Ames leaked U.S. secret codes to someone at the United Nations in New York. From there the codes went to Africa where America was participating in a UN police action in Somalia. U.S. involvement there ended not long after disastrous ambush on US troops by soldiers trained by bin Laden. There is evidence to suggest that bin Laden's aides acquired more than just US secret codes for the Mogadishu operation.

In the wake of these and other discoveries, the report, agency experts are not only concerned with the principle of citizens doing their part to listen and report. Please turn to page 86 for a special proposal on how you might help!

Spy Found in US Intelligence Agency

Ana Belen Montes, a 44-year-old senior analyst with the Defense Intelligence Agency, was arrested Sept 21 by the FBI and charged with providing U.S. national secrets to Cuba. Montes was the senior analyst responsible for matters pertaining to Cuba.

Montes had been under surveillance since May, when a court-authorized covert search of her apartment turned up a portable computer whose contents included, among other things, instructions on how to erase material from the computer, tips for radio reception, and references to "the numbers that you receive via radio." A Sony shortwave radio was also found.

The complaint said that the FBI identified text consisting of 150 sets of numerical groups. "The text begins, '30107 24624,' and continues until 150 such groups are listed. The FBI has determined that the precise same numbers, in the precise same order, were broadcast on February 6, 1999, at AM frequency 7887 kHz, by a woman speaking Spanish, who introduced the broadcast with the words "Atención! Atención!" "

Radio lobbyist Chris Smolinski says, "For those who are interested a quick check of WUN's huge frequency database, the text file on the older WUN CD (1995–1999) shows three entries for the freq (all as the "Atencion Stn")." And a quick search on http://www.wunclub.com has a single entry for 7887.0 from 2000."

Members of the Cuban-American community speculated that FBI agents moved in to arrest Montes to stop leaks to Cuba as U.S. forces mount a war on the Osama bin Laden network.

Emergency Alert System Suspended

Following the September 11 terrorist attacks, the Federal Emergency Management Agency (FEMA) requested that broadcast stations suspend their routine weekly and monthly tests of the Emergency Alert System (EAS) in order to avoid potential public confusion or fear. The tests were expected to resume as required by the FCC after October 2.

Emergency Nets Serious Business

Although the FCC issued no emergency declarations nor other special instructions to the Amateur Radio community as a consequence of the September 11 terrorist attacks, the FCC apparently intends to put teeth into its infrequent emergency declarations. The Commission has written a Springfield, Missouri, ham regarding alleged interference to an emergency net after the FCC declared a general communications emergency on June 10.

Because of severe flooding in Texas and Louisiana, the FCC had declared 3.873 and 7.285 MHz – plus or minus 3 kHz – off limits to all but flood emergency traffic. Agents say they monitored William C. Dennison, K0VCD, causing interference to – an emergency net.

Dennison's alleged action "reflects an alarming failure in understanding what Amateur Radio was established for and the basis for its allocation of broad frequencies and privileges," Riley Hollingsworth said.

"Communications" is compiled by editor Rachel Baughn KE4OPD (mededitor@grove-net.com) from newsclippings and reports submitted by our readers. Thanks to this month's reporters: Anonymous, Albany, NY; Norman Hill, Arlington, VA; Doug Robertson, Oxnard, CA; Alan Stoddart, Brooklyn, NY; Robert Thomas, Bridgeport, CT; Jeff Weinberg, Highlands Ranch, CO; Susan Wilden, Noblesville, IN; Via email: ARRL; Mark Ansel; Ed Cummings; Robert Felton; Alan Henney; Bob Kozlarek; Fred Moore; Ed Muro; Matthew Sadler; Mark Schubin; OpenDTV; John Stanko; Ron Tull; Larry Van Horn; Robert Wyman; Dave Zantow

Spy Found in US Intelligence Agency

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History will record September 11, 2001, as the day when America suffered unprecedented horror, grief, and personal loss. Truly this was a day that will live in infamy. How ironic that it occurred on September 11—“9/11.” In less than 90 minutes a low-tech, high-concept attack using two hijacked jetliners transformed New York’s World Trade Center complex to a pile of rubble, fifty feet deep in some areas.

Simultaneously, in Washington, D.C., the Pentagon was dive bombed by another hijacked jet. In Pennsylvania yet another hijacked jet presumed to be headed for Washington, D.C. crashed, killing all aboard. We now know that the heroic efforts of a few passengers who attacked the hijackers stopped this would-be suicide flight. These attacks were executed with surgical precision by terrorists who could fly the aircraft using little more than knives and box cutters to overpower the crew.

Several years ago I wrote an article for Monitoring Times on the Port of Authority of New York and New Jersey. In the midst of writing the article terrorists bombed the underground garages of the World Trade Center (henceforth called “WTC”). Fortunately, the loss of life was minimal, the damage to the WTC was repaired, and authorities apprehended and brought those responsible for the act to justice. This time, we weren’t so fortunate.

Local Media Scramble

It was about 8:50 a.m. and I was at work when I heard the first mention of an aircraft hitting the WTC. Local TV quickly provided images of a huge hole in the side of the WTC’s North Tower. In the bright morning sun the building’s now blackened silvery skin rained a river of fire and glass down the side of the building onto thousands of morning commuters. The news media reinforced my immediate skepticism that a small private aircraft could cause such damage; terrorism might be involved.

Almost as fast as the situation was unfolding, local TV channels suddenly went off the air as power was cut to their transmitters atop WTC. WCBS-TV maintained backup transmitters atop the Empire State Building, so for a time they were the only active TV station in New York City. WABC-TV quickly started using three UHF transmitters and remained on air with reduced coverage. Residents subscribing to cable TV and direct satellites only experienced brief outages. Within the next five days, five of New York City’s seven VHF stations were back on with reduced coverage from alternate transmitter sites.

As luck would have it I left the house that morning without my scanner and I knew I was missing a lot of action. My resourcefulness paid off when I got the idea to use a piece of RF test equipment, an IFR, as a receiver. A few feet of coax, a BNC Tee connector and two different rubber duckies made a good makeshift multiband antenna. Within minutes I was listening to several NYPD channels in my lab at work. The traffic was chaotic with the sounds of sirens and 10-13s on every channel. The IFR’s built-in spectrum analyzer displayed so many active channels that it resembled a comb!

Since all bridges and tunnels in and out of New York City were being closed, companies in the adjacent New Jersey communities were closing early. Given the mood of the moment most of us were happy to leave and it gave me the opportunity to do some listening from my home.

Lessons Learned from 1993

Following the 1993 terrorist attack on WTC many agencies realized that better inter-agency communications were needed. After comparing the two disasters it is now apparent that the new systems performed very well. NYPD’s
New York City Public Safety Agencies

Note: Private line or PL tone in parenthesis

Notional 800 MHz Public Safety Mutual Aid Channels

864.0125, 866.5125, 867.0125, 867.5125, 868.0125 (156.7 Hz

482.4625

470.8315

470.8125

160.530 Tactical 4 (TAC4) F8

160.965 Citywide F9

160.945 Reportee Talk Around F10

155.95S Reportee Output F13

155.370 State Municipal Radio Dispatcher (MDR) Interagency F12

463.550 Tribu Tunnel Authority Desk

D.O.I.T.T 800 MHz Trunk System

This is the layout for Bank 1 of a Motorola 3000 radio being used for disaster communications. Additional information on D.O.I.T.T system can be found at http://www.n2nov.net/doit.html

856.860/4375, 856.860/7625, 856.860/9375

CH

User

01 10400 Red Cross (Mass Care and Emergency Response Vehicles)

02 8750 DOD Transport

03 1001-1 UEM Alert (Interagency Talk.GROUP)

04 10432 Sanitation #1

05 11632 Department Citywide Admin Services (DCAS)

07 10448 Police

08 10644 Homeless Services

09 5010-10 Department of Buildings

10 7270 HPD Inspectors

11 10480 Leader #1

12 10496 Leader #2

Federal Emergency Management Agency

These are the "official" VHF assignments for FEMA

New Jersey

138.275 138.150 138.350 138.450 139.825 141.725 141.875 142.375 142.650 142.750 142.925 143.000

New York

138.275 138.350 138.450 139.825 141.725 141.875 142.375 142.650 142.750 142.925 143.000

Other Active VHF / UHF frequencies

154.250 Fire Department New York (FDNY) field operations

154.370 FDNY coordinating channel

156.675 Ferry boat coordination

161.670 News Media traffic

162.7875 Federal Bureau of Investigation (FBI) traffic

163.4125 New York District Aide Cops at Emergencies or 26 Federal Plaza

165.475 Linked FBI system

166.325 Gateway US Park System coordinating traffic among islands in city

166.925 Coordination with Coast Guard Medics

189.975 FBI Newark (Quite Active)

414.400 Linked FBI system

Port Authority George Washington Bridge Command Channel

VHF Marine Channels

154.300 156.000 157.050 157.100

Civilian Aircraft

Le Guandia Airport

118.000 New York Approach Control

118.700 New York Departure Control

119.950 Class B Flight Service (North)

120.400 New York Departure Control

120.800 New York Approach Control

121.700 Ground Control

121.850 Ground Control

121.875 Clearance Delivery

122.950 UNICOM

124.450 New York Departure Control

124.950 New York Approach Control

125.950 ATIS Arrival

126.050 Class B Flight Service (South)

127.050 ATIS Departure

127.300 New York Approach Control

128.800 New York Final Approach Control

132.000 New York Approach Control

135.200 Pre-Taxi Clearance/Helicopter Clearance Delivery

263.000 Ground Control/Tower/Class B Flight Service

Newark International Airport

115.700 ATIS Arrival

118.300 Tower

118.650 Pre-Taxi Clearance/Closure Delivery

119.200 New York Departure Control

121.800 Ground Control

122.950 UNICOM

125.500 Class B Flight Service

125.850 Final Vector

126.150 Gate Hold

127.600 New York Approach Control

127.850 New York Approach Control

128.550 Class B Flight Service

132.450 ATIS Departure

132.700 New York Approach Control

132.800 New York Approach Control

134.050 Tower

134.825 ATIS South Arrival

131.450 Class B Flight Service

157.600 Tower/Class B Flight Service

John F Kennedy International Airport

109.500 New York Approach Control (Transmit only)

115.100 ATIS Departure

115.400 ATIS Arrival SW

117.700 ATIS Arrival NE

119.400 New York Approach Control

119.100 Tower

121.650 Ground Control

121.900 Ground Control

122.950 Unicom

123.700 New York Approach/Departure Control

123.900 Tower

124.750 New York Departure Control

125.050 Gate Hold

125.250 Class B Flight Service

126.800 New York Approach Control

127.400 New York Approach Control

128.725 ATIS Arrival

132.400 New York Approach Control

134.250 New York Approach Control

134.250 New York Departure Control

135.050 Pre-Taxi Clearance/Closure Delivery

135.900 New York Departure Control

281.550 Tower/Class B Flight Service

348.600 Ground Control/Closure Delivery/Pre-Taxi Clearance

For complete agency channel assignments and information check the links below.

NYPD - FDNY - EMS
http://www.n2nov.net/nypd_ems.html

NYPD Tactical (Simplex) Channels
http://www.n2nov.net/nypd.html

FDNY - EMS
http://www.n2nov.net/ems800.html

NT Transit and Rail System
http://www.n2nov.net/transit.html

NYS Metro 21 800 System
http://www.n2nov.net/NYS800.html

Port of Authority Convention System (800 EDO System Out of Service)
http://www.n2nov.net/PAP800.html

NUSP
http://www.n2nov.net/nusp800.html

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basic UHF system grew since 1993, now including more channels and separate subsystems for medical units (EMTS) and the NYC Transit Authority. Many of the new 482-485 MHz channels were put into use, thus presenting an excellent opportunity to verify channel data we had received over the past few months. Since the transmitter sites are scattered throughout the city, few if any experienced obvious problems.

Communications for New York’s Fire Department (FDNY) also did very well despite previous negative publicity they received during their intended migration to a Motorola digital system. Phase one of that transition would have transferred the fire ground communications to digital radios. Problems related to multiple simultaneous transmissions caused FDNY to reject the radios. Many previously used VHF analog channels were active so I would have to assume that their original equipment was in working order. FDNY itself was not as lucky. Up to 200 of their members, the first to arrive on the scene, were killed while evacuating the building. In some cases, every member of an
"We started back through the piles of debris, documenting with photos and updating the other Metro Fire units with what we were seeing."

entire fire company lost their lives in the line of duty. To maintain leadership, "field" promotions had to be made.

Another change since 1993 now finds New York City's infrastructure communications using the D.O.I.T.T. 800 MHz trunked system. Fortunately this system is atop the Empire State Building and just received a major overhaul just two weeks before the WTC incident. Within 48 hours of the disaster crews from Motorola were on the scene, programming hundreds of new radios. Talk groups were also added to satisfy logistic requirements.

The World Trade Center complex served as the headquarters for The Port of Authority and the New York Office of Emergency Management (OEM). The Port of Authority's EDACS 800 system served the major airports. Moments after the planes impacted the buildings their system went silent, forcing radio communications to the old UHF repeater-based system. One would think that after the 1993 bombing, an alternate transmitter site would have been established.

New York's OEM office at 7 World Trade Center was itself a casualty when the building collapsed at 5:24 p.m. Authorities moved OEM Operations to the Police Academy on 20th St. Among those who lost their lives was Fr. Mychal Judge, FDNY's Chaplin. While administering the last rites to a fire fighter he removed his helmet and was struck in the head by a piece of falling debris. Symbolically, Mayor Rudolph Giuliani declared FDNY's spiritual leader the first confirmed casualty.

"Once the area we were in was stabilized, we returned to the "war zone" to re-evaluate."

Not Business as Usual

The amateur radio community responded interfacing with RACES and the Red Cross. Their preparedness was obvious as several nets started on 2M and 440 MHz repeaters within 30 minutes. Hundreds of dedicated volunteers offered countless hours coordinating medical / health and welfare communications. Metro Fire Radio [http://www.metrofireradio.com], a two-way radio notification group, also responded. Several of their members helped police and fire units in many situations. Their primary goal is to keep members of the police, fire, EMS, press, and OEM organizations informed of ongoing emergency incidents. Metro Fire uses three active channels, 452.175, 463.650. and 451.825. Metro Fire's Mike Coppola (Unit 301) was also first on the scene and captured some of the photos used in this article. Their web site offers many photos we could not include.

"On the morning of Tuesday, September 11th, 2001; shortly after 8am, I transmitted a tone and announced an alarm for the Borough of Manhattan NY — a high rise fire in the World Trade Center Tower #1. We "convoysed" into the city. Shortly after the 5th alarm was announced over Manhattan, a "Mayday" was yelled by the incident commander who stated "Another plane just hit tower #2". At this time, all Metro Fire units en-route to the scene knew that we weren't going to an accident."

"Once the area we were in was stabilized, we returned to the "war zone" to re-evaluate."

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scanning group, New York DX Association (NYDXA), publishes a monthly newsletter via E-mail, so I immediately sent our members a request to inform me of all active frequencies. I posted the results on our web page: http://nydxa.4t.com Within minutes I was listening to several channels, including communication from AWACS, “Northernlights” and “Huntress.” Nearby McGuire AFB provided several aircraft used for in flight refueling.

Since the World trade Center buildings had thousands of antennas atop them, the loss of communications is not limited to New York City based agencies. Countless Federal and state agencies including the New Jersey State Police now find themselves scattering for new equipment and transmitter sites.

Frequencies for Follow-up

In an article of this type, including all the frequencies for the agencies mentioned would be customary. While many have been included, space and time constraints required some abbreviation. Since the activity in and around New York City won’t be short term, updated information will be posted on our group’s web page mentioned above. Discussions will also take place on our weekly net each Wednesday at 8:00 p.m. held on the 147.000 (-600) repeater in New York City. All are welcomed to participate and scanner listeners may participate via E-mail, answered live during the net. Those questions and your comments can be sent to NYDXA@hotmail.com

My sincere thanks goes out to all those who contributed to this article, especially Charles Hargrove N2NOV, Mike Coppola, and Pete Monaco. Finally, let us not forget those who lost their lives and their families.

About Metro Fire Radio

By Michael J. Coppola ~ Unit 301

Metro Fire Radio is a two-way radio notification system for the New Jersey/New York metropolitan area that is used to keep the members of the police, fire, Emergency Management Service, press, and Office of Emergency Management organizations informed of ongoing emergency incidents. Our main transmitter (UHF), is located in Alpine, NJ, with a satellite receiver in Hackensack, NJ. Our sub channels, better known as Metro 2, 3, and 4, are located in Hawthorne, Hackensack, and West Orange respectively.

When a member hears of an emergency incident, he retransmits the information over the radio system. Members who are available may respond to the site to provide detailed, up-to-the-minute reports of the scene conditions. This has always been a great benefit to the organizations that depend on our system for reliable information.

Metro Fire Radio has a membership of over 120 members. Most agencies in our area that have UHF radios dedicate a channel for our organization. The system has been proven effective time and time again. Most of our members take photos of the incidents and coordinate with arson squads, emergency agencies, and press personnel after the job is over.

Unfortunately, this is the largest incident anyone in the world could ever report. It’s also a great example of how the members of this radio system do more than just “buff.” We’re the first group to put down a camera and help out at the scene. Rehabbing, stretching lines, topping hydrants, treating patients, and whatever else is asked of us. Further information on our system can be found at our web site: http://www.metrofireradio.com.

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- NO ONE supports your “Trunk Tracker” with more features!
September 11 was an eerie day for the country’s scanner listeners, especially those of us in the Nation’s Capital. The tragedy struck home for Washingtonians almost an hour after the World Trade Center was first attacked. “I was scanning Alexandria and Arlington County on one of three scanners on my desk in Old Town Alexandria, Va., while listening to WTOP's [AM-1500] coverage of the New York happenings,” recalls freelance photographer Bob Pugh. “An Arlington dispatcher shouted there was a plane down at the 14th Street bridge. The battalion chief answered up asking for details. She said new reports indicated that it was now in the Del Ray area.” Next it was reported at the Navy Annex, and finally, the Pentagon.

It was “too much to be a coincidence,” Bob thought. Hearing that, he jumped in his car, made the over 4-mile trip in five minutes, took U-turn into the Pentagon lot and parked on the grass at the northeast corner of the 60-year-old building. “Smoke covered the entire horizon,” Bob recalled. He was among the first, if not the first, of the photographers to arrive at the crash scene minutes after the ill-fated American Flight 77 crashed into the Pentagon at 9:37 a.m. Bob's video aired on the local TV stations and on MSNBC, Fox News, Dateline, CNN, and Good Morning America, among others.

The Arlington County trunk radio system buzzed with chatter about the crash, Bob said. Much of the coordination he observed during the first 30 minutes was face to face, as officials struggled to deal with the tragedy. Meanwhile, the sounds of continuous sirens filled the air as apparatus from adjacent jurisdictions responded to the Pentagon.

Better Communications

In January 1982, when Air Florida Flight 90 slammed into the 14th Street bridge, officials expressed much concern about poor radio communication. Although many of the fire/EMS departments that responded to Air Florida had VHF-high band radio systems, most lacked the ability to communicate directly on each other's radio channels.

Steve Souder, who was with D.C. fire/EMS communications that snowy day in 1982, has since become the administrator for Arlington County's Emergency Communications Center (ECC). Emergency radio communications in the area, he says, has greatly improved since then. Much of the mutual aid fire/EMS apparatus which was on the scene of the Pentagon now communicate using 800 MHz Motorola trunked radio systems. These radios are preprogrammed with Arlington County talkgroups, and vice versa. When appropriate, Steve says, they were able to communicate sector-to-sector or sector-to-command on the appropriate Arlington County talkgroup.

He also noted that the five national 800 MHz mutual aid channels, as well as the six local 800 MHz mutual aid channels, known as the Council of Governments-Mutual Aid Radio System (COG-MARS) channels, were used mainly for unit-to-unit “talk-around” coordination (frequencies listed below).

In 1982, the same area had only two fire mutual aid channels, 154.28 and 154.265, and one for police, 453.55. With little ability to communicate directly on each other's channels, rescue efforts during the Air Florida crash were further complicated.

Minutes after United Flight 175 became the second jetliner to crash into the World Trade Center at 9:06 a.m., MedSTAR paramedic Jim Burke said that the D.C. Hospital-Mutual Aid Radio System (H-MARS) was activated for a citywide bed status check. From this perspective, Jim pointed out, hospitals were alerted far sooner than they ever would have been before. This allowed hospital disaster plans to be implemented in a more timely fashion. The network, which operates on 462.4, was a new addition since the Air Florida crash.

One of the best sources of what was happening at the Pentagon was the Virginia State Police, says Dr. Willard Hardman, a Catholic University professor and loyal scanner listener (see his Pentagon frequencies below). He heard VSP troopers on 159.0 talk about the fourth plane inbound from Pennsylvania. Troopers set up a command post at the Pentagon with other agencies and remained there for days. VSP quickly brought in additional troopers from as far south as Richmond. Some listeners had also reported hearing a low-power VSP repeater on 158.985 (the Salem-South channel) in the immediate area of the Pentagon.

Willard said that the new police-mutual aid radio system (P-MARS) channel on 866.3625 was also a good source of information as emergency dispatch
With the sheer spectacle of the Pentagon on fire with the thick black smoke rolling over its face to the south, I knew I had to prioritize the visual overload of the scene...Medics treating a dozen or so victims...trucks, hoses, volunteers with blackboards, clergy, fire and smoke everywhere centers coordinated with one another. He said he heard various agencies, including the military, distribute radios to allied agencies to further enhance coordination. A D.C. National Guard MP battalion was activated and became quite active later in the day on 161.0MHz.

**Skies Controlled by Military**

While all this was happening on the ground, in the skies of North America commercial air traffic was being grounded as fighter jets blasted off for combat air patrol (CAP) duties. "I started listening to the events around 10:30 a.m.," states military air buff Ron Perron. The World Trade Towers and the Pentagon had already been attacked. "By that time," Ron observes, "there was not a peep of civil air traffic in the area."

One of the first transmissions he heard was Andrews AFB's tower announcing on its VHF and UHF frequencies that its airspace was closed and that all intruders would be shot down. "That certainly put an exclamation point on what I was to hear for the rest of the day," Ron said!

Throughout the day, the Reagan National Airpot controller (on 125.65) was the overall controlling authority for the D.C. area. He authorized all departures and entries into the "Class B" airspace. That role remained throughout the evening hours.

When the Air Force took over the air space, Ron says the D.C. Air National Guard assumed the combat air patrol. Ron monitored the two D.C.ANG F-16s (Wild and Caps) which started flying CAP missions around 10:30 a.m. At that time there were news reports of a fourth missing airliner, so presumably he assumed the F-16s were airborne protecting the D.C. area from that threat, among others. These F-16s were soon joined by three more F-16s from Langley (North Dakota ANG aircraft normally deployed to Langley in an air-defense mode). The D.C. ANG flight leader assumed the role as CAP commander while trying to track the aircraft. The D.C. ANG F-16s assumed control of the airspace below 23,000 feet, and the Langley F-16s and F-15s took the airspace above that. After about an hour, Ron says two Langley F-15s (First) joined the CAP and took up position high above the area. They were also joined by some F-18s up from Oceana.

About an hour after Ron started listening, he said he heard an AWACS (Bandsaw Kilo) off the Maryland and Virginia coast which started to assume control of the airspace. The D.C. ANG CAP commander, however, continued to control the immediate airspace around downtown D.C.. Later in the afternoon he was joined by another AWACS (Chalice). Interspersed among the medevac choppers trying to land at the Pentagon to extricate the wounded, helicopters from the 1st Helicopter Squadron (Mussels) were busy ferrying military officials from the Pentagon. Huntress assumed the NCS (net control station) role sometime in the late morning and set up on 255.8, 228.9 and 234.6. Ron says Huntress also assumed responsibility for designating targets and releasing fighters to prosecute those targets.

In the early evening hours of that fateful Tuesday, Air Force 1 was flying back from Offutt...
Air Force Base near Omaha, Neb. That’s when Dan Patrick and a handful of other scanner listeners in the Washington area monitored the fighter jets protecting the president’s aircraft on its return trip to Andrews Air Force Base.

It “sounded like an enormous amount of fire power” that was airborne, Dan observed. Dan, who works for WUSA-TV, had used his video camera to record some of the fighter jet radio chatter on 225.8 as the Air Force 1 escort came into range over the Blue Ridge. It was as if they “were concerned about every target,” he said. “It was an interesting coordination effort” for the 10 to 15 minutes that it lasted.

Now, days after the attacks, Washingtonians struggle to recover while operating in a lockdown state which the city has never before seen. Bomb threats, suspicious individuals, vehicles, aircraft and package reports plague the city. Never before has the Coast Guard seen. Two Coast Guard cutters and two patrol boats guard the city’s meager waterways using 157.15.

One D.C. police officer estimated that as much as half of the city’s officers who would normally be on patrol each shift have been detailed to fixed posts, including the city’s reservoirs, federal and city office buildings, and an expanded perimeter around the White House. Meanwhile, Urban Search and Rescue (USAR) teams continue their dig through the ruins of the Pentagon (much of FEMA’s incident support teams continue their dig through the ruins of the Pentagon).

After the recovery efforts will come clean-up and rebuilding, while Washingtonians try to cope with a forever-changed world.

About the contributors:

Alan Henney (alan@henney.com) and Willard Hardman (hardman1@ix.netcom.com) are coauthors of the Washington-Baltimore Scanner Almanac. See the Capitol Hill Monitor’s site: http://henney.com/chn for more Washington-area scanner information.

Bob Pugh (bopugh@totalshow.com) is a freelance photographer for BlindSpot News Services. He uses a Radio Shack Pro 2030, 2066 and Pro 33 and 39. In his car he carries a GE MPD 45 channel portable that uses a mobile converter for 460 MHz, and a Motorola 16 channel Radius.

Washington Area Mutual Aid Radio Systems (MARS)

I could see the evacuations well under way and hundreds of people milling around the Pentagon lawns.

<table>
<thead>
<tr>
<th>Frequency</th>
<th>Call Sign</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>154.2650</td>
<td>MARS 1</td>
<td>Washington</td>
</tr>
<tr>
<td>154.2800</td>
<td>MARS 2</td>
<td>Washington</td>
</tr>
<tr>
<td>154.2950</td>
<td>MARS 3</td>
<td>Washington</td>
</tr>
<tr>
<td>462.4000</td>
<td>MARS 4</td>
<td>Washington</td>
</tr>
<tr>
<td>866.0125</td>
<td>MARS 5</td>
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<td>866.5125</td>
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<td>Washington</td>
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<td>867.0125</td>
<td>MARS 7</td>
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</tr>
<tr>
<td>867.7625</td>
<td>MARS 11</td>
<td>Washington</td>
</tr>
</tbody>
</table>

I turned to the building in time to shoot the end of the collapse of the upper three floors.

139.900 District of Columbia Air National Guard Supervisor of Flying (SOF)

141.550 Special Air Mission (SAM) Command

225.800 NORAD Northeast Sector Operations Control Center (callsign Huntress)

228.700 NORAD Northeast Sector Operations Control Center (callsign Huntress)

226.900 NORAD Northeast Sector Operations Control Center (callsign Huntress)

234.500 NORAD Northeast Sector Operations Control Center (callsign Huntress)

234.800 District of Columbia Air National Guard Supervisor of Flying (SOF)/13th Fighter Wing Command Post

238.100 Navy Fleet Area Control and Surveillance Facility (FACSFAC) Virginia Corps Discrete (callsign Grant Killer)

243.600 Navy Fleet Area Control and Surveillance Facility (FACSFAC) Virginia Corps Discrete (callsign Grant Killer)

249.800 Navy Fleet Area Control and Surveillance Facility (FACSFAC) Virginia Corps Discrete (callsign Grant Killer)

250.000 Navy Fleet Area Control and Surveillance Facility (FACSFAC) Virginia Corps Discrete (callsign Grant Killer)

257.200 Reagan National Airport Approach Control

276.400 Marine Helicopter Squadron One (HMX-1) Operations

303.000 Common military tankers/dump frequency

320.600 Airborne Warning and Control System (AWACS) Operations

343.700 Reagan National Airport Approach Control

349.725 Reagan National Airport Approach Control

360.700 Washington Air Route Traffic Control Center (ARTCC)

378.100 Special Air Mission (SAM) Command

Military Callsigns Monitored

Aberdeen Bravo - E-3 AWACS aircraft

Angel - VMFA-321 Andrews AFB F-18 aircraft

Bendover Kilo - VMFA-321 Andrews AFB F-18 aircraft

Binge - McGuire AFB KC-10

Bully - D.C. ANG F-16

Caps - D.C. ANG F-16

Chalice (no suffix noted) - VMFA-321 Andrews AFB F-18 aircraft

First - Langley F-15 aircraft

Fugly - Ohio ANG KC-135 aircraft

Fueiler - McGuire AFB KC-10 aircraft

Huntress - NORAD Northeast Sector Operations Control Center controller

Maine - Maine ANG KC-135 aircraft

Muscel - USAF 1st Helicopter Squadron UH-1 Helicopters Andrews AFB

Quaint - Langley F-16S (North Dakota ANG deployed)

Raygun - Langley F-15 aircraft

Ray - Langley F-15 aircraft

Sneaky - D.C. ANG Supervisor of Flying

Snake - New Jersey ANG F-16 aircraft

Steel - Pennsylvania ANG KC-135 aircraft

Tazz - Ohio ANG KC-135 aircraft

Team - McGuire AFB KC-10 aircraft

Wild - McGuire AFB KC-10 aircraft

Aircraft Frequencies (Ron Ferron)

All frequencies are in MHz and mode is AM unless otherwise indicated

118.125 Navy Fleet Area Control and Surveillance Facility (FACSFAC) Virginia Corps Discrete (callsign Grant Killer)

118.400 Andrews AFB Tower

119.100 Reagan National Airport Tower

119.135 Andrews AFB Approach Control

120.750 Reagan National Airport Dedicated Control

123.025 Helicopter Unicom

124.200 Reagan National Airport Approach Control

125.650 Reagan National Airport Departure Control

126.550 Reagan National Airport Departure Control

127.275 District of Columbia Air National Guard Discrete

138.425 Florida Air National Guard (callsign Gator)
Bearcat® 245XLT Trunk Tracker II

Manufacturer suggested list price $429.95
CEI price $189.95
300 Channels • 10 banks • Trunk Scan and Scan Lists
Trunk Lockout • Trunk Delay • Cloning Capability
10 Priority Channels

Frequency Coverage: 12 MHz to 250 MHz

$20 off for using a credit card

AOR® AR8200 Mark II BIB Radio Scanner

Manufacturer suggested list price $639.95
CEI price $409.95

- 1,000 Channels • 20 banks • Select Scan Channels
- PASS channels: 50 per search bank • 50 for VFO search
- Frequency coverage: 20 MHz to 250 MHz
- 15 Hz spacing
- 50 Hz. 20 Hz
- 50 Hz, 10 Hz

Frequency Coverage: 20 MHz to 250 MHz

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Scanning the Heart of Dixie

By John Mayson

Our nation has scores of Interstate highways, hundreds of U. S. highways, and thousands of state highways. Many of these offer scenic views, and breathtaking landscape that keep driver and passenger alike in awe. Interstate 20 is not one of these.

I-20 starts just west of Florence, South Carolina, and stretches deep into Texas near Gomez Peak in Reeves County. The highway takes drivers through Columbia, Atlanta, Birmingham, Jackson, Shreveport, and Dallas/Fort Worth. While the route isn’t completely void of scenery, the long, straight, flat stretches between the urban centers can make for tedious driving.

Having driven almost the entire length of I-20 more times than I care to remember, I can personally vouch for the boredom that grips even the most easily amused of drivers. I know when I start wondering what ants dream or if balsa wood is edible, it’s time to pull over and snap back into reality. I recently discovered taking a scanner along is a great way to make the trip go by faster.

Scanning in the Middle

In this article we’re going to visit three states making up the heart of the Deep South: Louisiana, Mississippi, and Alabama. With a scanner in hand, you’ll hear everything from casino regulators to Mississippi River barges to the Alabama Bureau of Investigations. The county and parish lines will seem to go by faster as you listen to the police, sheriff, fire, and ambulance calls in the communities.

What you will need

Obviously you’ll need a scanner. One with lots of memories that also follows trunked systems, such as the Uniden BC780XLT or Pro-94, is an ideal choice. I also suggest an externally mounted antenna. These receivers and antennas can be found at Grove Enterprises, as well as many other advertisers in this magazine. You will monitor everything from several 800 MHz trunked systems to the Mississippi Highway Patrol’s 42 MHz system. Choose your antenna accordingly.

The second piece you need is frequency and trunked talkgroup information. This article will give you that piece. As a bonus, I’ll suggest ways to get as much information into your scanner before you leave home to avoid reprogramming it on the road.

The Bayou State

When you’re greeted to the state with English and French welcome signs, you know you’re in the Bayou State, also known as Louisiana. Despite what you might have heard, bayou is not the French word for swamp. It’s a derivation of a Choctaw word describing the marshy, sluggish bodies of water that feed lakes and rivers.

Louisiana is different. Rather than counties, Louisiana is divided into parishes, which have the same legal distinction as counties. The state’s legal system is based on Napoleonic law rather than English Common law. While many states grapple with the idea of being officially bilingual, Louisianans boast of its French and Anglo heritages.

Northern Louisiana is what southern Louisiana isn’t. You won’t find the quaint depravity of New Orleans or political legacies of Baton Rouge like Huey Long. Instead you’ll find quiet, conservative towns. Parish names such as Union and Lincoln were chosen because the locals were sympathetic to the north during the American Civil War, while further down the Mississippi River, New Orleans fought Union forces with a vengeance.

I-20 runs through eight parishes: Caddo, Bossier, Webster, Bienville, Lincoln, Ouachita, Richland, and Madison. Each parish has its own sheriff’s office, plus many police, fire, and ambulance services can be found. The Louisiana State Police has two troops in northern Louisiana. Troop G is headquartered in Shreveport and Troop F is headquartered in Monroe.

Bossier Parish operates a trunked radio system, as does the Louisiana State Police.

The Magnolia State

Mississippi is home to many great Americans such as William Faulkner and Kermit the Frog. Vicksburg boasts a wonderful Civil War park. The Jackson metropolitan area slowly gives way to the open road of eastern Mississippi. Other points of interest in the state are the Natchez Trace Parkway and the Gulf Island National Seashore.

I-20 passes through six counties: Warren, Hinds, Rankin, Scott, Newton, and Lauderdale. Hinds and Rankin counties, which include and surround Jackson use or plan to use Motorola trunked systems while the city of Jackson has chosen an EDACS trunked system. Warren
radio system owned and operated by the Southern Company out of Atlanta. It uses Motorola iDEN radios, exactly like the ones used by Nextel, and cannot be monitored by a scanner. Jefferson County uses a Motorola trunked system.

The Alabama Department of Public Safety started to implement a statewide EDACS trunked system. However, the system has not been completed, and along I-20 they use conventional VHF frequencies. I-20 runs through Troops C and B.

### Table 1: Tips for Travelers

All three states provide full service welcome centers. If you cross the state line during most daylight hours, be sure to stop in. You’ll find free maps, free Cokes, and lots of tourist brochures. All three states offer a wealth of historical and cultural sites. Two of the states have casinos for the grown-ups and two have beautiful Gulf coast beaches for the whole family.

### Table 2: Tips for Scanners

Keep your eyes on the road! Ambulances could be responding to your vehicle if you’re not careful. Cellular telephones have been singled out as a driving distraction and banned from use while driving in parts of the country. Truth is anything can distract a driver and this includes your scanner.

I suggest you program your scanner ahead of time. Should you need to reprogram it during your drive, pull over. If you absolutely need to fiddle with the scanner while driving, have someone else drive so you can focus on what you’re doing.

Additionally, know the law and practice common sense. I am not an attorney. However, I do know mobile use of a scanner may be illegal or require a permit. If you’re unsure check [http://www.afn.org/~afn09444/scanlaws.html](http://www.afn.org/~afn09444/scanlaws.html) or contact the appropriate police agency. Regardless of the law, you should use common sense. If you are stopped by law enforcement, turn the scanner off. Nothing can ruin a police stop. It’s tempting to hear your information broadcast by law enforcement, turn the scanner off. I know you should use common sense. I am not an attorney. However, I do know mobile use of a scanner may be illegal or require a permit. If you’re unsure check [http://www.afn.org/~afn09444/scanlaws.html](http://www.afn.org/~afn09444/scanlaws.html) or contact the appropriate police agency. Regardless of the law, you should use common sense. If you are stopped by law enforcement, turn the scanner off. Nothing can ruin a police stop.

### Table 3: Tracking the Trunks

The Uniden BC780XLT has a powerful feature called Control Channel Only scanning. A countywide trunked can have twenty or more frequencies. A statewide system might use hundreds. However, the number of frequencies used as trunked control channels is usually much less. Simply programming only the control channel frequency from each repeater can program the entire Louisiana State Police system into one bank. You are of course limited to 100 entries in your scanner list, but you can operate the scanner in search mode and listen almost seamlessly from one corner of the state to the next.

A frequent question I see on many Internet lists is “Can I program more than one trunked system into a single bank?” The answer to this is “Yes you can, with a caveat.” Trunk tracking scanners operate by monitoring the control channel, then sending the radio to the appropriate voice frequency. As long as the scanner sees only one control channel in a bank, this works fine. If there is more than one, the scanner will lock-on to the first one it comes to. Thus, for some reason the control channel is lost, it’ll lock onto the next. This could have undesired consequences.

You could have two systems, physically located hundreds of miles apart, in one bank. Frequencies programmed for the distant trunked system could possibly be used in the local area, and start tracking a local system. You could go from hearing an exciting police chase to hearing towing services or tree trimmers. The solution is to lock-out the frequencies of the system you do not wish to monitor. Remember to unlock those frequencies before you enter the new area. If you know the control channel frequencies ahead of time, you can enter just those. It’s less to lockout.

EDACS systems do not mix well. These systems require the frequencies be entered in “logical channel number” (LCN) order. Because of this, multiple systems cannot be entered into one bank since both will want to use LCN-1, LCN-2, etc. You can combine an EDACS and Motorola system into one bank. Enter the EDACS system first, then the Motorola frequencies. Make sure you change the trunk type on the scanner.

By carefully choosing your banks, you can fit virtually everything along I-20 into a Uniden BC780XLT. Hopefully we’ll start seeing more scanners with control-channel-only modes become available.

### Table 4: Louisiana Scanner Frequencies

<table>
<thead>
<tr>
<th>Line</th>
<th>Frequency</th>
<th>Description</th>
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<td>Channel 1</td>
<td>Caddo Parish Sheriff's Office</td>
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<td>453.205 MHz</td>
<td>Channel 2</td>
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<td>453.255 MHz</td>
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<td>453.305 MHz</td>
<td>Channel 4</td>
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<tr>
<td>453.355 MHz</td>
<td>Channel 5</td>
<td>Caddo Parish Sheriff's Office</td>
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<tr>
<td>453.405 MHz</td>
<td>Channel 6</td>
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<tr>
<td>453.455 MHz</td>
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<td>454.055 MHz</td>
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<td>Caddo Parish Sheriff's Office</td>
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<tr>
<td>454.105 MHz</td>
<td>Channel 20</td>
<td>Caddo Parish Sheriff's Office</td>
</tr>
</tbody>
</table>

### Louisiana State Police Troop F

- Bossier Parish
  - Bossier Parish Sheriff’s Office
  - Motorola Type II analog
    - 856.800 MHz
    - 856.815 MHz
  - 856.415 MHz
  - 856.875 MHz
  - 856.895 MHz
  - 856.215 MHz
  - 856.235 MHz

- Webster Parish
  - Webster Parish Sheriff’s Office
  - 856.800 MHz
  - 856.815 MHz
  - 856.875 MHz
  - 856.895 MHz
  - 856.215 MHz
  - 856.235 MHz

- Richland Parish
  - Richland Parish Sheriff’s Office
  - 856.800 MHz
  - 856.815 MHz
  - 856.875 MHz
  - 856.895 MHz
  - 856.215 MHz
  - 856.235 MHz

- Madison Parish
  - Madison Parish Sheriff’s Office
  - 856.800 MHz
  - 856.815 MHz
  - 856.875 MHz
  - 856.895 MHz
  - 856.215 MHz
  - 856.235 MHz

### Table 5: Scanner Frequencies

<table>
<thead>
<tr>
<th>Frequency</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>453.050 MHz</td>
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<td>453.205 MHz</td>
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<td>453.255 MHz</td>
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<td>454.105 MHz</td>
<td>Channel 19</td>
</tr>
<tr>
<td>454.155 MHz</td>
<td>Channel 20</td>
</tr>
</tbody>
</table>
Talkgroups

Jackson TRS
Clinton Police Department
Mercy Regional Medical Center of Vicksburg
Motorola ASTRO
Warren County TRS
Warren County

All frequencies and CTCSS/DCS tones, if known, are listed.

4400 Troop G State Fire Marshals
4368 Troop G Office of Motor Vehicles
4304 Troop G Talk-2
4272 Troop G Talk-1
4240 Troop G Coordinate Call
4208 Troop G LSP-2
4176 Troop G LSP-1
4144 Troop G Department of Public Safety
4112 Troop G Executive Security
4080 Troop G Criminal Investigations
4048 Troop G Criminal Investigations
4016 Troop G Gaming
3984 Troop G Car-to-Car
3888 Troop G Dispatch 2

Talkgroups

Shreveport: 856.4625, 858.4625, 859.4625, 860.4625 MHz
Ringgold: 856.7625, 857.7625, 858.7625, 859.7625 MHz
Plain Dealing: 856.9625, 857.9625, 858.9625, 859.9625 MHz

(' indicates control channel)

Louisiana State Police Troop G

3984 Troop F Car-to-Car
3664 Troop F Talk-2
3632 Troop F Talk-1
3600 Troop F Coordinate Call
3568 Troop F LSP-2
3536 Troop F LSP-1
3504 Troop F Department of Public Safety
3472 Troop F Executive Security
3440 Troop F Criminal Investigations
3408 Troop F Criminal Investigations
3376 Troop F Gaming
3344 Troop F Car-to-Car
3312 Troop F Dispatch 2

Talkgroups

Homer: 857.4375, 857.9375, 858.4375, 859.9375 MHz
Bellevue: 857.2625, 857.7625, 858.2625, 858.7625 MHz

Table 5: Mississippi Scanner Frequencies

All frequencies and CTCSS tones, if known, are listed.

Warren County
Warren County TRS
Motorola ASTRO
854.9625, 855.2375, 856.9375, 857.9375, 859.2625, 860.7625 MHz
Mercy Regional Medical Center of Vicksburg
155.175 MHz

Hinds County
Clinton Police Department
155.370 MHz (107.2 Hz)
Jackson TRS
EDACS analog
1 = 856.2125, 2 = 856.4875, 3 = 856.7375, 4 = 856.2125,
5 = 856.4875, 6 = 856.7375, 7 = 857.4875, 8 = 857.7375, 9 = 858.4875,
10 = 858.7375, 11 = 859.1375, 12 = 859.4875, 13 = 859.7375,
14 = 859.9375, 15 = 860.4875, 16 = 860.7375, 17 = 860.9275,
18 = 860.9275, 19 = 860.9625 MHz

Talkgroups
04-01 Jackson PD - Precinct 1 Dispatch
04-01 Jackson PD - Precinct 2 Dispatch
04-01 Jackson PD - Precinct 2 Info
04-02 Jackson PD - Precinct 3 Car-to-Car
04-02 Jackson PD - Precinct 3 Information
04-03 Jackson PD - Precinct 4 Dispatch
05-xx Jackson FD talkgroups

Rankin County
Rankin County TRS
Motorola Type II analog
852.5125, 852.8125, 852.9375, 853.3125, 853.5875, 853.6375,
854.4625, 854.7625, 855.9625, 856.4625 MHz

Talkgroups
560 - Rankin County SO Dispatch
912 - Rankin County SO 1AC
1712 - Rankin County SO Talk

Brandon Police Department
155.550 MHz (141.3 Hz)

Scott County
Scott County Sheriff’s Office
155.490 MHz

Newton County
Newton County Sheriff’s Office
159.150 MHz
Newton County Fire Control
153.815 MHz (186.2 Hz)

Lauderdale County
Lauderdale County Sheriff’s Office
154.830 MHz (0223)
Marion Police Department
460.125 MHz (131.8 Hz)

Mississippi Highway Patrol
42.02 MHz - Car-to-Car
42.08 MHz - District 6
42.12 MHz - District 1

Table 6: Alabama Scanner Frequencies

All frequencies and CTCSS tones, if known, are listed.

Sumter County
Sumter County Sheriff’s Office
155.655 MHz

Greene County
Greene County Sheriff’s Office
155.010 MHz
155.550 MHz

Tuscaloosa County
Tuscaloosa County Sheriff’s Office
155.610 MHz - Channel 1
155.670 MHz - Channel 2
Tuscaloosa Police Department
158.730 MHz (110.9 Hz) - Channel 1
154.845 MHz (110.9 Hz) - Channel 2
154.950 MHz - Channel 3
155.970 MHz - Channel 4
Tuscaloosa Fire Department
154.400 MHz (110.9 Hz)
University of Alabama Police Department
159.150 MHz

Jefferson County
Jefferson County Sheriff’s Office
Motorola Type II analog
856.2375, 856.4625, 856.7375, 856.9265, 857.2375, 857.4625,
857.725, 857.925, 858.4625, 858.7375, 858.9625, 859.2375,
859.4625, 859.7375, 859.9625, 860.2375, 860.4625, 860.7375,
860.9625 MHz

Talkgroups (courtesy Steve Taylor, KD4LCY)
Sheriff’s Department
400-0
400-2
400-3
400-4
400-5
400-6
400-12
400-14
300-8
600-4
11504

Transit Buses
10480
10512
10544

8860 - County Highway Dept
8816 - County wastewater or sewer dept
(see http://members.aol.com/scanbirmingham for more)

Birmingham Fire Department
154.190 MHz (100.0 Hz) - Channel 1
154.130 MHz - Channel 3
154.235 MHz - Channel 4
Fairfield Police Department
155.715 MHz
Homewood Police Department
460.125 MHz (156.7 Hz)
Hoover Police Department
460.350 MHz (127.3 Hz)
Huntsville Police Department
460.025 MHz (123.0 Hz)
Mountain Brook Police Department
153.920 MHz

St. Clair County
Saint Clair County Sheriff’s Office
154.040 MHz (186.2 Hz)
Pell City Police Department
159.090 MHz

Talladega County
Talladega County Sheriff’s Office
155.010 MHz

Calhoun County
Calhoun County Sheriff’s Office
Motorola ASTRO
857.7175, 856.2625, 859.7625, 859.7925, 856.2625, 860.7625,
860.925, 866.550, 860.550, 866.300, 866.750, 866.000, 866.850,
866.700, 866.030, 858.4625, 858.125, 866.6125, 866.8625 MHz

Calhoun County Sheriff’s Office
155.670 MHz

Cleburne County
Cleburne County Sheriff’s Office
155.535 MHz

Alabama Department of Public Safety
154.920 MHz - Troop B
155.010 MHz - Car-to-Car
155.505 MHz - Bureau of Investigations
158.790 MHz - Troop A
The History and Future of Radio – Part 2

By Dr. John F. Catalano

Last month we saw how radio started its evolution as the quirky, black magic mix of homemade parts. We saw how radio’s development was inextricably tied to the development, standardization and commercialization of electronic components, such as the vacuum tube.

It has been a fact of life in the communications industry that it is “technology limited.” In other words, most communications users can conceive of new, more flexible and convenient methods of radio communications. But, as we saw last time, until the advent of the vacuum tube amplifier, radio communications remained in the dark ages. Armstrong’s superheterodyne radio circuit was only made possible by the commercial and technical development of the vacuum tube industry.

Let’s look at an updated version of our radio time line from last time:

<table>
<thead>
<tr>
<th>Year</th>
<th>Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>1876</td>
<td>Bell invents telephone</td>
</tr>
<tr>
<td>1883</td>
<td>Edison invents the Edison effect</td>
</tr>
<tr>
<td>1886</td>
<td>Hertz produced and detected electric waves</td>
</tr>
<tr>
<td>1894</td>
<td>Lodge invents Coherer with 200 mile range</td>
</tr>
<tr>
<td>1897</td>
<td>J.J. Thompson discovers electron</td>
</tr>
<tr>
<td>1900</td>
<td>Poulsen invents Poulsen Arc</td>
</tr>
<tr>
<td>1901</td>
<td>Marconi sends signal from UK -Newfoundland</td>
</tr>
<tr>
<td>1906</td>
<td>Lodge invents Coherer with 200 mile range</td>
</tr>
<tr>
<td>1906</td>
<td>Armstrong invents RF generator</td>
</tr>
<tr>
<td>1912</td>
<td>Armstrong invents superheterodyne</td>
</tr>
<tr>
<td>1918</td>
<td>Armstrong invents superheterodyne</td>
</tr>
<tr>
<td>1924</td>
<td>RCA superheterodyne hits streets in March</td>
</tr>
<tr>
<td>1933</td>
<td>Armstrong invents F.M.</td>
</tr>
<tr>
<td>1955</td>
<td>Woodley Loop — Racal RA 17</td>
</tr>
<tr>
<td>1956</td>
<td>Germanium transistor commercialized</td>
</tr>
<tr>
<td>1976</td>
<td>Personal Computer Market Born</td>
</tr>
<tr>
<td>1981</td>
<td>Consumer Synthesized Receiver-Sony IC 2001</td>
</tr>
</tbody>
</table>

The major effect that the development of the component called the coherer made on radio is clear. I’m sure that in 1901 Marconi would have given us no argument. Then it was the development of the crystal detector that pushed radio. And finally, vacuum tube technology development led the way as radio communications developed, until the last part of the 20th century.

However, even looking at radio’s most recent past clearly shows that component and manufacturing technologies have dictated the resulting radio communications products.

Notice that for Part Two of this feature, we have added three items to the time line in 1956, 1976 and 1986. We’ve added these items in part two because they are the “drivers” of radio technology of today. We believe that they will continue to define radio for the foreseeable future.

As we concluded last time, the advancements in digital electronics, coupled with the almost unbelievable developments in microcircuit technology, led receiver design into the entire new design concept of digital signal processing (DSP).

But DSP owes its very existence to the Personal Computer industry. Let’s go back to around 1950 and see how today’s DSP radio technology owes its being to a totally unconnected industry.

The year is 1948 and people at Bell Labs show the world that a cool, small lump of solid material can perform the functions of a hot, bulky vacuum tube. Bell Telephone was looking for a replacement for their much-used mechanical relay. Most people who read the New York Times report of that lump, later called the transistor, did not realize its long-lasting significance as an electronic component. Far fewer realized that it was about to introduce true mass production methods to electronic component manufacturing.

But physicists had been predicting the possibility of just such a solid state amplifying device for over thirty years. In fact, the famous 1906 cat’s whisker lead/galena detector was later shown to function because of similar junction mechanisms that allowed the 1948 Bell Lab’s transistor to function.

By the mid-1950s a number of these transistor researchers established businesses to commercialize the newly developed transistor technology. The going was hard. Due to impurities in the materials, instabilities and inconsistent components resulted. Not exactly the stable, repeatable product that is required for a profitable business!

The work continued nonetheless, though it sometimes felt like black magic as all the talented scientists and engineers struggled to learn about the critical effects of ultra cleanliness and material purity in manufacturing. Additionally they were still trying to electrically tame the transistor. After a change of material from germanium to the better-behaved silicon, the transistor forces at last became the norm to function.

The work continued nonetheless, though it sometimes felt like black magic as all the talented scientists and engineers struggled to learn about the critical effects of ultra cleanliness and material purity in manufacturing. Additionally they were still trying to electrically tame the transistor. After a change of material from germanium to the better-behaved silicon, the transistor forces at last began to win battles over the entrenched vacuum-tube empire.

In the late 1960s, after stable manufacturing of single transistors at last became the norm, transistors began to replace tubes in many applications. Transistor companies started to look for ways to expand transistor and associated manufacturing technology to new products. Companies like Texas Instruments proposed fabricating more than just a single transistor. They attempted to fabricate whole functioning circuits.

Here, instead of each transistor being made and packaged as a single device, the idea was to manufacture a number of transistors and resistors on the silicon. Then, using the same micro-sized “wire,” connect them all together to form an operating circuit, such as an amplifier. It was called the Integrated Circuit, or IC for short. Thus the concept of today’s microchip was born.

As the years went by the IC industry fine-tuned their technology and manufacturing. The result was the ability to cram many smaller devices on the same amount of silicon. This had a two-fold effect. First, more and more complex circuits were becoming possible. But, just as important, was the fact that since the amount of basic material used was relatively constant, and many circuits could be made at once, the costs did not go up directly with circuit complexity. In fact, cost per function went down!

For years this industry, now called the semiconductor industry after the class of material used to fabricate these devices—just kept making standard devices. Major semiconductor IC products until 1980, listed by production volume, included: simple logic gates, operational amplifiers, power amplifiers, clocks, frequency synthesizers, timers and phase lock loops.

Meanwhile, the semiconductor companies kept their researchers working on making smaller, higher device density ICs, while increasing their operational speeds. At the time, it was a technological answer, looking for a question. There was no product need for a large number (millions) of devices on a chip.

The PC – The Semiconductor Industry’s Dream

In the mid-1970s home computers such as the Apple and Atari began to hit the market. These computers utilized the first of a new type of IC called the microprocessor. Early microprocessors were developed by expanding and combining digital logic ICs. Although not a trivial matter, the first processors were made by a relatively small new company, MOS Technology. Most people who bought these early computers confessed to not having a real need for them and initial quantities were too low to attract the big semiconductor companies. But things were about to change.

When IBM announced the PC, it caught many people in the semiconductor industry by surprise, except for another relatively new company—Intel. Intel had been working away at microprocessor architecture for a number of years and was IBM’s choice. The first IBM PC had an 8086 microprocessor, running at less than 10 MHz. But the race was on.

History shows that for almost the next twenty years, a human effort hundreds of times greater than getting a man to the moon was directed at microprocessor development. By the

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last decade of the 20th century, processor speeds have become so fast that they approximate real-time calculations. In other words, to the user, complex calculations could be performed with little perceptible delay. In fact, not just calculations, but full emulation of electronic circuit functions were now possible. Could these special processors be used in place of real component-based circuits?

Audio DSP - A Reality

The answer demonstrated first by Texas Instruments and now by many other companies including Analog Devices was - yes! However, since the required speed of the processor is directly related to the frequency of the signal being processed, the first Digital Signal Processing (DSP) chips targeted audio applications where the speeds were limited to the 20 kHz range.

Figure 1 shows a typical block diagram of a receiver using DSP audio applications. Once the analog audio signal is digitized by an Analog to Digital converter (A/D), all audio filtering can be performed by mathematical functions. For example, a low pass filter function can be emulated by the processor if the stop frequency and response curve is defined by a formula and stored in the processor's memory.

By changing the formula, you can instantly convert the DSP to a different type of audio filter, say bandpass. By changing the coefficients of the variables in the formula, parameters of the filter can be adjusted. This is made simple by storing all the variable parameters in memory. Then it is a simple matter of calling them up by filter name when needed. The result is like having a bank of razor sharp audio filters at your disposal. The only difference is the tiny size and cost of the DSP.

Audio DSPs became commonplace in many military and professional communications equipment. This led directly to a whole generation of PC sound cards based on the same DSP chips. Today, the capabilities of these DSP-based PC sound cards have been greatly expanded. Be assured that if you purchased a PC in the past few years you have been using a digital signal processor without even knowing it.

Another very useful function of DSP chips can be the relative easy way they can be used to decode various forms of digital signals. By plugging in RTTY, SITOR, AMTOR or any other digital mode, these DSP chips become small, inexpensive, flexible decoders. Not bad for an almost free added extra.

Why Not RF DSP?

Not known for their slow thinking, the semiconductor companies launched an all-out attempt to extend the DSP function from the slower audio stages to the faster RF signal stages. In this way the majority of any receiver could be reduced to a DSP chip, or chips. Great benefits in operational flexibility, cost and manufacturing could be realized. Since Armstrong's superheterodyne circuit is still widely used with intermediate frequencies (IF) of 70 MHz, 10 MHz and 455 kHz, these became the initial target speeds for DSP device developers.

Figure 2 is a block diagram of a full DSP receiver. The same A/D approach is used as with the audio DSP. However, this A/D converter's performance must be much higher in order to follow the higher frequency RF signal. This DSP now allows the same razor sharp, completely user-definable filtering for the RF stages, as we saw (or heard) in the audio DSP application. The use of DSP in the RF stages allows us to cut out co-channel interference, a major operational need given our over-crowded VHF/UHF radio spectrum. All this at a very low cost!

In addition, due to it being DSP throughout about where it is to be used, or even obsolescence.

Even wilder possibilities include fabricating "universal soft radio" receivers and transmitters. These then could be used for any radio application. See Figure 3. Move over, Captain Kirk! I'm sure that the soft radio concept has brought a smile to many telecom CEOs and CFOs.

But Is It Possible?

Companies and universities have been working on the soft radio concept since the middle 1990s. Figure 4 shows Pentek's 4272 Multiband Digital Receiver which features: sampling rates to 70 MHz, one wideband and two narrow band receivers, dynamic range of 70 dB and 0.008 Hz tuning resolution. Check the free audio/slide seminar on their website http://www.pentek.com for a very good technical treatment of software radio design. Many of the semiconductor companies named at this site for functional block chips are working on a totally integrated software radio solution.

Although not yet fully integrated into a single package, its major functions should be available in a chip set by the end of 2001. A number of companies are hard at work to meet their announced product goal of 4th quarter 2001. Even if they miss by a year, when it does happen, this next technology leap promises to revolutionize radio communications and make products that are only today's dreams, into realities ... and probably commodities.

Welcome to the 21st Century and the future of radio.
Some Tough Questions for Bob

Recently I had the opportunity to level some pretty hard questions to our own Bob Grove. Bob, always at the ready with the straight stuff, gives us his unique quarter of a century perspective as a mover and shaker of the radio industry. My questions are labeled JC, John Catalano, & Bob Grove's replies are BG.

JC: Bob, since you started Grove Enterprises over a quarter of a century ago, radio monitoring has changed greatly. As a business professional, can you tell us during these twenty-five plus years, what technical advances in receiver design, capability or added features, had the most impact on radio monitoring?

BG: High quality products at lower cost; digital signal processing (DSP); circuit integration which has allowed a multitude of features in a small case and reduced the costs of designing and assembly; wide-spectrum receivers; computer-hosted receivers; computer databases; Internet publishing and informational exchange; spectrum displays for receiving equipment; satellite broadcasting; trunk-tracking scanners.

JC: Can you recall specific radios, over the years, which single-handedly changed the radio paradigm with their introduction?


JC: In hindsight, which of these developments/radios had the longest lasting effect on monitoring?

BG: The Barlow-Wadley XCR-30. Crystal stability combined with tuning agility is an unbeatable combination. It's had an impact on virtually every receiver and scanner to follow.

JC: Has there been any technical/product "dead ends" which you have witnessed?

BG: As a relatively small company compared to the volume production of offshore manufacturers, we discovered what many other entrepreneurs have found out: We simply couldn't compete. Our preamps, tuners, speakers, converters, antennas, and other Grove products were moderately successful, but the small numbers that were sold didn't pay for the effort.

Perhaps the most dramatic dead end was the Grove receiver, originally to be sold as the SR-1000, then the SW100. After nearly a half-million-dollar investment and years of development, we actually had a nearly-finished product, but were unable to go into production. We finally closed our manufacturing division.

We will be introducing—or even re-introducing—products in the future, but they will be made at other U.S. locations and private labeled for us.

JC: From a business point of view, how has your operation changed to accommodate the move from a ten tube receiver to a microprocessor-controlled receiver crammed with custom integrated circuits? In your sales approach? In equipment servicing?

BG: Microprocessor control is a two-headed monster. The ability of every imaginable adjustment being made by a teeny chip is amazing, but few bench techies know how to troubleshoot radios that use them. Analyzing a digital-pulse-train algorithm is an imposing task for the newcomer to electronics theory.

But we are in a plug-and-play generation; many consumers don’t know a cathode from an emitter, and don’t care. They do recognize buzz words like "microprocessor" and "chip," but just so long as their contrivance has them, they’re satisfied. Today, marketing is different, but not because of the contents of the product, but because of the impact of the Internet. The emergence of pushbutton control over rotary knobs has been a revolution, but many of us “old timers” resent it. I recall asking when I first saw an imported, no-no knob radio, “Don’t the Japanese have thumbs?”

In general, we’ve seen a move away from component-level servicing, toward modular replacement. This began in the TV industry after vacuum tubes were replaced by transistors. Sub-circuits were on replaceable cards, and if there was trouble with the vertical height, instead of making component tests, you simply replaced the entire circuit card. It’s easier, but more expensive from a component standpoint. But if the boards are small enough, their replacement cost can be less than the labor required to find a defective component on the board.

JC: We know you have been asked to testify before Congressional committees on various radio topics. Other than frequency restrictions, are there any laws which restrict specific receiver features, performance or demodulation capability for radios sold to the open retail market?

BG: Other than frequencies and services which consumer radios are allowed to use, no one can say for certain the course that technology will take over the next decade. However, from today’s historical vantage point, we have seen that breakthroughs in semiconductor technology have led the way.

Looking at what development is being done in semiconductors, the search for new materials still taps the list. Organically based devices that can be “grown” instead of manufactured, have been under constant development over the past thirty years. To my knowledge, this is still far from a reality.

The desire for smaller and more dense circuits has caused the light-exposed photomasking processing steps to be replaced with shorter wavelength x-rays. This could yield an instantaneous doubling of circuit densities with a factor of ten a possibility. Smaller devices usually go hand-in-hand with faster devices.

During the 1970s and ‘80s many new transistor device types were developed: PMOS, NMOS, DMOS, VMOS, DMOS, RFMOS, BiPolar, CMOS and more. CMOS, with its low power consumption and circuit flexibility, became the clear winner over a decade, with BiPolar coming in a close second. We are overdue for a new family of devices. The next generation may rely on light coupling instead of conductors to connect elements on the silicon IC, in much the same way that fiber optic bundles have replaced wire cables in our neighborhoods. And, as in fiber optic bundles, the immediate advantage would be even higher circuit speeds.

If these developments happen, clock speeds in excess of 3 GHz may be come commonplace. The result would be DSP radio chips which are completely software-defined and cover the mythical “DC to light” frequency spectrum. OK, not quite light, but how about 10 GHz?!

Again I would like to thank Harve Simmons, radio and electronics historian extraordinaire, and Bob Grove for his insightful and frank discussion.
The Best Way to Learn Morse Code

Throughout the long history of amateur radio there has been a requirement to learn the International Morse Code, that confounding system of dots and dashes, the brainchild of portrait artist and inventor Samuel Finley Breese Morse. While the past ten years has seen the establishment of a “no-code” entry into the hobby, advancement (and access to the coveted HF voice bands) is earned only by mastery of the code. Luckily that mastery is confined to 5 words per minute (wpm). For those who came to the hobby earlier and have gone on to a more thorough knowledge of CW (as Morse code is known) this speed is agonizingly slow, but, for code beginners it can seem an insurmountable goal.

The strange thing about learning Morse code is that, while experienced teachers might insist there are proper ways to learn this language, the fact is that studying the code is really a personal affair. My own course of learning took in what amounts to a shopping list of every type of CW learning gimmick known. I wondered how others had learned and started asking.

One friend, Cory Koral, K2WV, told me he made “flash cards” with the Morse symbols printed on one side and the corresponding letter on the other and studied them until he had them memorized. It worked, and later he was able to get a job at the Border Patrol as a CW operator. Another ham I know used the ARRL code practice tapes and began listening in his car during his daily commute. Within a few months he progressed from 5 to 20 wpm and passed his Extra Class code exam.

I put the question of learning CW to a number of other veteran hams of note and asked them to share their methods with MT readers.

Learning from the Experts

Riley Hollingsworth, K4ZDH, FCC Special Counsel for Amateur Radio Enforcement: “...I learned 5 letters at a time, and kept the practice sessions short, ten minutes or so...I was 13 and working at a grocery store, so when I’d walk by a large sign or ad in the store, I’d do the letters in my mind in Morse code, numbers as well. Then later an Elmer would send to me a few minutes every morning that summer of 1960...”

Bob Heil, K9EID, developer of Heil Sound microphones, got his start in the late ‘50s “...I started out with a high school buddy and we started listening to a 33-1/3 RPM record (I still have it!) with code practice on it. We got up enough speed just sending back and forth across the kitchen table for several months to take our technician class license test. In 1956 you could take the code test three times before I could pass it! At that time we had to go to the local Federal Building (Cleveland, OH) to take the test from an FCC examiner; this one was notorious for setting the code speed too high. At least that’s what we all thought!”

Waldo Boyd, Secretary of the Society of Wireless Pioneers, wrote, “...I learned Morse telegraphy as a youngster and shortwave guru enjoyed a similar beginning, “I simply memorized the code from a printed list going “dit-dah-dit” while sitting on a couch in our home at the age of 13 in 1951. I had borrowed a code-practice oscillator from my "Elmer" (Dave Crossley, W8BCO, now a silent key). The Novice Class license had just been established, and I was so nervous that I had to take the code test three times before I could pass it! At that time we had to go to the local Federal Building (Cleveland, OH) to take the test from an FCC examiner; this one was notorious for setting the code speed too high. At least that’s what we all thought!”

Keith LeBaron, W9KGY, Secretary of the Morse Telegraph Club, a national organization promoting the history and use of Morse telegraphy was yet another “kid ham.” He tells us, “When I was a kid of nearly 12 years of age I started hanging around a railroad interlocking plant, and telegraphy, with American Morse code, being used. I was started hanging around a railroad interlocking plant, and telegraphy, with American Morse code, being used. I was starting high school and I took Introduction to Electricity. The teacher...Dick Falley, W9ZKU (now W7WT)...promoted amateur radio in high school.
The first year he was there he got the school board to buy a Collins 32V1 [transmitter], Collins 75A1 [receiver] and a 1kW home brew amplifier. I started learning international code at that time...In my sophomore year a bunch of amplifier...) started learning international code 75A1 [receiver] and a board to buy a Collins 32V1 [transmitter], Collins The first You have to keep your key closed, as you did on ment by members lead to what we call each other via the telephone. Further develop-telegraph (with American Morse and a sounder and bug). One of the members of the Morse Telegraph Club developed a system where we hooked one to the other...now a silent key) and I key was depressed. My memories. There is always a silent key). We can dial into the hub and get on the wire' just like we had it 50 or more years ago. You have to keep your key closed, as you did on regular telegraph circuits, and only open it to send. It is a lot of fun to do that. The oldest guy I talk with on the telegraph hub is 100 years old..."

Bottom Line

Taking these examples it's easy to develop a formula for learning Morse code: You need to be about 12 years old, have a friend or "Elmer" to do it with and have a burning desire to learn. After that the rest is routine.

But, what if you're not exactly a kid anymore? Can "old dogs" learn CW? Yes! At age 38 I was determined to get my Novice ticket and got my 12 year old daughter (the perfect CW age) to join me in becoming hams. First, we listened to the ARRL practice bulletins on League station W1AW (see chart). Then we bought the ARRL code practice tapes and a code practice oscillator. Two grueling months later we got our tickets.

The next year we tried for the General Class 13 wpm (no longer required) and did basically the same thing. But by then the home computer had arrived on the scene and with my Commodore C-64 and Microlog SWL cartridge I used the built-in 5 character random generator to augment the W1AW bulletins, code tapes and practice oscillator. It worked.

Four years later, in 1999, I learned that future code requirements would be drastically reduced and that Extra Class would require no code test if you were already a General Class licensee. Driven by a stubborn unwillingness to be known as a "5 wpm Extra" I dusted off the C-64, code tapes, and W1AW schedule. This time around I fortified my efforts with a copy of PC-based Morse Academy and Morse Tutor Gold as well as (gasp!) actual on-air QSOs! Six tedious weeks later I found myself in the now all-too-familiar testing room with the actual 20 wpm exam. It was not my finest moment. Suffice it to say that I did stagger to the finish line with the bare minimum required to pass. It took only 11 years to go from 5 to 20 wpm! My neighbors, a father/son combo, did it in 11 months.

So, if you're a 12 year old, go find yourself an "Elmer" and start studying the code. If you're an older person get one of your kids to learn with you. If you don't have kids, find a friend and get cracking. But, regardless of who you learn with or what study aid you use, if you don't have the determination to see it through, you'll never do it. It's that simple. The best way to learn the code is to begin. And, don't believe any of the old timers who tell you (as the Volunteer Exam Coordinator for my Novice exam told me) that your code score will be printed on your license. It won't be.
More on the R390 Audio Transformer

In our August column we discussed the difficulty in finding a suitable speaker to match the 600 ohm output of the popular surplus classic, the Collins R390 receiver. We suggested a make-do approach with inexpensive audio output transformers. But Chuck Rippel, an expert in R390 restoration, has an even better answer.

A custom transformer made with the R390 in mind is available for $18.35 (stock number P-T119DA) from Antique Electronic Supply (phone (480) 820-5411). The 1.8 lb. transformer is a perfect match for the 600 ohm audio output of the radio, and can be used with either 4 or 8 ohm speakers. It is capable of 12 watts of audio, and has a flat 20-20,000 Hz frequency response.

Now that's a transformer!


Thanks, Chuck.

Whither DCS?

In our September issue, a reader asked what a number of radio abbreviations meant; one was DCS. While this is commonly heard among members of the Defense Communications System, sharp-eyed reader Brain Cathcart suggested it's more likely digital coded squelch since the sharp-eyed reader Brain Cathcart suggested it's more likely digital coded squelch since the inquirer was using mostly VHF/UHF references. I agree.

Q. I recently felt a shock when I was touching a "hot" wire and my elbow brushed a gas pipe. Was the pulsating feeling due to the AC? What would I have felt if it had been DC? (Mark Burns, Terre Haute, IN)

A. Yes, the "buzzing" sensation was the 60 Hz repetition rate of the alternating current, successively contracting and releasing the muscles; it is also the sensation of the 60 Hz firing the pain receptors of your nervous system. Had this been DC, you would have felt a strong "clamping" sensation. But I wouldn't keep on experimenting if I were you!

Q. According to the signal-strength meter, shortwave reception on my Sony ICF-2010 is strong, but I get a lot of background noise which interferes with the signals. Is this a sign of an ineffective antenna? (Gerald Silver, Tamarac, FL)

A. It certainly is a sign of electrical interference, either from nearby appliances or the power line. If you are using the built-on whip, you need to change the location of your radio; take it outside on battery power and see if the noise goes away. This will let you know if the noise is locally generated.

If you are using an outside antenna, you may not be connecting it with coaxial cable to the radio; this shielding is necessary to avoid - or at least reduce - the unwanted pickup referred to above.

After you determine the source of the noise, it is easier to determine the steps to take to reduce it.

Q. Is Project HAARP in Alaska likely to be jamming signals around the globe? Is there any connection between this project and Area 51 in Nevada? (Donald Michael Choleva, Cleveland, OH)

A. No and no. The transmissions are carefully timed so as not to interfere with busy frequencies, and the powerful beams are directed overhead, not toward the horizon. Any effects on the ionosphere are temporary. And the HAARP project isn't even remotely connected to experimental flight tests at Area 51.

Q. If I accidentally insert M cells into a radio with the wrong polarity on the contacts, am I likely to cause damage? (Please include your name and address.)

A. No. Modern silicon transistors have a reverse breakdown voltage well in excess of what they would experience from such reversed polarity. And if such an occurrence could cause problems, engineers include what they call an "idiot diode," a simple rectifier diode in series with the battery wiring to prevent such accidents.

The reflector should be about 37-1/2" long, and it can be mounted right against the metal boom, 17" behind the driven element. The forward director, 30" long, can also be mounted right against the boom, 17" ahead of the driven element.

You should get about 6 dBd gain with this home-made antenna, and if it's made durably, it should withstand strong winds and heavy ice for many years. If you wish another dB or two of gain and slightly sharper directivity, mount a second director in front of the first, length and separation the same.

Q. If a car radio is turned on during a lightning storm, does this increase the likelihood of being hit by lightning? (Donald Michael Choleva, Cleveland, OH)

A. No. The small shift in electrical charge which the radio causes is inconsequential when compared to the enormous voltage developed between the earth and clouds. The conductivity, height, and resistance to ground of the vehicle are the determining factors.

Q. I'm situated between several NOAA weather stations and would like to erect three identical beam antennas so I can home in on SAME alerts of my selection. Any suggestions for homemade antennas? B. Williams, Peoria, IL)

A. Sounds like an easy task if you're handy with simple tools and have some aluminum around; I'd suggest old TV antennas for elements and insulators. Let's make a three-element Yagi. The center of the three is the driven element - the one to which the coax will be connected. It must be insulated from the mast, and the two halves insulated from each other, just like on a TV antenna. Make the two halves 17" each, or a total, tip-to-tip span for both halves of about 34".

Q. It is a sign of electrical interference, either from nearby appliances or the power line. If you are using the built-on whip, you need to change the location of your radio; take it outside on battery power and see if the noise goes away. This will let you know if the noise is locally generated.

If you are using an outside antenna, you may not be connecting it with coaxial cable to the radio; this shielding is necessary to avoid - or at least reduce - the unwanted pickup referred to above.

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A custom transformer made with the R390 in mind is available for $18.35 (stock number P-T119DA) from Antique Electronic Supply (phone (480) 820-5411). The 1.8 lb. transformer is a perfect match for the 600 ohm audio output of the radio, and can be used with either 4 or 8 ohm speakers. It is capable of 12 watts of audio, and has a flat 20-20,000 Hz frequency response.


Thanks, Chuck.

Whither DCS?

In our September issue, a reader asked what a number of radio abbreviations meant; one was DCS. While this is commonly heard among members of the Defense Communications System, sharp-eyed reader Brain Cathcart suggested it's more likely digital coded squelch since the inquiring was using mostly VHF/UHF references. I agree.

Q. I recently felt a shock when I was touching a "hot" wire and my elbow brushed a gas pipe. Was the pulsating feeling due to the AC? What would I have felt if it had been DC? (Mark Burns, Terre Haute, IN)

A. Yes, the "buzzing" sensation was the 60 Hz repetition rate of the alternating current, successively contracting and releasing the muscles; it is also the sensation of the 60 Hz firing the pain receptors of your nervous system. Had this been DC, you would have felt a strong "clamping" sensation. But I wouldn't keep on experimenting if I were you!

Q. According to the signal-strength meter, shortwave reception on my Sony ICF-2010 is strong, but I get a lot of background noise which interferes with the signals. Is this a sign of an ineffective antenna? (Gerald Silver, Tamarac, FL)

A. It certainly is a sign of electrical interference, either from nearby appliances or the power line. If you are using the built-on whip, you need to change the location of your radio; take it outside on battery power and see if the noise goes away. This will let you know if the noise is locally generated.

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Questions or tips sent to Ask Bob, c/o MT are printed in this column as space permits. If you desire a prompt, personal reply, mail your questions along with a self-addressed stamped envelope (no telephone calls, please) in care of MT, or e-mail to bgrove@grove-ent.com. (Please include your name and address.) The current Ask Bob is now online at our website: www.grove-ent.com
As you read this, it is time to flip the calendar over to November. Then it hits you; the Holiday Season is rapidly approaching. This month I offer more bright ideas, many of which would make some great gifts. (Suggest you highlight your favorites and leave it lying around the house.)

Last summer was another bad year for forest fires. I again observed that USFS hand crews were using radio chest packs. This keeps the radio out the way, but still handy for use. Some can even carry two radios. Well, I just had to have one. How can you monitor an airshow or other special event without this accessory? Packs also carry extra batteries, paper and pen, telescoping or rubber duck etc. They cost in the $24-45 range plus shipping. Here is a list of website vendors:

www.pcexpress.com
www.epicenter.com
www.geoduck.com
www.mountainview.com
www.mountainpass.com
www.mini-mountain.com
www.radiosrus.com
www.sandmountain.com
www.tenueo.com
www.vjm.gear911.com
www.wmb.mittenmountain.com
www.windchase.com
www.2aa-battery.com

Battery packs are also available, and they cost less. Here are some websites to explore:

http://www.mtnexpress.com
http://www.epicenter.com
http://www.geoduck.com
http://www.mini-mountain.com
http://www.mountainpass.com
http://www.sandmountain.com
http://www.tenueo.com
http://www.windchase.com
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LED Flashlights are all the rage these days. The LED (bulb) never breaks or burns out. And they last many more times what you can get from the standard 2AA-battery size. There are also many watch battery versions. These are in a small plastic case about the size of a quarter. I find these helpful for nighttime operations on radios without backlit keys.

Some adventurous folks are retrofitting their radio displays with these newer and brighter LEDs. Bright white LEDs are best for overall use, for nighttime operations consider red. It’s the perfect project if you have an old scanner whose backlight has long since died. Check out the PAL lights. Anticipated life on one 9-volt battery is two years. They are ALWAYS on. I point mine at the scanner and it is great for night vision. Here are some websites to explore:

http://www.flashlightavenue.com
http://www.tledlight.com
http://www.sharplite.com
http://www.id-ideas.com/photos/index.html
http://www.store.yahoo.com/hand/flashlights.html
http://www.flashlighttechnology.com
http://www.goes-r-us.com
http://www.mittenmountain.com
http://www.mountainpass.com
http://www.mini-mountain.com
http://www.windchase.com
http://www.wmb.mittenmountain.com
http://www.epicenter.com
http://www.geoduck.com
http://www.mini-mountain.com
http://www.mountainpass.com
http://www.sandmountain.com
http://www.tenueo.com
http://www.windchase.com
http://www.2aa-battery.com

If you are viewing this in the MT Express downloadable version, just click on the URL. If you are not familiar with this form of Monitoring Times, check out this website for your FREE copy. http://www.groveenterprises.com/mtexpress.html

The new 2002 Police Call directory is a real price saver. I needed two regional books, one for Washington State and another for Idaho. With each I received a nationwide CD version of Police Call. I didn’t need the duplicate CD, so I gave it a friend. My generosity cost me nothing and cemented a good friendship.

Reader Larry Shaunce WDOAXK offered this tip: “I had an idea many years ago and it has saved me a lot of time and trouble over the years. It is getting a filing cabinet and labeling a folder in it with every letter of the alphabet, A-Z. I file every owner’s manual for practically everything I purchase, including non-radio-related items. Along with each owner’s manual, I also staple the receipt on the back page. Now, whenever I have a problem with a piece of equipment, or if I decide to sell something I know exactly where the manuals will be, and don’t have to search the whole house over!”

Thanks Larry.

At Staples Office Supplies, I found a small black case for eyeglasses. It fits my Icom T7A perfectly. While the outside is black Cordova denim, the inside is a hard plastic shell with a cloth liner. It comes with a standard belt loop, and a self-closing snap. I can lay it in the van, and not worry about accidentally sitting on the case, thus damaging the radio. Take along your radio to see if it will fit your radio/scanner. Camera accessory bags are also worthy of a trip to the camera store.


Follow-up:

A couple of columns ago I suggested carrying a cheap, one time use camera in your vehicle. If you stumbled into any big emergencies, you could safely stop and shoot a few frames. Well that created an avalanche in my inbox. I had written the idea from my own experiences and frame of mind. I would never respond to the scene based on what I heard on the scanner, nor would I get too close and impede the emergency personnel on scene. Well, I had failed to point out these subtle details, assuming everyone had enough common sense. I heard from several firefighters and EMS professionals who were upset that I had encouraged some brain dead, scanner heads from showing up on scene. I hope not, as that was not my intent.

I also heard from a “stringer” who pointed out that he makes his living as a free lance photojournalist. He wanted me to acknowledge that some people have legitimate reasons for stopping and shooting news photos. For these people, taking pictures is their livelihood. But they are probably the only ones entitled to take close-up photos. If in doubt, just keep driving. I hope this will put all those concerns to bed.

I also received much mail about the disposal of old batteries. These contain dangerous chemicals that can leach down into the water aquifer. Not good for the environment or our drinking water. Well, it seems that many of you do not have a local repository. Few Radio Shack stores heed the company’s advice and accept old batteries. My local clerk said they throw batteries in the same dumpster with everything else.

Well, here is my next bright idea. If there is no local place in your community, call the local Sanitation Department and ask for a mail letter type drive-thru disposal bin. I bet they can scrounge one from somewhere. Here in Spokane, there is a special drive up box for batteries at the North Colbert Transfer Station. Get involved; make that call. And try http://www.rhr.org/consumer/
The Florida Connection and Cleveland Rocks

You're reading this report at the end of October or beginning of November, but I'm rewriting parts of it as Peter Jennings and Ted Koppel and the worldwide ABC News staff are discussing the worst tragedy America has ever experienced...the terrorist attack that is the subject of much of this month's "Monitor Times.

Even 36 hours after the incident a surprising series of developments was once again turning the spotlight on South Florida. My friends and associates know of my fascination with the "South Florida Connection," the term I coined for those news stories that start out far removed from our lives down here, but end up in our backyards. Remember headlines concerning refugees, riots, political turmoil, drug wars, spies, immigration cases (Elian), and funky Presidential election ballots? Now we have the dubious distinction of housing and training the terrorists for the last year or so.

Consider this little factoid: the terrorists were engaged in their flight training while the ballot box fiasco was headline news. Flight training was in Vero Beach; the ballot boxes were less than a hundred miles south in West Palm Beach. A very strange juxtaposition, indeed, and an ominous historical note for both Mr. Bush and Mr. Gore.

Beyond these items, the attack has brought something new to our scanners and our skies: Combat Air Patrols or CAP flights. With all civilian air traffic still grounded at this time, and with most of the population staying home to watch developments on TV, the "background noise" of the city has diminished to a level reminiscent of Hurricane Andrew's immediate aftermath. Near silence.

Except for the unusual and constant "whoosh" of high altitude fighters and tankers and AWACS jets. The noise is strange in its consistency. One cannot detect a flight path nor a particular orbit, just a constant presence overhead...and a series of radio calls on the scanner that have a different sound to them. That is, the pilots and radio operators are speaking in a more matter-of-fact manner, using frequencies not logged before in this part of the country. Larry Van Horn and other columnists will be discussing the radio details elsewhere in this issue.

Now we'll return to more traditional Scanning Report news and features, but feel free to e-mail me with your stories and observations concerning the attack. Frequency lists can be addressed to me as well, or to the columnists specializing in particular communication subjects (trunking, MilCom, FedCom, aircraft band, HF, etc.).

Maps and Freqs

A website for your "Top 10" list is http://www.maptech.com. You can choose a city, zip code, or map coordinates and see a topographic map, an aeronautical chart, a marine chart, and an aerial photograph of the location you've chosen. This is a convenient way to check on frequencies that are published within the aero and marine charts.

Bank Number One

Our ongoing discussion of wireless microphones and low power radios has taken yet another turn. An anonymous Indiana reader saw a courtroom bailiff carrying a handful of "interesting looking devices" down the hall. Upon inspection, these units turned out to be Assistive Listening Devices (ALD) that are used in the courthouse to ensure that legal proceedings are easily understood by those with hearing impairments.

ALDs are covered in the American's with Disabilities Act (ADA) and can be researched further by checking out the websites listed at the end of this column. Generally speaking, though, the ADA requires that government and (some) private assembly areas provide a mechanism that allows participation by those with hearing disabilities.

"Individuals who are deaf or hard of hearing are unable to participate in government-sponsored events or public meetings and unable to benefit from city programs and services when they are not provided with appropriate auxiliary aids and services," according to the U.S. Justice Department, which handles ADA enforcement activities.

The frequencies allocated for ALD use (classified as "auditory assistance devices" by the National Telecommunications and Information Administration - NTIA) are between 72.0-76.0 MHz. Anyone who uses these systems or has further information on operating modes is invited to write in.

Frequencies listed for the ALDs observed in the courthouse were:

72.1, 72.3, 72.5, 72.7, 72.9, 74.7, 75.3, 75.5, 75.7, 75.9

On-Scene Commander

As discussed above, Miami certainly has its share of political dramas. While we lost the Latin Grammy Awards show, we kept The Source Hip-Hop Awards Show, and Jan Fine was there. Jan monitored the following channels near the Jackie Gleason Theater in Miami Beach, Florida. All were used for on-site security and show coordination:

461.5625, 464.5625, 464.9500, 466.2375, 466.8875, 468.7125

Who's Listening?

"Cleveland Rocks" according to Drew Carey's popular TV show. As far as scanning is concerned, Cleveland and the Northern Ohio area "rock" with a great variety of interesting subjects, all of which are monitored by spotlight hobbyist Mike Fink.

Mike runs the ohioscan.com website and enjoys sharing his information with hobbyists worldwide. "The more people who are interested in the hobby...the better the hobby gets," according to Mike. "Computer control and the Internet saved scanning," he believes. The convergence of scanning and the Internet revived a dying hobby and motivated equipment manufacturers to continue research, development and production of scanners.

"I'm looking forward to a digital scanner," he continued. But, some systems may still be out of reach. "There's very little FedCom in Cleveland now. Almost everyone has switched to Nextel."

Mike is a regular participant in the MilCom, FedCom, and TrunkCom list servers, as well as several Yahoo Groups dealing with radio communications. AirNav, printed versions of aeronautical charts, and military equipment websites such as Jane's are used for additional research. All frequency information gleaned from these sources is saved in a Microsoft Works database.

Current equipment includes a Pro 2006 with OptoElectronics board and ScanStar software, a Uniden BC-780 with TrunkStar software, and an Icon R8500 with Icon's software. Nil-Jon Omni-Wide antennas are used with LMR-400 high quality cable. A 100-ft. wire is used for HF work as well, and Mike hopes to bolster his SatCom receiving capabilities soon.

He regularly monitors Cleveland and Indianapolis Air Route Traffic Control Centers, mili-
tary aviation traffic from bases throughout Ohio, and cross-country aviation traffic using nearby ranges. Military Operating Areas (MOAs) and aerial refueling routes.

Mike was introduced to scanning by his father, who purchased a Regency unit many years ago to monitor his own company. Mike's dad also had some Sheriff's Office crystals installed, and that was the hook. From that point, Mike purchased a variety of handheld and desktop units, antennas, cables, research books and computers. He's owned the Drake SW -8, Uniden top units, antennas, cables, research books and dad also had some Sheriff's Office crystals in-years ago to monitor his own company. Mike's aerial refueling routes.

Ranges, Military Operating Areas (MOAs) and military aviation traffic from bases throughout Ohio, there's just no interesting MilCom or FedCom players than police officers!" 

What happens during those times when there's just no interesting MilCom or FedCom or local activity? "There's always Mall Security...and never a shortage of shoplifters, parking problems, lost kids and amusing communications."

Look for Mike's extensive frequency list at the end of this column.

On the Keyboard

We're planning to look at some Urban Search and Rescue communications, local trunked systems and more of your mail and information.

Links of Interest from this column:

MapTech: http://www.maptech.com
ADA: http://www.adaq.gov/ad/a/ada/ada1.htm
NTIA: http://www.ntia.doc.gov/rsa/home/rsa/home.html
Mike Fink's Ohio Website: http://www.ohioscan.com
AirNav: http://www.airnav.com

Mike Fink's Northern Ohio Frequency List

(more details available on his website)

MILCOM

Ohio Air National Guard, Springfield-Beckley Airport, Ohio

138.275, 138.450, 138.750, 139.625, 139.700, 139.975, 142.125, 143.425, 143.925, 261.100, 267.999, 281.400, 290.275, 290.500, 301.600, 327.700, 327.100, 335.800, 343.900, 351.800, 383.300, 383.300, 399.900

Ohio Air National Guard, Toledo Express Airport, Ohio

138.050, 138.100, 138.425, 139.625, 139.750, 139.975, 141.600, 143.850, 141.875, 307.000, 317.550, 338.900, 343.800, 379.200

Rickenbacker Air National Guard Base, Columbus, Ohio

119.150, 120.200, 121.850, 123.800, 124.600, 132.300, 132.700, 132.750, 139.875, 236.600, 252.100, 257.800, 267.900, 275.500, 275.800, 279.690, 286.200, 311.300

Wright-Patterson AFB, Dayton, Ohio

118.850, 122.850, 126.500, 126.900, 138.075, 138.900, 139.250, 236.600, 251.025, 291.000, 317.750, 327.100, 349.400, 372.200

Indiana Air National Guard, Bear Field, Fort Wayne, Indiana

138.050, 138.100, 138.200, 139.750, 243.000, 251.100, 255.400, 260.600, 269.450, 284.600, 289.300, 317.800, 318.200, 321.100, 343.000, 348.600, 349.000, 350.350, 362.300, 363.800, 370.850, 383.300, 385.700

Indiana Air National Guard, Hulman Field, Terre Haute, Indiana

138.100, 138.150, 138.250, 138.300, 139.925, 139.725, 139.800, 140.425, 141.725, 141.125, 144.875, 280.500, 288.150, 392.200

Grissom AFB, Peru, Indiana

120.000, 121.050, 133.700, 139.900, 252.100, 271.800, 275.600, 290.450, 321.000, 324.300, 351.100, 354.200, 363.800, 372.200, 376.100, 379.300

Michigan Air National Guard, Selfridge AFB, Michigan


Additional Rongs, Maa, Air-To-Air

138.350, 225.700, 257.000, 259.400, 267.800, 269.325, 301.600, 314.600, 316.125

AERIAL REFUEILING

AR-217, 218, 219, and 220 all run from the Toledo area east to mid-Pennsylvania.

AR-217

282.700, 283.900, 306.300, 317.400

AR-218

269.300, 282.700, 307.100, 352.600

AR-219

282.700, 288.300, 363.100, 366.300

AR-220

282.700, 307.100, 317.400, 352.600

AR-206H

282.700, 323.000, 346.900, 354.100

AR-206L

235.100, 282.700, 306.300, 323.000

LOCAL GOVERNMENT

Southwest Regional Communications Network

866.2375, 866.6000, 867.0625, 867.5500, 868.0750, 868.3750, 868.7125

Brookpark Police

16 Brookpark Dispatch
48 Brookpark Detectives "Bureau"
80 Brookpark Tax
112 Brookpark Surveillance?
144 Brookpark Superv.
176 Brookpark Aux "Ap"

Brookpark Fire

8208 Brookpark Fd Disp.
8240 Brookpark Fd Fireground
8272 Fire Supervisor

Brookpark Works

16496 Brookpark Works
16560 Brookpark Building Dept.
16592 Brookpark Parks
16646 Brookpark Service Dept.

North Royalton Fire

8496 N Royalton Fd Ch1 Disp.
8528 N Royalton Fd Ch2 Fireground

Parma Heights Police

208 Ch1 Parma Heights Police Disp.
528 Ch2 Parma Heights Police Aux
432 Ch3 Parma Heights Police Tac
464 Ch3 Parma Heights Police
496 Parma Heights Senior Ctrn.

Parma Heights Fire

8204 Parma Heights Fd Fireground
8304 Parma Heights Fd Disp.
8592 Parma Heights Fd Tac-1 Fireground

Parma Heights Gov

16424 Parma Heights Works
16624 Parma Heights Works
16688 Parma Heights Citywide

Strongsville Police

336 Ch1 Strongsville Police Disp.
368 Ch2 Strongsville Police
656 Ch3 Strongsville Police Tac "Traffic"
688 Ch4 Strongsville Police Tac "Detectives"
720 Ch5 Strongsville Police Tac "Tactical"
752 Ch6 Strongsville Police Tac "Spec Ops"
784 Ch7 Strongsville Police Tac "Surveillance"
17008 Ch8 Strongsville Police Fd City Mutual
16432 Systemwide/Regional Mutual Aid

Strongsville Fire

8432 Ch1 Strongsville Fd Disp.
8439 Ch1 Strongsville Fd Page Outs
8528 Strongsville Fd Tac-1
8560 Ch3 Strongsville Police Tac-2
8592 Strongsville Fd Fireground/Inspectors
8624 Ch2 Strongsville Police Fd Spec Ops

Strongsville Gov

16944 Strongsville Service Dept.
16976 Strongsville Building Insp.

Cuyahoga Metropolitan Housing Authority

453.775 Ch1
453.825 Ch2
453.950 Ch4
453.975 Ch3

Cuyahoga County Sheriff's Department

423.050 Ch1
423.175 Ch2
423.300 Ch3

November 2001 MONITORING TIMES 29
last month we discussed monitoring Air Traffic Control and navigation systems at Canada’s largest airport in Toronto. This month we begin a cross-Canada check-in at the nation’s major airports, starting on the west coast in British Columbia (BC). BC is a mountainous province that richly deserves its license plate slogan “Beautiful British Columbia.”

The standard VHF marine band frequencies are very active here. Private amphibious tour aircraft taking off and landing alongside these ships, a helipad and the “Seabus” ferry (156.45, 156.60 MHz) to North Vancouver make this a busy spot for the scanner owner.

On a recent visit to Vancouver – BC’s largest city – ScanCan monitored many of the frequencies listed below for Vancouver and Victoria airports.

### Table 1: Vancouver harbour, BC

- **(Helicopters)** (CBC7)
- **ATIS** 126.6
- **Tower** 118.4, 301.1
- **Unicorn** 122.35

### Table 2: Vancouver Int’l Airport, BC (YVR)

<table>
<thead>
<tr>
<th>Air Traffic Control</th>
<th>Frequency</th>
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</thead>
<tbody>
<tr>
<td><strong>Radio</strong></td>
<td>121.4</td>
</tr>
<tr>
<td><strong>ATIS</strong></td>
<td>124.6</td>
</tr>
<tr>
<td><strong>CINC DEL</strong></td>
<td>121.4</td>
</tr>
<tr>
<td><strong>Ground</strong></td>
<td>121.7 (south), 127.15 (north), 275.8</td>
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<tr>
<td><strong>Tower</strong></td>
<td>118.7 (south), 119.55 (north), 124.0 (outer), 226.5, 236.6</td>
</tr>
<tr>
<td><strong>Terminal</strong></td>
<td>125.2</td>
</tr>
<tr>
<td><strong>Arrivals</strong></td>
<td>128.6 (south), 133.1 (north), 352.7</td>
</tr>
<tr>
<td><strong>Departures</strong></td>
<td>126.125, 132.3, 363.8</td>
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<table>
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<tr>
<th>VHF navigation beacons</th>
<th>Frequency</th>
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<tbody>
<tr>
<td><strong>VOT</strong></td>
<td>114.8</td>
</tr>
<tr>
<td><strong>VORTAC</strong></td>
<td>115.9</td>
</tr>
<tr>
<td><strong>DM/E/LS</strong></td>
<td>109.5</td>
</tr>
<tr>
<td><strong>DM/E/LS</strong></td>
<td>109.5</td>
</tr>
<tr>
<td><strong>DM/E/LS</strong></td>
<td>111.1</td>
</tr>
<tr>
<td><strong>DM/E/LS</strong></td>
<td>110.55</td>
</tr>
<tr>
<td><strong>DM/E/LS</strong></td>
<td>110.55</td>
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### Table 3: Victoria Int’l Airport, BC (YYJ)

<table>
<thead>
<tr>
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<th>Frequency</th>
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<tr>
<td><strong>ATIS</strong></td>
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<tr>
<td><strong>CINC DEL</strong></td>
<td>126.4</td>
</tr>
<tr>
<td><strong>Ground</strong></td>
<td>121.9</td>
</tr>
<tr>
<td><strong>Tower</strong></td>
<td>119.7 (inner), 119.1 (outer), 239.6</td>
</tr>
<tr>
<td><strong>ATF</strong></td>
<td>119.7</td>
</tr>
<tr>
<td><strong>Terminal</strong></td>
<td>127.8, 133.85, 308.4</td>
</tr>
<tr>
<td><strong>Military443 Squadron Stinger Ops</strong></td>
<td>349.3</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>VHF navigation beacons</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>VOT</strong></td>
<td>115.7</td>
</tr>
<tr>
<td><strong>VOR/DME</strong></td>
<td>113.7</td>
</tr>
<tr>
<td><strong>DM/E/LS</strong></td>
<td>108.7</td>
</tr>
<tr>
<td><strong>DM/E/LS</strong></td>
<td>108.7</td>
</tr>
</tbody>
</table>

Victoria (BC’s provincial capital) is located on Vancouver Island, at quite a distance from Vancouver (on the mainland). However, ScanCan could clearly hear the Victoria VOR/DME beacon from inside my hotel room near the Vancouver airport, using just a handheld scanner and telescoping whip antenna. The signal can probably be heard from nearby Seattle in Washington State as well. Perhaps MT readers in northern Washington can confirm that.

### Table 4: Aviation Abbreviations

- **ATIS** – Automatic Terminal Information Service
- **ATF** – Aerodrome Traffic Frequency
- **CINC DEL** – Clearance Delivery
- **DME** – Distance Measuring Equipment
- **ILS** – Instrument Landing System
- **VORTAC** – VHF Omnidirectional Range/Tactical Air Navigation
- **VOT** – VOR Receiver Test Facility

### Calgary Emergency Services

In December we will move east into Alberta and take a look at a Calgary International Airport. Meanwhile, Monitoring Times reader John Atwood kindly sent the following trunking frequency information for the City of Calgary EMS / Fire / Police trunked radio system (Motorola) to ScanCan. John informs ScanCan that by monitoring the Central Zone you will hear 95% of the activity.

### Table 5: Calgary Emergency Services

<table>
<thead>
<tr>
<th>Zone</th>
<th>Frequency</th>
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<tbody>
<tr>
<td><strong>Central Zone</strong></td>
<td>866.537500, 866.237500, 865.637500, 865.137500, 864.637500</td>
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<tr>
<td><strong>NW Zone</strong></td>
<td>866.612500, 866.612500, 866.612500, 866.612500, 866.612500</td>
</tr>
<tr>
<td><strong>NE Zone</strong></td>
<td>866.737500, 866.737500, 866.737500, 866.737500, 866.737500</td>
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<tr>
<td><strong>SW Zone</strong></td>
<td>866.237500, 866.237500, 866.237500, 866.237500, 866.237500</td>
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<tr>
<td><strong>SE Zone</strong></td>
<td>866.612500, 866.612500, 866.612500, 866.612500, 866.612500</td>
</tr>
</tbody>
</table>

### Monitoring the Media

Hopping back to ScanCan’s home province of Ontario, one of my most interesting hits in recent months has been Toronto radio station CFRB’s “Skywatch Traffic” aircraft on 162.33 MHz. Piloted by CFRB reporter Guy Valentine, it broadcasts live traffic reports during the morning and evening rush hours. The broadcast is made live from “air-to-air,” so to speak. It is much more interesting to listen to the report on a scanner instead of an AM broadcast band receiver (CFRB can be heard on 1010 kHz). Guy Valentine switches from a slick, professional, radio voice to an informal conversational style as he exchanges information, off-air, with a female assistant back in the studio. Very interesting and well worth listening to.

Another media stop on ScanCan’s band search is Toronto area FM station Z103.5. Transmitting from a tower in the hills northwest of Toronto [43 54 39N, 79 56 19W], it can be heard on its assigned frequency of 103.5 MHz in the FM broadcast band. ScanCan readers may be much more interested to monitor the second and third harmonics with a scanner on 207.0 MHz and 310.5 MHz. The harmonics can be heard within about a kilometer of the tower. This simple trick can be used with many powerful broadcast and VHF/UHF utility transmitters. It is a clever way to identify which of the many towers spread alongside highways and in rural fields, is the source of a signal you are hearing. Of course a frequency counter will do the same job, but why spend the money when you can use your scanner or car radio?

ScanCan will use that harmonic trick often in its travels throughout the Great White North. It is useful to know when a signal is coming in order to help identify it. At other times you may need a directional antenna to separate signals coming from different transmitters, and you’ll need to know which direction to point your antenna.

ScanCan carries a BNC-to-binding post converter from an old oscilloscope. The BNC end pops onto the scanner antenna connector and a couple of thick wire, quarter-wave elements (cut from surplus car antennas, but coat hanger wire will do just fine) are slipped into the binding posts and hand-tightened (see figure 2). I carry elements cut for the major VHF and UHF bands with me. This setup makes for a very inexpensive and effective dipole antenna for adding a bit of gain to weak signals, and determining a rough direction for signal sources.

Until next month, north from the border.

---

**Track down those signal sources with a simple dipole antenna.**
**UNIDEN**

<table>
<thead>
<tr>
<th>Part Number</th>
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**ALINCO**

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<td>AR3000AB-DS</td>
<td>SCN 26</td>
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<td>AR8600</td>
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**YAESU**

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**ICOM**

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<td>R3</td>
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**ANTENNAS**

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**Shipping/Handling Charges**

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<tr>
<td>$2500+</td>
<td>$27.95</td>
</tr>
</tbody>
</table>

*price includes shipping within the US

Prices subject to change without notice.

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Grove Enterprises, Inc.
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www.grove-ent.com
SITFAA: New Life for an Old Net

SITFAA is a Spanish-language acronym, which we can loosely translate to “Inter-American Air Forces Telecom Network.” Its mission is to provide reliable, interoperable, voice and data communication for air forces in the Western Hemisphere, using the long-distance capabilities of high-frequency (HF) shortwave radio.

SITFAA is one of the older US military radio networks. It was established in 1964 by the 18 members of SICOFAA, another Spanish acronym which translates to “System of Cooperation Among the American Air Forces.”

SITFAA’s member nations include Argentina, Bolivia, Brazil, Canada, Chile, Colombia, the Dominican Republic, Ecuador, El Salvador, Guatemala, Honduras, Nicaragua, Panama, Paraguay, Peru, Venezuela, the United States, and Uruguay. Languages used are English, Spanish, and Portuguese. Because the network is multilingual, its computer and human translation services are sometimes called upon by other Air Force personnel, or even local public safety agencies.

SITFAA’s Master Network Control Station (MNCS) is at Andrews Air Force Base (AFB) in Maryland. An alternate net control station is at Davis-Monthan AFB in Arizona. Personnel from these two operations also provide technical assistance to the stations operated by member nations.

While SITFAA is listed as voice and data, it has for many years been pretty much a radioteletype (RTTY) net. There have also been efforts to use the long-distance capabilities of high-frequency (HF) shortwave radio.

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While SITFAA is listed as voice and data, it has for many years been pretty much a radioteletype (RTTY) net. There have also been experiments in the use of “packet radio” to create a more Internet-like user interface. The US Air Force has largely gone to satellites for its most important communications, but several of the member nations still consider HF to be an important capability. Thus SITFAA is very much alive and well, and it is evolving as the century changes.

SITFAA meets Scope Command

As we know from previous columns, Scope Command is the US Air Force plan to modernize most of its high-power, HF radios. Everyone knows that the Global High-Frequency System (GHFS) is included in the Scope Command upgrade, and many also know that it includes the “Mystic Star” system used by aircraft carrying the President, Vice-President, and some other important persons.

What isn’t as well known is that SITFAA is also currently involved in a Scope Command upgrade. We’re hearing some big changes on the air.

Keep in mind, as always, that Scope Command is just what it says it is – an equipment upgrade. Though all the networks being modernized get new control centers at Andrews, they maintain their separate identities and missions. Nothing is going away as a result of Scope Command, and some new things are coming in.

The most audible of these is the global implementation of Automatic Link Establishment (ALE). ALE is an automated system that allows radios to determine the best HF frequencies without human intervention. They do this by exchanging data bursts in a sophisticated, digital mode that uses eight-tone multiple frequency-shift keying (MFSK).

ALE was not in the original Scope Command plans, but it has since become a key feature. Already, it has been used for phone patching and some voice communication by the GHFS stations. Its bleepy-sounding transmissions are now a common sound all over HF.

More recently, in summer of 2001, listeners began finding new ALE frequencies. These were clearly Air Force, but not GHFS. They turned out to be SITFAA. Most commonly seen are the two net control stations, using the ALE identifiers of STFADW for Andrews, and DAVISM for Davis-Monthan.

SITFAA Honduran Activity

Another ALE identifier being heard quite frequently at present is SOTOAB, for Enrique Soto Cano Air Base in Honduras. This base, which also houses the Honduran Air Force Academy, is headquarters of the US military’s Joint Task Force Bravo (JTF-B).

JTF-B was established by US Southern Command as a forward military presence during the Central American crisis of the 1980s. It continues to stage exercises, medical readiness tests, and contingency operations relating to such things as hurricane relief.

Since the closing of bases in Panama, activity at Soto Cano has picked up. We’ve seen some support for assets involved in the “War On Drugs.” However, the Honduran constitution does not allow a permanent US presence here, and various Pentagon studies have deemed the base of only marginal usefulness.

What’s interesting for us, though, is the use of SITFAA. The ALE from Soto, as it contacts the control points, has revealed many new frequencies. Better yet, voice contacts have been heard for the first time in years. One good logging comes from Jack Metcalfe, who found Soto working HD1FAE in voice on 18370.5 kilohertz (kHz). HD1FAE, in Quito, Ecuador, is using one of those amateur-style callsigns common on similar nets in the past.

Jack also saw technical chatter being exchanged within the ALE transmissions. This is a common Air Force practice. It’s passed in the Automatic Messages of the Day (AMD) field, a kind of catch-all function which displays messages on the receiving station’s ALE controller panel.

Here’s the complete list of what we know about SITFAA. Good hunting!

SITFAA

<table>
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<th>System</th>
<th>Frequency (kHz)</th>
</tr>
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<tr>
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<tr>
<td>SOTOAB</td>
<td>14649.0</td>
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</tbody>
</table>

ALE Identifiers:

- DAVISM: Davis-Monthan AFB, AZ (Alternate net control)
- HD1FAE: Quito, Ecuador
- HOTR: Unknown, might not be SITFAA
- JTA: Unknown
- STFADW: Andrews AFB, MD (Primary net control)
- STFFR: Probably Puerto Rico but not part of the original

Numeric IDs such as 812257 may be aircraft.
All transmissions are USB (upper sideband) unless otherwise indicated. All frequencies are in kHz (kiloherz) and all times are UTC (Coordinated Universal Time). "Numbers" stations (encrypted, usually unidentified, broadcasts thought to be intelligence-related) are indicated in () with their ENIGMA station designators, as issued by the European Numbers Intelligence Gathering and Monitoring Association.

**Abbreviations used in this column**

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
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<tr>
<td>VOMMET</td>
<td>Flight Weather (loosely from French)</td>
</tr>
<tr>
<td>VOLMET</td>
<td>Flight Weather (loosely from French)</td>
</tr>
<tr>
<td>RTTY</td>
<td>Radio Teletype</td>
</tr>
<tr>
<td>SITFAMA</td>
<td>Inter-American Air Forces Telecom Net</td>
</tr>
<tr>
<td>NNAVTEX</td>
<td>Navigational Telex, automated Sitor-B bulletins</td>
</tr>
<tr>
<td>FDC</td>
<td>French Air Force Metz, with CW markers at 0416. (Newberry-GA)</td>
</tr>
<tr>
<td>NNNOMDC</td>
<td>NNNOMDC-US Navv-Marine Corps MARS e-mail system, calling various US Coast Guard cutters in slow Pactor-II, at 1207. (MADX-MD)</td>
</tr>
<tr>
<td>NNNOCGL</td>
<td>NNNOCGL in slow Pactor-II at 2200. (MADX-MD)</td>
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<td>Federal Emergency Management Agency</td>
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<td>FSK</td>
<td>Frequency-Shift Keying</td>
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<td>JSTARS</td>
<td>Joint Surveillance Target Attack Radar System</td>
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<td>United States</td>
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<td>Unid</td>
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<td>US</td>
<td>United States</td>
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<td>V2a</td>
<td>Cuban atencion(!!) numbers, 3-message format</td>
</tr>
<tr>
<td>VOLMET</td>
<td>Flight Weather (loosely from French)</td>
</tr>
<tr>
<td>XSL</td>
<td>&quot;Slot Machine,&quot; weird Asian noisemaker</td>
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</table>

1767.0 Unid-loudest frequency for unknown stations with fixed-length digital FSK data bursts, also heard at other times on 1712, 1717, 1722, 1727, 1732, 1736, 1776, and 1792 kHz. (Jason A. Stralli-Ohio) I don't have any clue what this is. Anyone else know? -Hugh

1782.0 LFO-Orlandet Radio, Norway, with a patch at 2153. (Ary Boender-Netherlands)

2582.0 ZBM-Bermuda Harbor Radio, with Marine Information Bulletins, at 0437. (Mid-Atlantic Dxor-MD)

3058.0 Unid-Slot Machine Station (XSL) with video-game noises in pulsed PSK idlers, also on 3075, 4231, 4291, 5643, 6417, 6445, 6500, 6693, 6768, 8588, and 8704, not always a full simulcast, and heard at different times of day. (Anonymous-Japan) This greatly increases our knowledge of this odd, Asian network. Thanks. -Hugh

3137.0 PLA-US Air Force, Lajes Field, Azores, with ALE sounding, also on 3059, at 0341. (MADX-MD)

3415.0 ART-Israeli phonetic numbers station (E10), AM callup at 2200. (Boender-Netherlands)

3840.0 YHF-Israeli phonetic numbers station (E10), AM callup at 2200. (Boender-Netherlands)

4218.0 OST-Costende Radio, Belgium, CW identifier in ARQ idlers, at 0306. (Herb Newberry-GA)

5696.0 Coast Guard 20C-US Coast Guard, on a drug interdiction operation with DEA, reporting airborne from Panther (DEA operations, Bahamas), at 0106. (Ron Perron-MD)

5841.0 Panther-DEA operations, Bahamas, working Coast Guard 13C and Coast Guard 61A, on a drug operation, at 0117. (Perron-MD)

6482.0 CLA-Havana Radio, Cuba, with CW markers and frequencies at 0449. (Newberry-GA)

6604.0 New York VOLMET, NY, with flight weather at 0344. (Newberry-GA)

6739.0 Offutt-US Air Force, with a 22-character EAM at 0301. (Jeff Haverlah-TX)

6768.0 Cuban Atencion numbers (V2a), AM female voice in progress at 0434. (MADX-MD)

6959.0 British Lincolshire Poocher numbers (E3), callup 82290, at 2100. (MADX-MD)

7632.0 3524-Unknown US military calling Offutt at 1326. Chalice Faxtrot-US Air Force, calling unknown station at 1622. (Tom Sevart-KS)

7657.0 US CIA "Counting" numbers station

7684.5 NNNOCGL in slow Pactor-II at 2200. (MADX-MD)

7685.5 NNNOCGL, calling various US Coast Guard cutters in slow Pactor-II, at 1207. (MADX-MD)

7710.0 VFF-Canadian Coast Guard, Iqaluit, with a FAX ice chart at 0525. (MADX-MD)

7880.0 DDK3-Hamburg Metro, Germany, with FAX weather chart, on an unscheduled list, at 0832. (Day Watson-UK)

8010.0 Cuban Atencion numbers (V2a), AM female voice at 0611. (MADX-MD)

8040.0 GFA-Bracknell Meteo, UK, weather FAX at 0508. (Newberry-GA)

8080.0 CIA "Counting Station" (E5), tune-in, group count, and message at 2100. (Boender-Netherlands)

8094.5 FD-French Air Force Metz, with CW markers at 0416. (Newberry-GA)

8097.0 Cuban Atencion numbers (V2a), AM female voice at 0533. (MADX-MD)

8246.0 November Oscar-US Navy, working Frotxt and Lima in a Link-11 control net, at 0224. (Sue Wilden-IN)

8496.0 CLA-Havana Radio, Cuba, with CW marker at 0241. (Wilden-IN)

8670.0 IAR8-Rome Radio, Italy, with CW identifier at 0416. (Newberry-GA)

8674.0 CAMSLANT Chesapeake-US Coast Guard, Portsmouth, VA, with voice synthesized weather at 0442. (Newberry-GA)

8764.0 MMO-US Coast Guard, Hawaii, with high seas weather at 1222. (MADX-MD)

8906.0 Santa Maria, confirming the proper spelling of waypoint LADOX with an unknown aircraft at 0505. (Brent Davenport-CO)

8921.0 Speedbird 208-British Airways, with a patch to Medlink regarding a patient on a flight enroute to London, at 0421. (Sevart-KS)

8971.0 Hunter 01-British Royal Air Force on a joint operation with US in the Caribbean, making radio checks with Blue Star, Roosevelt Roads, PR, at 0037. Hunter 01, working Blue Star again at 0200. (Perron-MD)

9183.0 CAMSLANT-US Coast Guard, VA, working Coast Guard 2109, at 1729. (MADX-MD)

9192.0 Efficient-US military, with a 28-character EAM at 1625. (Haverlah-TX)

9156.0 Billy Boy-US military, probably Nightwatch net, working uncopyable ground station (WAR46), at 0237. (Haverlah-TX)

9205.0 Unid-Unknown US Air Force aircraft, making a phone patch at 1737. (Sevart-KS)

9302.0 Cuban Cut Number Siation (M8), with numbers in progress at 0427. (MADX-MD)

9437.0 WUE6-US Army Corps of Engineers, Hendersonville, TN, calling WU6G at 1443. WUG, working WU6J, Ft. Worth, TX, at 1524. (Sevart-KS)

9415.0 Ghostrider Base-Unknown military, working "189" at 2034. (Sevart-KS)

9323.0 Cuban Atencion numbers (V2a), AM female voice in progress at 0417. (MADX-MD)

9440.0 Ueld-Weird, encrypted RTTY, sounds like US military only slower than usual, probably from California, possibly explaining last month's FSK Morse station on the same frequency, which then wouldn't be Russian/ex-Soviet at all. Direct simulky at 5345.8, 7985, and 9085. all at 1700. (Hugh Stegman-CA)
The Digital Signals FAQ

One of the most useful spin-offs of Internet culture has been the idea of the FAQ (short for Frequently Asked Questions) – a document that usually accompanies some piece of hardware or software and attempts to answer the users’ most basic questions about its functions or helps with troubleshooting.

A few years ago, we decided to gather all the publicly available knowledge we could muster about digital signals in one document, which became known as the Digital Signals FAQ. The document has a brief description of the characteristics of most every signal that a listener is likely to encounter on HF:

- Synchronous & asynchronous FSK (continuous and block) systems
- PSK systems
- Packet-like and asynchronous data black systems
- FAX-like systems
- SSV (Slow Scan TV) systems
- ALE and selective calling systems
- Vocoder (Voice encryption) systems
- Ionospheric sounding and other propagation measuring systems

It also collects all the parameters (speed, tone shifts, autocorrelation, likely users, etc.) of each system in a handy reference table. Thanks to Mike Agner’s diligent research, the FAQ also provides an overview and feature list of all decoding equipment (software or hardware) that we’ve come across. The FAQ will remain available for all to use at the WUN (Worldwide Utility News) website: http://www.wunclub.com/digsigfaq.html

It’s been about two years since we revised the document, but at the time you read this column it has a brief description of the characteristics of most every signal that a listener is likely to encounter on HF:

As we’ve mentioned before, this fact makes a lot of the currently available decoders (including the high-end, semi-professional machines) practically useless – that impressive long list of decoding modules now being a testament to obsolescence and by-gone age of “old-fashioned” digital systems.

However, the flip side of FSK’s demise is that the PSK section of the document now rivals the FSK section in size with a huge number of systems profiled, including many of previously unidentified PSK signals.

Other updates to the document include links to Leif Dehio’s excellent digital signals audio clips library for nearly all the systems featured in the FAQ. Now readers can both read about the system in addition to hearing it, and in many cases, seeing the signal’s audio spectrum.

Amateur Experimentation Continues Apace

In updating the FAQ, since we don’t discriminate between amateur and commercial systems, it’s also apparent that the amateur radio world has paralleled the FSK to PSK shift in its own way. The availability of cheap DSP-based PC soundcards has fuelled an explosion in experimental modes on the amateur bands. Since AX.25 Packet Radio, Clever, GTOR and PacTOR have all enjoyed particular success in the commercial world, who knows if this won’t also apply to some of these new modes?

There’s quite some polarization in the amateur world, though, between narrow bandwidth and wide bandwidth signals. Since spectrum is at a premium for radio amateurs (most HF amateur bands are only a few hundred kHz wide) there has been a struggle to accept wider signals even though there is a genuine recognition that higher speed data transfers won’t be possible without wider bandwidth signals.

Here is a quick run-down of three of these new modes...

PSK31: The first narrowband PSK system to gain wide acceptance, PSK31 uses simple PC soundcard-based software and provides a robust keyboard-to-keyboard chat mode at the relatively slow speed of 31.25bd but occupying a relatively narrow band of 31.25kHz of spectrum. Tuning around 14070 kHz at any time of day will usually yield many of the slowly warbling signals.

MFSK16: MFSK16 uses 16 tones with a relatively narrow tone spacing of 15.625 Hz to provide a net throughput of around 62.5bd in a total of around 316Hz. Forward error correction (FEC) is by a convolutional encoder. This mode is very similar in concept (and on-air sound) to Coquelet and Piccolo.

MT63: Is another FEC system using 64 tones again spaced at 15.625 Hz.

A number of radio amateurs are also experimenting with STANAG4285-based and MIL-188-110A PSK modems in addition to our old friend MIL-188-141A ALE.

New Romanian Network

Leif Dehio and a few others spotted a new ALE network with stations based in the capitals of the Romanian counties or “judets” (see the map in Figure 1). The network is likely a military or internal security operation as indicated by May 2001 press releases on the Harris Corporation website concerning equipment sales to Romania’s Ministry of Defense. The IDs have now been spotted on a number of frequencies as follows:

- 4110 6770 6945 8005 8010 8015 10375 10640 10645 kHz USB

The identifiers and the corresponding locations are: ALX Alexandria ARA Arad BIS Bistrita BMA Bota Mare BOT Botosani BRA Braila BSV Brasov BUL+B1,B4,B11 Bucharest CRG Constanta CRA Craiova DEV Deva DRO Dratie-Turnu Severin GAL Galati GIU Giurgiu PIT Pitesti PMN Pitesti Neamet PLS Ploiesti RES Resita SLA Slatina SUD Slobozia SUC Suzavoa TAR Targoviste TIM Timisoara TUN Targu Mures TUL Tulcea VAS Vosdii

The ALE triggers traffic using MIL-188-110A PSK serial tone and 39 tone modems in addition to Harris AVS (Advanced Voice System) voice encryption. Interestingly, a number of the IDs sport suffixes like B1, 2, 3, 4, 5 and 11. The purpose of these is yet unknown.

Until next month enjoy the digital DX.

Mike Chace
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Digital Digest

Stan Scalsky
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Digital Digest

The Digital Signals FAQ

Mike Chace
mike@chace-ortiz.org

November 2001 MONITORING TIMES 35
The NASB Agenda

From the newsletter of the National Association of Shortwave Broadcasters, representing many, but not all private US SW stations, its new president Ed Evans writes:

NASB members object to the FCC requirement that license-renewal notices must be broadcast, maintaining that this is useless and unnecessary in the case of international broadcasters. NASB’s legal representative, Shaw Pittman, has petitioned the FCC for a blanket waiver.

Frequency hour fees have increased substantially from the original $35 imposed in the early 1990s. Shaw Pittman thinks we may appeal this, though repealing them will be difficult, as they were instituted as an Act of Congress.

World Radio Conference 2003 issues: it has been proposed to add “digital” as a broadcast method and make it the exclusive mode for all new bands. We plan to recommend that the expanded bands be open to all accepted modulation techniques. Further, we will propose that the restrictions placed on DSB emissions be removed. We have data showing there is also need for new spectrum, especially below 10 MHz.


Web Site: http://www.shortwave.org Ed Evans can be reached at (803)-625-5551 or email at evans@wusb.com (NASB via Dan Eleya, via Wolfgang Büschel, WWDX)

Situational report

AFGHANISTAN Immediately following the attack on the US, SWLs became greatly interested in monitoring new bands. We plan to recommend that the expanded bands be add “digital” as a broadcast method and make it the exclusive mode for all new bands.

ASIA From the newsletter of the National Association of Shortwave Broadcasters, representing many, but not all private US SW stations, its new president Ed Evans writes:

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silence (Jori Savolainen, Finland, hard-core DX)

CHINA Xinjiang Renmin Guangbo Diantai (Xinjiang People's Broadcasting Station). Address: 84 Tunjie Lu, Urumqi, Xinjiang 830044; Tel: +86 (0) 91 2866523; Web Site: http://www.xjbs.com.cn Mandarin service; 2330-2340 daily, 0100-0110 Sun. Ext: 100, 1100-1105, 1150, 1155, 1200, 1500, 1550, 1600, 1800 in English. Ext: 1510, 1520, 1530, 1630, 1830, 1840, 1930, 2030, 2040, 2130, 2230, 2240, 2320, 2340, 2350, 2355. Radio: +86 (0) 91 860006. Fax: +86 (0) 91 2866008; Email: mfslu@xjbs.com.cn

GUINEA Radio Television Guineenne, PO Box 391, Conakry; Tel: +224 411 401 01/02; Ext: 1100-1105, 1110, 1120, 1130, 1200, 1300, 1400-1430, 1500. Ext: 0850, 0855, 0856, 0857, 0900, 0905, 0910, 0915, 0920, 0925, 0930, 0935. Radio: +224 (0) 411 401 01/02. Ext: +224 (0) 411 401 05/06. Ext: +224 (0) 411 401 07. Daily 0700-2330. E-mail: rtv@discount.or.gu

FINLAND In an attempt to be of service to YLE Radio Finland's listeners abroad, I have made a set of coverage maps (forecasts). The receiver is supposed to be portable with a whip antenna. Five colours on the maps illustrate reception quality in all target areas, best being red. http://www.uuvuasa.fi/~jpe/~finland/oc1/ Disclaimer: Please note that these do NOT represent the official view of YLE (Jori Savolainen) TASARII PAKISTAN R. Pakistan: http://www.cranet.net.pk/ pk Bureau of Broadcasted Services, Karachi. Address: 112 M.I. Road, Karachi 75520; Tel: +92 (0) 2 375 8770; Fax: +92 (0) 2 374 8591; E-mail: pk@cranet.net.pk

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UAE Radio has been renamed, extremely strong on 15395 at 1555-1710, TURKEY VOT had to cancel 9445 because of financial problems at TRT, still on 9460 Tibet Voice of Tibet complains of jamming and gives schedule: 1215-1300 running Anti-Zionist feature following the attack on US (gh)

VOT site somehow knocked it off-center, not easily restored. The next time I got best here for Turkish music (gh) 9445 had been to Eu/NAm, 500 kW, 313 degrees and 11885 (Sedef Somaltin, TRT via George J. Poppin) What a shame, 9445 their Voice For The Voiceless via Martin Schoch, Germany, DXLD) 2400 on 11815/11525 (Oystein Alme, project manager, Voice of Tibet, St. Ola's)

SOMALIA R. Boydhabo was first heard by BBC Monitoring in January 2001. It supports the Rhawan Resistance Army (RRA), hostile to the transitional government in Mogadishu. It is believed to broadcast from a town in southern Somalia, 140 miles northwest of Mogadishu. TD in Rhawan dialect: "Radio Boydhabo, odkla uruka RRA" (Radio Boydhabo, Voice of the RRA). Web Site: http://www.arfisde.com Daily 1500-1800 on 6810v, 17300 (Bjorn Maim, Quito, Ecuador, SW Bulletin)

UZBEKISTAN Radio Tashkent added 11905 for English at 2030 and 2130 (Ivo and Osaka 555-8691, Japan (Hans Johnson, WY, Cumbre DX))

MONITORING TIMES

U N I T E D K I N G D O M
Salama Radio, 15475 at 1900-2000, is becoming part of my regular listening because of all the local music it plays. It comes from across Africa and is just fantastic. I have heard very little religious programming. Nice signal just about every day. They seem to be reaching out to all of Africa, not just Nigeria (Hans Johnson, WY, Cumbre DX))

VATICAN A study by an international panel found no connection between electromagnetic emissions from Vatican Radio transmitters in a town outside Rome and leukemia rates in and around Santa Maria di Galeria were no higher than rates in Rome (AP via Mike Cooper)

TANZANIA R. Tanzania is on both 5050 and 5985 all day, the 5985 is unreliable. 7280 not heard and appears replaced by 5985 (Chris Greenway, Kenya, BDXC-UK)

Now you are SAF friend!! Regards, SAF SCI (Anker Petersen, Denmark, Clandestine Radio Watch)
Global Forum

Broadcast Logs
Gayle Van Horn
gayle@webworkz.com

0000 UTC on 11615
CZECH REP: Radio Prague. English service. Interval signal to ID and air report on incident in Prague. (William McGuire, Chertery, MD) 0009 on 11615, male/female commentary to contest info. (Harold Froedge, Palmer, AK)

0000 UTC on 15385
SPAIN: Radio Espana. Promotional for Radio Club and request for reception reports. Segment on opera. SINPO 252+. (Froedge, AK) Intermezzo features the culture of Madrid. (Fraser, MA)

0013 UTC on 6797.5
PERU: Radio Ondas del Rio Mayo. Spanish pop and easy listening tunes to promotional and greetings to listeners. Peruvians logged during 1000 as Radio Huanta 4746.6, 1005-1011 in Quechua to Huaynos music; Radio Sicuani 4826.3, 1020-1026 included during 1000 as Radio Huanta 4746.6, 1005-1011 in Quechua tunes to promotional and greetings to listeners. Peruvians logged Intermezzo features the culture of Madrid. (Fraser, MA) reception reports. Segment on opera. SINPO 252+. (Frodge, AK)

0056 UTC on 4929.5

0100 UTC on 11800
ITALY: RAI. News item on cloning humans and the opposition by Italian academicians. (Fraser, MA) 0400 on 9530 Germany relay with Middle East news report, 1940 on Morocco relay 15410 with African service. (McGuire, MA)

0155 UTC on 6034.9
COLOMBIA: La Voz del Guaviare. Spanish. Very mine romantic ballads from the ‘60s era. Advertisements for electric household goods to slogan as, “la voz del Guaviare, radio con participation.” SINPO 43323. (Michael Schnitzer, Hassfurt, Germany) La Voz del Llano 0850-0905 on 6114.9. Station promotional with fair reception and fading. (Bob Montgomery, PA/Cumbre DX)

0402 UTC on 17675
NEW ZEALAND: Radio New Zealand Int’l. World and national news to extended NZ weather. (Froedge, SD) Audible 0610-0630 on 11725 with What’s Going On feature on New Zealand Festival of the Arts. Station ID at 0630 to Alistair Cooke’s Letter From America. (Froedge, Prince George, BC Canada)

0451 UTC on 6240.45
PIRATES (EUROPE): Radio Casonova. German pop song plus John Fogerty’s The Old Man Down the Road. Frequent German announcements, many IDs, snail mail address, phone number, greetings. Phone call taken at 0516, noting this was the strongest signal on 48 meters. Some RTTY interference observed. Additional Euro pirates heard as Classic Rock Radio 7470US8, 0529-0550; UK Radio 6266.55, 0556-0559; Laser Hot Hits 6395, 0603-0606. (Dave Valko, PA/Cumbre DX)

0530 UTC on 5995.2
PERU: Radio Melodia. Poor-fair signal in the clear with extended conversation with mention of Radio America in Buenos Aires, all over back to back Latin pops. Slight unidentified interference on frequency. (Paul Ormandy, Oamaru, New Zealand/HCDX)

0557 UTC on 5965

0629 UTC on 15794.85
EUROPE-PIRATES: Radio Borderhunter. Very weak signal with music. Signal did not seem to improve by 0704 recheck. Swing-

Thanks to our contributors – Have you sent in YOUR logs?
Send to Gayle Van Horn, c/o Monitoring Times (or e-mail gayle@webworkz.com)

English broadcast unless otherwise noted.

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The Low Down on QSLing Beacons

Ever tuned down around 190-535 kHz and heard Morse code? If so, you’re hearing low-powered beacons, known as Non Directional Beacons (NDB). Beacon signals transmit twenty-four hours using Morse code consisting of one, two or three letters or digits. NDBs guide pilots or mariners as they traverse across the globe.

By following the changes of the beacon, long-wave DXers can log beacons from hundreds or even thousands of miles away, as signals change hour to hour or night to night. Often times, signals may come in quite loudly, much to the elation of beacon hunters.

Adding to the excitement of the chase is to follow up by QSLing the beacon, seeking verification of their DXing efforts. Most “hunters” seek not only a verification of the beacon, but background information on the transmitting facility.

Many beacon QSLers use a generic form of addressing when sending their reception reports. In the United States, the basic address form is: Airport Manager, Flight Service, Name of Airport, City, State, Zip Code.

If the station is an FAA controlled facility, the generic address may be sent as: FAA Field Office, Name of Airport, City, State, Zip Code.

Reports must include a self-prepared QSL card. Cards may be typed, hand stenciled or designed on your computer. Basic information should include: station identifier, station location, frequency in kilohertz, date/time of reception, verification of reception statement, blank space/location for signature or station stamp and blank space for location transmitting power or antenna type. By including this information in a clear and concise manner, chances are your veri-signer will sign and return your card to you.

Return postage should be included as well as the long-standing tradition of enclosing a postcard sent from your area or perhaps a photograph of your listening post. Enclosing a self-addressed envelope is frequently used with success by DXers.

For additional information on beacon DXing, subscription to The Lowdown monthly publication, feature articles and more, visit the website of the Longwave Club of America http://www.lwca.org (it’s a great place to get the “lowdown”.

GERMANY
Deutsche Welle, 9700 kHz. Full data card unsigned, plus station pennant. Received in 113 days for an English report and two U.S. dollars. Station address: Raderbergquartel 50, D-50968 Cologne, Germany. (Joe Squash, Wake Forest, NC)

Radio Netherlands via Wachtach, Germany, 9860 kHz. Full data card unsigned, plus station pennant and stickers. Received in 64 days for an English report and one IRC. Station address: P.O. 222, 1200 JG Hilversum, The Netherlands. (Sam Wright, Biloix, MS)

ITALY
Radio Speranza, 6231.4 kHz. Verification letter signed by Padre Luigi Corridi-Director, plus QSL card. Received in two weeks for an English report and one IRC. Station address: Largo San Giorgio 91-41100 Modena, Italy. Noted this is the only Italian catholic radio on shortwave. (Gianpietro Bernardini, Milano, Spain/ HCDX)

LAOS
Lao National Radio, 6130 kHz. Full data letter stamped with station seal, signed by Ms. Malvorn-English Section. Having no luck with my follow-up reports, my letter was hand delivered by a colleague of mine working for Canadian Hunter in northern Laos. Within two weeks I received a beautiful Laotian Red Border Guard neck scarf, a long friendly letter and a request for further correspondence. (Joe Talbot, Red Deer, Alberta, Canada/DXLD) Joe, no indication of an address, may we assume the following for your initial letter?-ed. Lao National Radio, B.F. 310, Vientiane, Laos.

MEDIUM WAVE
3LO, 774 kHz AM. Full data ABC map card after one follow up, plus stickers and personal note. Received in three weeks for an AM report and one U.S. dollar. Station address: 774 ABC Melbourne, GPO Box 9994, Melbourne, Victoria 3001. Station received during Greyland WA 2000 DXpedition. (Talbot, CAN/Cumbre DX) Additional address info for DXers --ed. Address: ABC Southbank Centre, Level 2, Melbourne, Victoria 3006. Website: http://local.abc.net.au/melbourne/radio/default.htm.

KGFX, 1060 AM kHz. Verification letter signed by Paul Rollie-Program Director. Received in twelve days for a taped report. Station address: 214 W. Pleasant Dr., Pierre, SD 57501. Medium wave QSL 2,763. (Patrick Martin, Seaside, OR)

WMIB, 1660 AM kHz. Full data QSL card signed by Phil Beckman-Operations Manager. Received in 65 days for an AM report and one U.S. dollar. Station address: 601 Elkcam Circle, Marco Island, FL 34145. (Danielle Canonico, Muggio, Switzerland)

RAI Caltonissiera 189 AM kHz. Full data QSL card unsigned. Received for an AM follow up report from 2000. Station address: Via del Parco Mirabellino 9 20052 Monza, Italy. (Canonico, SUI)

PERU
Radio La Hora, 4855 kHz. Full data QSL card signed by Carlos Gamarra-Moscoso-Director. Mr. Gamarra is a DXer and notes the station is interested in receiving reception reports. Please address your reports to his personal address as; Av. Garcilaso N. 411, Wanchaq, Cusco, Peru. He will also confirm reports for Peruvian stations; Radio LTC, Radio La Voz de la Selva and Radio Sicuani. (Canonico, SUI)

PIRATE (EUROPE)
Spaceman Radio, 6290 kHz. QSL card, info sheet, and Greetings From Holland sticker. Received in 20 days for a pirate report. Station maildrop: P.O. Box 73, NL 7160 AB Neele, The Netherlands. Email: komopdeband@hotmail.com (Bernardini, Italy/HCDX)

SLOVAKIA
Radio Slovakia Int'l, 5930 kHz. No data QSL plus letter signed by Oxana Ferjencikova, plus station pennant and sticker. Received in 78 days for an English report and two dollars. Station address: Mytna 1, P.O. Box 55, 81755 Bratislava 15, Slovakia. (Squash, NC)

UTILITY
KPH Bolinas, CA, 8642 kHz CW. Partial data RCA Marine Radiogram, signed as, "the gang of KPH". Received in 34 days for a utility report and a SASE. Verification for special event broadcast of San Francisco Radio, to commemorate old RCA ship-to-shore radio stations. QSL address: T. Horstfall, 1862 Tulare Ave., Richmond, CA 94805. (Bill Flynn, OR/ODXA)

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It's time for our semi-annual review of media-related programs on shortwave. Since the last time we did this in May, Radio Sweden has ceased its broadcasts of MediaScan (though, like Radio Netherlands' Media Network, it continues on the Internet in print form). This particular wave of change swept away the oldest continuously broadcast media program on radio. MediaScan began in 1948 as Sweden Calling DXers. A brief history of the program and its founder, Arne Skoog, can be read at the Radio Sweden Internet site http://www.sr.se/rs/red/ind_eng.html. The MediaScan newsletter also continues at this site and you can arrange there to receive it automatically every two weeks via e-mail.

A lesser-known program, Special Program for Radio Amateurs, has apparently been dropped by Radio Romania International. I have to confess that I was not a regular listener to this program, but it no longer appears in the station's published schedule and I presume it is no longer broadcast.

There are many radio programs that remain and each has a somewhat different focus. Communications World casts the widest net, chronicling everything from shortwave to satellite to the Internet. World of Radio gives a comprehensive activities report on the HF broadcast bands, including frequencies, personalities, station and program information. DX Partyline attempts to serve both new and seasoned DXers and SWLers by providing a place for the clubs to impart information about their events and projects, and by reading reports from listeners around the world about what is being heard on the bands in their respective regions. DXers Unlimited tends toward light technical topics. DXing with Cumbre, whenever possible, likes to emphasize new DX catches. The Media Report is unique for looking at the motivations behind the mass media and those who seek to influence it, both at home (in Australia) and abroad. A few, such as Ask WWCR and Feedback, concentrate solely or primarily on information about their own respective stations. The rest, more or less, look at the hobby or at media in general and each has a somewhat different focus.

For most stations refer to the Shortwave Guide pages for frequency information. (Some listings have frequency information to clarify which of the station's multiple services is carrying the program.) The one letter day abbreviations track that used in MT's Shortwave Guide section. Times are approximate and both times and frequencies are subject to change.

Special thanks to Ivan Grishin, Glenn Hauser, Marie Lamb and John Norfolk whose valuable work has been included in this month's column. If you have information that can add to this listing or correct an inaccuracy, please consider yourself obligated to step up and provide it.

Until December, good listening!

November 2001
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HOW TO USE THE SHORTWAVE GUIDE

Convert your time to UTC.

Broadcast time on ☢ and time off ☣ are expressed in Coordinated Universal Time (UTC) - the time at the 0 meridian near Greenwich, England. To translate your local time into UTC, first convert your local time to 24-hour format, then add (during Standard Time) 5, 6, 7, or 8 hours for Eastern, Central, Mountain or Pacific Times, respectively. Eastern, Central, and Pacific Times are already converted to UTC for you at the top of each page.

Note that all dates, as well as times, are in UTC; for example, a show which might air at 0030 UTC Sunday will be heard on Saturday evening in America (in other words, 7:30 pm Eastern, 6:30 pm Central, etc.).

Find the station you want to hear.

Look at the page which corresponds to the time you will be listening. On the top half of the page English broadcasts are listed by frequency, the station listing; all frequencies are listed in kilohertz (kHz). Not all listed stations will be heard from your location and virtually none in kilohertz (kHz). Not all listed stations will be heard all the time on all frequencies.

To help you find the most promising signal for your location, immediately following each frequency we've included information on the target area ☛ of the broadcast. Signals beamed toward your area will generally be easier to hear than those beamed elsewhere, even though the latter will often still be audible.

Target Areas:

Africa: alternate frequency (occasional use only)
Asia: The Americas
Australia: Asia
Central America: domestic broadcast
Europe: irregular (Costa Rica RFPI)
Middle East: private
North America: private
South America: various

Choose a program or station you want to hear.

Selected programs for prime listening hours appear following the frequencies - space does not permit 24 hour listings nor can every station be listed. However, listings for the most popular stations and selected less-known stations illustrate the variety available on shortwave. The format of the listings alternates among three different styles - by station, by day - month by month. Times listed are approximate and programs are subject to change.

The program listings emphasize broadcasts targeted to North America. In most cases, the stations and programs listed should be readily receivable in North America using a portable radio. Most broadcasters produce one broadcast in English per day that is repeated over a 24 hour period to all areas. If you are able to listen to transmissions to other areas of the world during “prime time” hours, referring to the prime time listings for those stations will likely be helpful in determining what programs will be broadcast.

Occasionally, a program or station listing may be followed by a reference to another listing for the same program or station at a different time. This is done to conserve space and make it possible to provide more listings.

Program Highlights

John Figliozzi

Perspectives
The awful events of September 11, 2001, soberly remind us that we still live in a largely dangerous world where the differences that separate us, and the lack of knowledge and understanding among us foster a global situation that means we can be just a spark away from violence, disaster or conflict.

In this kind of world, is it not the height of folly to overly rely on information technologies that, in turn, rely on business and political relationships that can be severed at a moment’s notice? In the alternative, is it not just as foolish to de-emphasize technologies that assure some additional measure of control over whether information ultimately reaches its intended recipients?

Shortwave thrives in a destabilized world. One sees the sad truth of that statement in the way that receivers nearly fly off the shelves when events that spawn military operations like Desert Storm and Enduring Freedom take place. But the reasons for the “popularity” of shortwave go far beyond its continued reliability. It’s the opportunity to hear events as they happen - either first-hand or via reporitage - from the perspectives of the diverse many, free of the filtering and distortion offered by so much of other media and delivery technologies.

At its core, it’s all about news and it’s all about perspective. For the past few weeks, I’ve been keeping a log of newscasts, writing down what I’m hearing about the current world crisis on Middle East stations like the Voice of the Islamic Republic of Iran, Radio Cairo, the Voice of Turkey, Radio Pakistan, Kol Israel, Radio Kuwait and UAE Radio Dubai, among others. When you write it down and compare what you’re hearing from different sources, personal horizons and understanding are significantly broadened. Often what you hear first via one of these stations is reported a day or so later on CNN or Fox News.

You also learn that it’s often not as simple as labeling one source as truth and another as propaganda. The truth and the propaganda are sometimes sprinkled throughout. Our differing perspectives make that so and challenge us to continually come to new realizations.

Perspective. We can never have enough of it. Shortwave remains a most unique and important source for it. Listen and learn. Our futures truly depend on it.
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<th>Language</th>
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**Note:** Frequencies are subject to change and may vary depending on the time of day and regional availability. Always check the latest information from the respective broadcasting entities.
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|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| <strong>Shortwave Guide</strong> | | | | | | | | | | | | | | | | | | | | |
| <strong>MONITORING TIMES</strong> | | | | | | | | | | | | | | | | | | | | |
| 17500s | 17750s | 21725s | | | | | | | | | | | | | | | | | | |
| <strong>Frequency Bands</strong> | | | | | | | | | | | | | | | | | | | | |
| 17500s | | | | | | | | | | | | | | | | | | | | |
| <strong>UTC - 10PM / 9PM / 7PM</strong> | | | | | | | | | | | | | | | | | | | | |
| 0300 | 0400 | 0500 | 0600 | 0700 | 0800 | 0900 | 1000 | 1100 | 1200 | 1300 | 1400 | 1500 | 1600 | 1700 | 1800 | 1900 | 2000 | 2100 | 2200 | 2300 |
| <strong>MONITORING TIMES</strong> | | | | | | | | | | | | | | | | | | | | |
| 17500s | 17750s | 21725s | | | | | | | | | | | | | | | | | | |
| <strong>Frequency Bands</strong> | | | | | | | | | | | | | | | | | | | | |
| 17500s | | | | | | | | | | | | | | | | | | | | |
| <strong>UTC - 10PM / 9PM / 7PM</strong> | | | | | | | | | | | | | | | | | | | | |
| 0300 | 0400 | 0500 | 0600 | 0700 | 0800 | 0900 | 1000 | 1100 | 1200 | 1300 | 1400 | 1500 | 1600 | 1700 | 1800 | 1900 | 2000 | 2100 | 2200 | 2300 |
| <strong>Shortwave Guide</strong> | | | | | | | | | | | | | | | | | | | | |
| <strong>Monitors</strong> | | | | | | | | | | | | | | | | | | | | |</p>
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**Shortwave Guide**

**0500 UTC - 12 AM E / 11PM C / 9PM P**

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**0600 UTC - 1 AM E / 12M C / 10 PM P**

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**November 2001**

**MONITORING TIMES**

45
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### Shortwave Guide

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| 1200 | 1207 | BBC, Caribean Report 15175as |
| 1200 | 1208 | UK, BBC World Service 15175as |
| 1200 | 1209 | France, Radio France Info 15175as |
| 1200 | 1210 | Philippines, Radyo Dabawenyo 15175as |
| 1200 | 1211 | Bangladesh, Radio Amar 15175as |
| 1200 | 1212 | Botswana, Radio 15175as |
| 1200 | 1213 | Norway, Radio 15175as |
| 1200 | 1214 | Finland, Scandenavia Radio 15175as |
| 1200 | 1215 | Greece, Voice of Hope 15175as |
| 1200 | 1216 | Oman, Oman News Service 15175as |
| 1200 | 1217 | Iran, Radio 15175as |
| 1200 | 1218 | Italy, Italian Radio Relays 15175as |
| 1200 | 1219 | Japan, Radio 15175as |
| 1200 | 1220 | Kenya, Voice of Peace 15175as |
| 1200 | 1221 | Lesotho, Radio 15175as |
| 1200 | 1222 | Liberia, Liberia Info 15175as |

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| 1300 | 1309 | France, Radio France Info 15175as |
| 1300 | 1310 | Philippines, Radyo Dabawenyo 15175as |
| 1300 | 1311 | Bangladesh, Radio Amar 15175as |
| 1300 | 1312 | Botswana, Radio 15175as |
| 1300 | 1313 | Norway, Radio 15175as |
| 1300 | 1314 | Finland, Scandenavia Radio 15175as |
| 1300 | 1315 | Greece, Voice of Hope 15175as |
| 1300 | 1316 | Oman, Oman News Service 15175as |
| 1300 | 1317 | Iran, Radio 15175as |
| 1300 | 1318 | Italy, Italian Radio Relays 15175as |
| 1300 | 1319 | Japan, Radio 15175as |
| 1300 | 1320 | Kenya, Voice of Peace 15175as |
| 1300 | 1321 | Lesotho, Radio 15175as |
| 1300 | 1322 | Liberia, Liberia Info 15175as |

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**1400 UTC - 9AM E / 8AM C / 7AM P**

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| 1400 | 1409 | France, Radio France Info 15175as |
| 1400 | 1410 | Philippines, Radyo Dabawenyo 15175as |
| 1400 | 1411 | Bangladesh, Radio Amar 15175as |
| 1400 | 1412 | Botswana, Radio 15175as |
| 1400 | 1413 | Norway, Radio 15175as |
| 1400 | 1414 | Finland, Scandenavia Radio 15175as |
| 1400 | 1415 | Greece, Voice of Hope 15175as |
| 1400 | 1416 | Oman, Oman News Service 15175as |
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| 1400 | 1418 | Italy, Italian Radio Relays 15175as |
| 1400 | 1419 | Japan, Radio 15175as |
| 1400 | 1420 | Kenya, Voice of Peace 15175as |
| 1400 | 1421 | Lesotho, Radio 15175as |
| 1400 | 1422 | Liberia, Liberia Info 15175as |
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**Shortwave Guide**

November 2001

52 MONITORING TIMES
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0400 UTC - Page 44 Freqs

Shortwave Guide

Local Lines and Views
0500 R. Netherlands M Dutch Horizons
0530 BBCWS(eu) A Africa Quiz or This Week and Africa
0535 BBCWS(eu) T The Bottom Africa
0540 BBCWS(eu) F Africa or Today
0545 BBCWS(eu) S Life in Africa

Deutsche Welle
0545 R. Australia S Living in Australia

0532 Voice of Russia S Moscow Yesterday and Today
0546 Voice of Russia W Russian People and Events

Informational Features
0500 HCB W The Book & the Spade (archaeology)
0505 R. Netherlands S Documentary
0514 R. Australia M Science/Tech.
0515 Deutsche Welle M Science (weekend)

0530 BBCWS(eu) M People and Places
0535 Business/Economics M Business World/Brief
0540 Science/Technology M Science World/Brief

Music
0500 HCB F Inspirational Classics
0510 R. Netherlands W Music 52-15 (world/klass)
0515 R. Japan S Pop Goes Asia
0530 R. Australia S Free Music-Australia (classical)

0532 Voice of Russia M The Jazz Show
0546 Voice of Russia T Music at Your Request

Saturday Night
0500 HCJB T Walkin' in the Sunshine (country)

0515 R. Australia M Klassische Musik (music)

0530 R. Habana Cuba M HUB

0535 R. Habana Cuba M HUB

0545 R. Australia S Short Story

SWL, Media and Communications
0540 R. Habana Cuba S/W Ellers, Unlimited
0547 Spanish Foreign R. S Radio Waves

Listener Contact/Interactive
0500 HCJB S Satuday Night
0510 R. Japan M A Look from Tokyo
0511 Voice of Russia T MW HD
0520 China R. Int. A Listeners' Garden
0535 Spanish Foreign R. A Radio Club

0540 R. Habana Cuba M HUB

0547 Spanish Foreign R. M Radio Club

Sport
0500 R. Australia S/A Grandstand (live action)*
0505 R. Australia A Pacific Sports
0530 China R. Int. T Sports World
0540 Deutsche Welle F HUB

0535 R. Habana Cuba T/A Time Out

( *special on 9640, 12080, 17570, 17715, 17730, 21775 kHz only.)

0600 UTC - Page 45 Freqs

Newscasts (*extended)*
0600 BBCWS(eu)(me)(as) F World Briefing
0600 BBCWS(eu)(me)(wcaf) 4 F World Briefing
0600 BBCWS(eu)(me)(wcaf) M World Briefing

0600 BBCWS(eu)(me)(as) F News Summary
0600 BBCWS(eu)(me)(as) M News Summary

0610 R. Australia S/A World Briefing (radio)
0610 R. Australia S/A Sports Report
0620 BBCWS(eu)(me)(as) F Sports Report

0630 BBCWS(eu)(me)(as) F Sports Brief

0645 BBCWS(eu)(me)(as) F World Business Report

Business/Economics
0630 BBCWS(eu)(me)(as) F Business World/Brief

Science/Technology
0630 BBCWS(eu)(me)(as) F Science World/Brief

Entertainment/Variety, Magazine Shows
0605 BBCWS(eu)(me)(as) F Entertainers' World

0610 R. Habana Cuba S/A Entertainment World

0615 R. Japan F Radio World

0630 BBCWS(eu)(me)(as) F News Brief

0645 BBCWS(eu)(me)(as) F News Brief

0645 BBCWS(eu)(me)(as) F News Brief

1000 UTC - Page 47 Freqs

Newscasts (*extended)*
1000 BBCWS(eu)(me)(as) F World Briefing
1000 BBCWS(eu)(me)(as) M World Briefing
1000 BBCWS(eu)(me)(as) F World Briefing
1000 BBCWS(eu)(me)(as) M World Briefing

1000 BBCWS(eu)(me)(as) F News Summary
1000 BBCWS(eu)(me)(as) M News Summary

1010 R. Australia S/A World Briefing

1020 R. Australia S/A World Briefing

1030 BBCWS(eu)(me)(as) S Agenda (themes)

Business/Economics
1030 BBCWS(eu)(me)(as) F Business World/Brief

Science/Technology
1030 BBCWS(eu)(me)(as) F Science World/Brief

Entertainment/Variety, Magazine Shows
1030 BBCWS(eu)(me)(as) F Magazine Shows

Sports
1000 R. Australia S/A Grandstand (live action)*
1010 R. Australia S/A World Briefing (radio)
1020 BBCWS(eu)(me)(as) F Sports Report

1030 R. Australia S/A World Briefing

1045 BBCWS(eu)(me)(as) F Sports Report

1100 UTC - Page 48 Freqs

Newscasts (*extended)*
1100 BBCWS(eu)(me)(as) F World Briefing
1100 BBCWS(eu)(me)(as) M World Briefing

1100 BBCWS(eu)(me)(as) F News Summary
1100 BBCWS(eu)(me)(as) M News Summary

1110 R. Australia S/A World Briefing

1120 BBCWS(eu)(me)(as) F Sports Report

1145 BBCWS(eu)(me)(as) F Sports Report

1200 UTC - Page 48 Freqs

Newscasts (*extended)*
1200 BBCWS(eu)(me)(as) F World Briefing
1200 BBCWS(eu)(me)(as) M World Briefing

1200 BBCWS(eu)(me)(as) F News Summary
1200 BBCWS(eu)(me)(as) M News Summary

1210 R. Australia S/A World Briefing

1230 BBCWS(eu)(me)(as) F Sports Report

1245 BBCWS(eu)(me)(as) F Sports Report

1300 UTC - Page 48 Freqs

Newscasts (*extended)*
1300 BBCWS(eu)(me)(as) F World Briefing
1300 BBCWS(eu)(me)(as) M World Briefing

1300 BBCWS(eu)(me)(as) F News Summary
1300 BBCWS(eu)(me)(as) M News Summary

1310 R. Australia S/A World Briefing

1330 BBCWS(eu)(me)(as) F Sports Report

1345 BBCWS(eu)(me)(as) F Sports Report
### Current Affairs Magazine/Features
- 1105 BBCWS(eu) M-F Caribbean Report*
- 1105 BBCWS(me) M-F Asia Pacific
- 1115 R Japan M-F Asian Top News (region's radio)
- 1130 BBCWS(cm)(eu) M-F News Analysis
- 1140 R Korea Int. M-F News Commentary

### Business/Economics
- 1120 HCB M-F Money Matters
- 1120 BBCWS(cm)(eu) M-F World Business Report
- 1120 BBCWS(cm)(me) M-F World Business Review
- 1145 R Korea Int. M-F Economic Rader

### Science/Technology (incl. Health & Environment)
- 1105 BBCWS(cm) M Health Matters
- 1105 BBCWS(cm) T Science View
- 1105 BBCWS(cm) W People and Places
- 1105 BBCWS(cm) F Discovery

### Local Lives and Views
- 1105 R New Zealand M-H Kim Hill (interviews)
- 1115 BBCWS(cm) M-F Caribbean Magazine
- 1120 BBCWS(cm) M Letter from America
- 1120 BBCWS(cm) S Postcards from Africa
- 1125 R Australia M-F Life Matters (special report)
- 1145 R Korea Int. M Health Matters (special report)

### Informational Features
- 1105 BBCWS(cm) M Omnibus (documentary)
- 1125 R Japan M Let's Learn Japanese
- 1130 BBCWS(cm) M Ever Ernest
- 1130 BBCWS(cm) F Focus on Faith
- 1145 R Korea Int. M Exploring the New Millennium

### Music
- 1100 HCB S Morning Song (poetry)
- 1105 BBCWS(cm) T Meridian -Masterpiece
- 1125 R New Zealand M Meridian -Music
- 1125 R New Zealand M Deep Purple
- 1125 R Japan M Unforgettable Masterpieces
- 1130 BBCWS(cm) W Japan Music Bag
- 1130 BBCWS(cm) F Music Beat (pop)
- 1130 BBCWS(cm) F Country Club
- 1145 R Korea Int. M Festival of nostalgia

### Entertainment/Variety, Magazine Shows
- 1105 BBCWS(cm) M Wargle Around the World (pop requests)
- 1105 BBCWS(cm) F Country Club
- 1110 BBCWS(cm) S Play of the Week (radio theatre)
- 1130 HCB M-F Morning in the Mountains

### SWL, Media and Communication
- 1130 HCB S Multimode Feedback

### Listener Contacts/Interactive
- 1100 R Japan S Hello From Tokyo
- 1100 R Korea Int. S Hello From China

### Sport
- 1105 R New Zealand S Sportsworld
- 1110 BBCWS(cm) M-F Caribbean Report*
- 1120 BBCWS(cm) M-F Fast Track
- 1120 BBCWS(cm) M-F Sports International
- 1145 BBCWS(cm)(eu) M-IA Sports Roundup

### 1200 UTC - Page 48 Freqs

#### Newscasts (continued)
- 1200 BBCWS(cm)(eu)(me) D News
- 1200 BBCWS(cm) D News
- 1200 BBCWS(cm) D News
- 1200 HUB M-F News
- 1200 BBCWS(cm) M-F News
- 1200 HUB M-F Latin American & World News
- 1200 R Australia M-F Latin American & World News
- 1200 R New Zealand M-F Late Edition
- 1210 BBCWS(cm) M-F Caribbean Report

#### Current Events Magazines/Features
- 1205 BBCWS(cm) M-F Weekend Magazine
- 1205 BBCWS(cm) S Agenda (travel)
- 1210 R Sweden M-F 60 Degrees North

### Business/Economics
- 1205 BBCWS(cm) M-F Caribbean Business
- 1210 BBCWS(cm) A Global Business
- 1245 R Sweden M-F Money Matters

### Science/Technology (incl. Health & Environment)
- 1210 BBCWS(cm) M-F Body and Mind (Health)
- 1245 BBCWS(cm) F Body and Mind (Health)
- 1245 R Sweden M Greenpeace (ecology-2nd wk.) Heartbeat (3rd wk.)

### Arts and Culture
- 1230 R Sweden A Spectrum (3rd wk.)

### Local Lives and Views
- 1230 R Australia M-F Late Night Live (discuss)
- 1230 R Sweden A Weekend (Europe magazine-1st wk.) Sweden Today (2nd wk.)
- 1245 R Sweden F Nordic Report (1st wk.) The S Files (Things Swedish-4th wk.)

### Informational Features
- 1230 R Australia A The Spirit of Things (spiritual matters)
- 1245 HCB M-F Weekend in Britain
- 1245 BBCWS(cm) M A Radio History of the World
- 1245 BBCWS(cm) F Patterns of Faith
- 1245 BBCWS(cm) F Patterns of Faith
- 1245 BBCWS(cm) F Patterns of Faith
- 1245 BBCWS(cm) F Patterns of Faith

### Music
- 1250 BBCWS(cm) S The Alternative (electic)
- 1250 BBCWS(cm) F Country Club
- 1250 BBCWS(cm) F Sound Quality (innovative)

### Entertainment/Variety, Magazine Shows
- 1200 BBCWS(cm) S Play of the Week (from 1130)
- 1205 BBCWS(cm) M-F Morning in the Mountains (from 1130)
- 1205 BBCWS(cm) M-F Best of "The Edge" (youth culture)
- 1205 BBCWS(cm) M-F Play the Week (radio theatre)
- 1210 BBCWS(cm) M-F Morning in the Mountains

### SWL, Media and Communications
- 1200 WWCR S World of Radio
- 1210 WWCR S Communications World
- 1230 WWCR S World of Radio

### Listener Contacts/Interactive
- 1215 WWCR S Ask WWCR
- 1250 WWCR S Ask WWCR

### Sport
- 1205 HCB M-F Sports News
- 1205 R New Zealand M-F World of Sport
- 1245 R Sweden M-F Spotmam

### 1500 UTC - Page 49 Freqs

#### Newscasts
- 1300 BBCWS(cm)(me)(eu) D News
- 1300 BBCWS(cm) D News
- 1300 BBCWS(cm) D News
- 1300 BBCWS(cm) D News
- 1300 BBCWS(cm) D News
- 1300 BBCWS(cm) D News

#### Current Affairs Magazine/Features
- 1305 BBCWS(cm) M-F Outlook
- 1310 R China Int. S Report on Developing Countries
- 1330 R Sweden M-F Global Review
- 1330 R Sweden M-F Today's Morning

### Business/Economics
- 1305 BBCWS(cm) M-F Global Business
- 1320 R China Int. M Daily Economists
- 1330 BBCWS(cm) S Global Business
- 1335 R Sweden M-F World Business Report

### Science/Technology (incl. Health & Environment)
- 1305 BBCWS(cm) M-F Discovery
- 1305 BBCWS(cm) M Health Matters
- 1345 R Sweden M Global Review
- 1345 R Sweden M Science Show

### Art/Culture
- 1305 BBCWS(cm) F Meridian -Screen (film/news)
- 1305 BBCWS(cm) M-F Meridian -Writing (books)
- 1320 R China Int. M In the Spotlight
- 1330 R Sweden M Spectrum (3rd Sat.)

### Local Lives and Views
- 1330 R New Zealand M-F People's Politics (Parliament)
- 1330 R New Zealand M-F The House (Canadian politics)
- 1330 R Canada Int. M People's Politics (Parliament)
- 1330 R Canada Int. M People in the Know
- 1330 R Canada Int. M Life in China
- 1330 BBCWS(cm)(eu) F Swedish Matters
- 1330 BBCWS(cm)(me) F Swedish Matters
- 1330 BBCWS(cm)(af) F Swedish Matters
- 1330 BBCWS(cm)(me) F Swedish Matters
- 1330 BBCWS(cm)(af) F Swedish Matters

### Informational Features
- 1305 R Australia M-F Weekend Around the World
- 1345 R Sweden F Review of the Newsweek
- 1345 R Sweden F Review of the Newsweek
- 1345 R Sweden F Review of the Newsweek
- 1345 R Sweden F Review of the Newsweek

### Music
- 1305 BBCWS(cm) M-F Weekend in Britain
- 1305 BBCWS(cm) S Weekend in Britain
- 1305 BBCWS(cm) S Weekend in Britain
- 1305 BBCWS(cm) S Weekend in Britain
- 1305 BBCWS(cm) S Weekend in Britain

### Entertainment/Variety, Magazine Shows
- 1305 BBCWS(cm) S The Alternative (electic)
- 1305 BBCWS(cm) S Country Club
- 1305 BBCWS(cm) S Sound Quality (innovative)
- 1305 BBCWS(cm) S Sound Quality (innovative)
- 1305 BBCWS(cm) S Sound Quality (innovative)

### SWL, Media and Communications
- 1300 WWCR S World of Radio
- 1300 WWCR S World of Radio
- 1300 WWCR S World of Radio
- 1300 WWCR S World of Radio
- 1300 WWCR S World of Radio

### Listener Contacts/Interactive
- 1315 WWCR S Ask WWCR
- 1330 WWCR S Ask WWCR
- 1330 WWCR S Ask WWCR
- 1330 WWCR S Ask WWCR
- 1330 WWCR S Ask WWCR

### Sport
- 1305 BBCWS(cm) M-F Sports News
- 1305 BBCWS(cm) M-F Sports News
- 1305 BBCWS(cm) M-F Sports News
- 1305 BBCWS(cm) M-F Sports News
- 1305 BBCWS(cm) M-F Sports News

### Music
- 1305 BBCWS(cm) M-F Jazzmattace
- 1305 BBCWS(cm) M-F Jazzmattace
- 1305 BBCWS(cm) M-F Jazzmattace
- 1305 BBCWS(cm) M-F Jazzmattace
- 1305 BBCWS(cm) M-F Jazzmattace

### Entertainment/Variety, Magazine Shows
- 1300 Channel Africa M/S Channel Africa Extra (weekend variety)

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**November 2001**

**MONITORING TIMES**

59
### 1400 UTC - Page 49 Freqs

**News**
- **1400** BBCWS(am)(eu)
  - **M-F** News
  - **S** News
  - **D** Current Affairs
  - **A** Economic Report
  - **F** Money Matters

**Science/Technology**
- **1405** BBCWS(wee)(am)
  - **M** Discovery
  - **T** Health Matters
  - **F** Science View
  - **W** One Planet (ecology)
  - **F** Greenpeace (2nd wk)

**Arts and Culture**
- **1405** BBCWS(wee)(am)
  - **T** Mandolin-Screen (film)
  - **R** Mandolin-Writing (books)
  - **S** Books and Writing
  - **R** Quirks and Quarks
  - **R** Art

**Sports**
- **1405** BBCWS(wee)(am)
  - **M** Football Extra
  - **F** Sports Roundup

**Listener Contact/Interactive**
- **1405** BBCWS(wee)(am)
  - **S** Talking Point (current events call-in)
  - **T** Melbourne
  - **F** Munich
  - **W** Sydney

### 1500 UTC - Page 50 Freqs

**News**
- **1500** BBCWS(wee)(am)
  - **M** News Summary
  - **F** News
  - **D** News
  - **A** Current Affairs
  - **R** Australia
  - **S** News
  - **D** News
  - **F** News
  - **A** News

**Science/Technology**
- **1500** BBCWS(wee)(am)
  - **M** Meridian - Music
  - **F** Meridian - Masterpiece
  - **D** Wonders of the World
  - **A** Wonders of the World

**Arts and Culture**
- **1500** BBCWS(wee)(am)
  - **A** Mandolin-Screen (film/series)
  - **R** Mandolin-Writing (books)
  - **T** In the Spotlight
  - **S** Waiting for the World

**Informal Features**
- **1500** BBCWS(wee)(am)
  - **M** Mandolin-Ideas
  - **R** New Dimensions ("progressive" ideas)
  - **A** Voices from Other Lands
  - **T** Essential Guide
  - **W** Everywoman
  - **F** Focus on Faith
  - **W** People and Places

**Music**
- **1400** BBCWS(wee)(am)
  - **S** Sounds Nordic (rock/pop/etc, 1st wk.)

---

### 1600 UTC - Page 50 Freqs

**News**
- **1600** BBCWS(wee)(am)
  - **M** News
  - **F** News
  - **D** News
  - **A** News

**Science/Technology**
- **1600** BBCWS(wee)(am)
  - **M** Science/Technology (incl. Health & Environment)
  - **F** Science/Technology (incl. Health & Environment)
  - **D** Science/Technology (incl. Health & Environment)
  - **A** Science/Technology (incl. Health & Environment)

**Arts and Culture**
- **1600** BBCWS(wee)(am)
  - **T** Mandolin-Screen (film/series)
  - **R** Mandolin-Writing (books)
  - **M** In the Spotlight
  - **F** Waiting for the World

**Informal Features**
- **1600** BBCWS(wee)(am)
  - **M** Mandolin-Ideas
  - **R** New Dimensions ("progressive" ideas)

**Music**
- **1600** BBCWS(wee)(am)
  - **S** Sounds Nordic (rock/pop/etc, 1st wk.)
### Panamsat Galaxy 6 - C-Band

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See ad on page 79 for satellite equipment from Universal Electronics.

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**Universal Video Descrambler**

For Free Information Package and Pricing: www.rcdistributing.com

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**Keep Your C-band System Running Strong!**

**BEST VALUES ON...**

- Receivers, including 4DTV & MPEG-2
- Dish Movers & LNBS, all kinds
- Tune-up Kits, Tools & Parts
- Toll-Free Technical Help

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**GE Americom GE-2 - Ku-Band**

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**Robert Smathers**

roberts@nmia.com

www.grove-ent.com/mssg.html

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**Panamsat SBS-6 - Ku-Band**

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Digital Satellites on the Horizon

I have been checking out the plans published by NOAA (National Oceanic and Atmospheric Administration), the World Meteorological Organization and EUMETSAT (Europe's meteorological satellite organization) for the transition to digital weather satellites (WXSATs), and realized just how much will change—though fortunately not for some time!

After several decades providing hobbyists and professional weather forecasters with near-continuous transmissions from the NOAA constellation, for which low-cost equipment is required for its reception, NOAA is planning to take advantage of the new technology for the next generation of WXSATs, for which low-cost near-continuous transmissions from the NOAA constellation, for which low-cost equipment is required for its reception, NOAA is planning to take advantage of the new technology for the next generation of WXSATs. I am looking at the plans for the new digital satellites in future editions because there is much to consider.

◆ Decoding 1980s' style

First we built frame-stores—electronic circuitry that decoded the incoming audio signal from a WXSAT receiver—that produced an image. The design for the most popular system came from an original article by a radio amateur with the call-sign YU3UMV (sorry, I cannot locate my copy of this article to confirm his name). With the costly electronic memory of that era, resolution was very limited, so displayed images could not be further enhanced. Photography was the only way to record images. I disposed of my frame-store in July, reluctantly accepting that despite its original cost, it had no further use.

In the late 1980s I bought an extremely expensive interface card that fit into my non-standard computer and could decode the audio previously done by the frame-store. Doing the same job by computer was vastly more efficient because the image could be manipulated.

Over a decade later, we can decode the high resolution digital images from NOAA WXSATs because they have remained in the same format, but technology has advanced enough for an advanced hobbyist to be able to buy or build reception hardware.

◆ Timetable for Digital WXSATs

Data supplied by World Meteorological Organization. Current scheduled polar WXAT launch timetable:

NOAA-M - previously scheduled for April 2001, but currently listed for March 21, 2002: APT and HRPT

NOAA-N - scheduled for December 2003: APT and HRPT

NOAA-N' - scheduled for July 2007: APT and HRPT

NPOESS-1 - scheduled for 2010: tentatively AHRPT and X-band (digital)

This launch list indicates that APT should continue to be available from NOAA satellites through to NOAA-N' in 2007. With a lifetime of two years, we can anticipate APT remaining with us until at least 2009. Anyone just entering the hobby of WXAT monitoring need not become concerned about acquiring redundant equipment just yet! For further information, there are a few web sites that carry (not always consistent) schedules. Watch this column for regular updates on other future digital WXSATs.

http://www.earth.nasa.gov/missions/ref_web/monoam.htm
http://www.wmo.ch/index-en.html

◆ WXSATs to monitor

During the recent cessation of transmissions from Meteor 3-5, its replacement, the elderly Meteor 2-21, was reactivated. Both these Russian WXSATs are long past their best, and both have developed problems of one form or another. Although picture quality remains limited, Meteor 3-5 can at least provide a reliable transmission from horizon to horizon.

Monitors have noticed the severe reception problems caused by the partly unfurled VHF antenna on Meteor 2-21 that results in very low signal strength during parts of its orbit. However, it is usually only transmitting during those periods when Meteor 3-5's orbital plane crosses through the zone of twilight where the illumination of its solar panels is at a low angle.

Meanwhile, NOAA-15 has suffered further image synchronization problems, and NOAA-12's APT has been off during its frequency clash with NOAA-15. APT has been thin this month!

◆ Pictures

Victor Beaulieu kindly sent me one of his first NOAA WXAT pictures, showing Florida, the Great Lakes, and Cuba. Victor is still experimenting with the settings in his software, but the reception of a first image is always an exciting event!

http://www.itchycoo-park.freeserve.co.uk/wxsats.htm
http://www.earth.nasa.gov/missions/ref_web/monoam.htm
http://www.wmo.ch/index-en.html

Dick Mobley examines his high quality HRPT images more carefully than I believe I do. He spotted a tiny "strange ring formation" in one of his Alaskan images—see figure 2. The "ring" is in the center of this close-up, and appears tiny. Dick analyzed the image and measured it at about 15km across. The close-up image suggested to me that it was the center of a low pressure system. An earlier pass (at 0125UTC) by NOAA-14 showed no sign of the ring, though the following pass showed it well defined.

◆ Frequencies

NOAA-14 transmits APT on 137.62 MHz
NOAA-12 and -15 normally transmit APT on 137.50 MHz
Meteor 3-5 may transmit APT on 137.30 MHz when in sunlight
Resurs 1-4 transmits APT on 137.85 MHz
GOES-8 and GOES-10 use 1651 MHz for WEFAX

Dick Mobley
Dick Mobley examines his high quality HRPT images more carefully than I believe I do. He spotted a tiny "strange ring formation" in one of his Alaskan images—see figure 2. The "ring" is in the center of this close-up, and appears tiny. Dick analyzed the image and measured it at about 15km across. The close-up image suggested to me that it was the center of a low pressure system. An earlier pass (at 0125UTC) by NOAA-14 showed no sign of the ring, though the following pass showed it well defined.

View From Above

Lawrence Harris
Lawrence@itchycoo-park.freeserve.co.uk
http://www.itchycoo-park.freeserve.co.uk/wxsats.htm

Fig 1: NOAA-15 image of USA from Victor Beaulieu

Fig 2: NOAA-12 0157UTC August 22, 2001
In the wake of the most serious attack ever on U.S. soil on September 11, some government communications systems continue to operate at full strength while others have relaxed their operational readiness condition.

In the hours immediately after the attacks monitors reported that the SHARES (Shared Resources) and Federal Emergency Management (FEMA) radio systems carried the heaviest activity on the shortwave radio bands.

**SHARES (Shared Resources)**

Shortly after the attack, the following message was posted to the SHARES public website:

**CURRENT OPERATION:**

**TIME:** 111400Z SEPT 01

**FROM:** Chairman, SHARES HF Interoperability Working Group

**TO:** SHARES Points of Contact, SHARES Stations, Emergency Response Personnel, NTCN-HF Stations, NCS RM-HF Stations,

**SUBJ:** SHARES Coordination Network Operational Level Change Notice 01-2

**REF:** NCSD 3-3, NCSH 3-3-1, NCSM 3-3-1, NTCN-HF Network Guide

**MESSAGE CONTAINS (7) PARAGRAPHS**

**MESSAGE FOLLOWS**

**PARA 1** This is SHARES Coordination Network (SCN) Operational Level Change Notice No. 01-2.

**PARA 2** Effective 111430Z SEPT 01 the SCN Operational Level is changed from Operational Level 3 to Operational Level 2.

**PARA 3** This SCN Operational Level change is requested by the FBI, the National Coordinating Center for Telecommunications (NCC), and the General Services Administration to support disaster operations in New York City and Washington, DC.

**PARA 4** Situation. The SHARES Coordination Network (SCN) will begin Level 2 operations effective 1430Z (10:30 a.m., EST) September 11, 2001, as a result of disaster operations which occurred at the New York City Twin Towers and at locations in Washington DC. Level 2 operations will continue until rescinded.

**PARA 5** Special Instructions. SCN check-in windows established for this operation are:

- September 11, 2001, - 1430Z to 1630Z (10:30 a.m., to 12:30 p.m., EST)
- September 11, 2001, - 2000Z to 2200Z (4:00 p.m., to 6:00 p.m., EST)
- September 12, 2001, - 0100Z to 0300Z (9:00 p.m., to 11:00 p.m., EST)

Check-in windows are established to assess the capability of SHARES to support this operation, and to provide station personnel an opportunity to check equipment and review procedures. Stations participating in this operation are requested to submit a Station Availability Report to one of the SHARES Coordination Stations conducting operations on any of the 10 SCN channels listed in NCSH 3-3-1, Chapter 1.

**PARA 6** SCN Operational Levels are designed to improve the responsiveness of the SHARES Coordination Network during emergencies. The three SCN Operational Levels are:

a. Operational Level 3: Conditions normal. No emergency exists. The ten-channel SCN may be used by SHARES station personnel for training and non-emergency operations.

b. Operational Level 2: Emergency potential exists. Non-emergency operations on the SCN suspended. SCN monitoring increased. Check-in windows established on the national and regional nets to receive Station Availability Reports.

c. Operational Level 1: Emergency exists. SHARES message support required. National and regional nets maintain full-period operations to receive Station Availability Reports, to list SHARES message traffic, and to coordinate the processing of SHARES messages.

**PARA 7** It is not the intent of this notice to direct the activation or participation of any SHARES station during this emergency. Participation in this or any emergency is on a voluntary basis in accordance with reference documents.

**END OF MESSAGE**

Within a week of the attack the Shares Coordination Net (SCN) had returned to operational level three (normal operations). See the above definitions of the three operational levels, and the Shares website (http://www.ncs.gov/-shares/shares.htm).

Radio hobbyists all across the United States heard a variety of communications on all of the SCN frequencies during the days immediately after the attacks. Here is a list of known SCN frequencies.
Even though the SHARES network has returned to normal operations, you can still follow net operations on a weekly basis. SHARES Coordination Stations nationwide conduct a weekly SHARES Net on the ten channels assigned to the SHARES Coordination Network (SCN) every Wednesday from 1600 to 1800 UTC. This Net is intended to give SHARES stations practice in sending Station Availability Reports, to allow propagation checks to different SHARES Stations, and to provide the opportunity to test equipment and antennas.

**FEMA Swings into Action**

As in most disasters one of the more prominent federal agencies working the disaster scenes in New York and Washington is the Federal Emergency Management Agency (FEMA) and its Urban Search and Rescue task forces.

---

### FEMA VHF/UHF Frequencies

The primary mode of local field communications within FEMA occurs on their VHF/UHF networks. Here is an extensive list of these networks used nationwide and within selected FEMA regions.

**Disaster Response**

- 136.125/141.875: FEMA Region 5/B
- 136.575/141.950: FEMA Region 4
- 139.450/142.425: FEMA Region 4/6
- 139.775/143.475: FEMA Region 9/2
- 139.925/143.000: FEMA New York City (Region 2)
- 139.925/142.975: FEMA Region 6
- FEMA Region 3/Region 10
- 140.025/143.000: FEMA Region 1/Region 7
- 140.900 Simplex: FEMA Region 1/9
- 140.725 Simplex: FEMA Region 5/B
- 141.725 Simplex: FEMA Region 4/6
- 141.850/143.850: FEMA Region 4/6
- 142.350 Simplex: FEMA Region 9
- 142.375 Simplex: FEMA Region 9/10
- 142.400 Simplex: FEMA Region 4
- 142.925 Simplex: FEMA Region 9
- 142.950 Simplex: FEMA New York City (Region 2)
- 142.975 Simplex: FEMA Region 9
- 143.050 Simplex: FEMA Region 10
- (Repeater input to 142.375)
- 143.600/143.000: FEMA Region 1
- 143.625 Simplex: FEMA Region 6
- FEMA Region 5/B
- 165.625/144.8625: Nationwide
- 173.7875 Simplex: Nationwide
- 408.400 Simplex: Nationwide
- 417.600 Simplex: Nationwide
- 417.700 Simplex: Nationwide
- 418.050 Simplex: Nationwide
- 418.075 Simplex: Nationwide
- 418.575 Simplex: Nationwide
- FEMA Urban Search and Rescue Cache
- 418.050 Simplex: FEMA Command 1
- 406.450 Simplex: FEMA Search and Rescue Team 1
- 415.950 Simplex: FEMA Search and Rescue Team 1 Tactical 3
- 416.275 Simplex: FEMA Search and Rescue Team 1 Tactical 4
- 407.125 Simplex: FEMA Search and Rescue Team 2 Tactical 5
- 416.475 Simplex: FEMA Search and Rescue Team 2 Tactical 6
- 416.725 Simplex: FEMA Search and Rescue Team 3 Tactical 7

And that does it for this month. Until next time, 73 and good hunting.
Making the Case for Simulcasting

A s new digital trunked radio systems replace their old analog predecessors, many scanner listeners find themselves no longer able to follow the action of the local police and fire departments. Until scanners that can monitor digital transmissions become commercially available, one option may be to simultaneously broadcast ("simulcast") some of the trunked radio transmissions on an analog radio channel that can easily be monitored.

Having been an avid monitorist since the OLD regency 10 channel through the Bearcat BC101 and so many others I cannot recall, I am stumped at trunking. I have recently moved back to my hometown of Springfield, Ohio. Here we used to have one fire repeater and PD the same. Now just this month they switched over to ComNet Ericsson digital and all is gone.

They are on five channels with the intent to go with mobile data terminals down the road. My problem is, as a monitorist and former volunteer firefighter, this town has lost eyes and ears of all the civilians who used to monitor: I am ready to compose a letter to mayor and city council requesting they patch the new system with the old and if something confidential comes up, kill the patch.

Have you heard of any other communities doing such a thing? I know Dayton fire continues to simulcast dispatch on VHF and hope that they will understand how many people they have cut out.

They have no intention of having a backup. High band will be forfeited back to the FCC. Local communication between the Sheriff's office and township fire departments is gone. Why and how can technology eliminate monitoring as we used to sit and passively listen to one channel? Most people think their scanner quit working. Well it did. I unplugged and put away an old pager I had used for almost 20 years, most recently as a monitor. It was a sad day.

Stephen

Springfield, Ohio

Yes, the old Springfield, Ohio, Police dispatch frequency of 159.090 MHz and Fire dispatch on 154.370 MHz appear to be gone. City Police and Fire services have transitioned to the new M/A Com EDACS system and are using ProVoice digital audio radios, which cannot be monitored by current scanners. Other city services are expected to stay in analog voice, so not everything is out of reach. The new system uses the following frequencies, listed in Logical Channel Number (LCN) order:

<table>
<thead>
<tr>
<th>LCN</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>866.8875</td>
</tr>
<tr>
<td>2</td>
<td>867.3875</td>
</tr>
<tr>
<td>3</td>
<td>867.9125</td>
</tr>
<tr>
<td>4</td>
<td>868.4625</td>
</tr>
</tbody>
</table>

I understand your frustration, Stephen, and I would encourage you to write those letters to the mayor and city council. I hope the information in this column will help you and so many others make the case in their community that other enlightened municipalities have made their public safety communications open and available to the public.

Cape Cod, Massachusetts

The Massachusetts State Police is the primary user of a statewide Motorola trunked radio system that has both Type I and Type II radios in service, referred to as a "hybrid." Because there are Type I radios in use, you'll need to use a fleetmap in your TrunkTracker scanner to properly display and follow the active talkgroups. The fleetmap for the Massachusetts statewide system is:

<table>
<thead>
<tr>
<th>Block</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>856.175</td>
</tr>
<tr>
<td>1</td>
<td>856.3625</td>
</tr>
<tr>
<td>2</td>
<td>856.3875</td>
</tr>
<tr>
<td>3</td>
<td>856.7375</td>
</tr>
<tr>
<td>4</td>
<td>857.2375</td>
</tr>
<tr>
<td>5</td>
<td>857.2625</td>
</tr>
<tr>
<td>6</td>
<td>857.7375</td>
</tr>
<tr>
<td>7</td>
<td>858.2625</td>
</tr>
<tr>
<td>8</td>
<td>859.2375</td>
</tr>
<tr>
<td>9</td>
<td>860.2625</td>
</tr>
</tbody>
</table>

Out on Cape Cod, each fire department generally has their own dispatch center with their own talkgroup on the statewide system. These departments also simulcast their dispatches on a separate 33 MHz lowband frequency. For instance, Falmouth Fire uses talkgroup 37552 and simulcasts on 33.78 MHz while Brewster simulcasts their talkgroup 37328 on 33.52 MHz.

The frequencies in use on the statewide system in western Cape Cod (referred to as "Zone 4") are 854.2125, 855.6625, 855.8875, 857.2375, 857.7265, 858.2125, 859.2125, 859.2375, 860.2125, 860.2375 and 860.4625 MHz.

Eastern Cape Cod uses another set of frequencies, but I don't have clear information about which ones are active and which ones overlap with Zone 4.

Ocean City, Maryland

The coastal resort town of Ocean City, Maryland, has operated an 11-channel EDACS system since 1993. Their frequencies, in LCN order, are 859.9875, 859.9625, 855.2375, 860.9875, 856.7375, 857.7375, 858.7375, 859.7375, 860.7375, 856.2375 and 857.2375 MHz.

Although their trunking system works fine, the Fire Department simulcasts several frequencies including dispatch on 158.895, fireground operations on 154.015 and medevac on 154.025 MHz. Coast Guard operations can be heard on 157.150 and County Fire Operations are available on 46.380 MHz.

Anne Arundel County, Maryland

Annapolitan in Maryland operates a Motorola Type II trunked radio system on:

<table>
<thead>
<tr>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>856.3625</td>
</tr>
<tr>
<td>856.3875</td>
</tr>
<tr>
<td>856.4125</td>
</tr>
<tr>
<td>857.3625</td>
</tr>
<tr>
<td>857.3875</td>
</tr>
<tr>
<td>857.4125</td>
</tr>
<tr>
<td>858.3625</td>
</tr>
<tr>
<td>858.3875</td>
</tr>
<tr>
<td>858.4125</td>
</tr>
<tr>
<td>858.4625</td>
</tr>
<tr>
<td>859.3625</td>
</tr>
<tr>
<td>859.3875</td>
</tr>
<tr>
<td>860.3625</td>
</tr>
</tbody>
</table>

Fire and Mutual Aid are simulcast on the following VHFs:

<table>
<thead>
<tr>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>150.010</td>
</tr>
<tr>
<td>150.340</td>
</tr>
<tr>
<td>150.175</td>
</tr>
<tr>
<td>150.280</td>
</tr>
<tr>
<td>150.250</td>
</tr>
</tbody>
</table>

Fairfax County, Virginia

Fairfax County, Virginia, is using an eight site Motorola ASTRO digital trunked system on the following 20 frequencies:

<table>
<thead>
<tr>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>852.9625</td>
</tr>
<tr>
<td>853.1875</td>
</tr>
<tr>
<td>853.3375</td>
</tr>
<tr>
<td>853.4625</td>
</tr>
<tr>
<td>853.4875</td>
</tr>
<tr>
<td>853.6375</td>
</tr>
<tr>
<td>853.7875</td>
</tr>
<tr>
<td>853.9125</td>
</tr>
<tr>
<td>854.1375</td>
</tr>
<tr>
<td>854.1625</td>
</tr>
<tr>
<td>854.2875</td>
</tr>
<tr>
<td>854.4625</td>
</tr>
<tr>
<td>854.9255</td>
</tr>
<tr>
<td>855.875</td>
</tr>
<tr>
<td>856.2625</td>
</tr>
<tr>
<td>856.7265</td>
</tr>
<tr>
<td>856.2565</td>
</tr>
<tr>
<td>856.2625</td>
</tr>
<tr>
<td>856.2765</td>
</tr>
</tbody>
</table>

Fire and Rescue, using talkgroup 00176, will also be simulcast on 460.575 MHz, although it's not clear whether that arrangement will be permanent.

Kempsville, Virginia

Continuing down the Atlantic coast, the community of Kempsville in the Hampton Roads area uses the Virginia Beach, Virginia, trunked radio system for their fire and rescue communications. A simulcast of their activity is transmitted on 155.175 MHz. Their reasoning is that the rescue squad, which is all-volunteer, makes heavy use of scanners and pagers!

* The Virginia Beach municipal trunked radio system is a Motorola Type III (hybrid) system and uses the following frequencies:

<table>
<thead>
<tr>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>854.625</td>
</tr>
<tr>
<td>856.4875</td>
</tr>
<tr>
<td>856.7125</td>
</tr>
<tr>
<td>856.7375</td>
</tr>
<tr>
<td>856.4625</td>
</tr>
<tr>
<td>856.4875</td>
</tr>
<tr>
<td>857.7265</td>
</tr>
<tr>
<td>857.7375</td>
</tr>
<tr>
<td>857.4625</td>
</tr>
<tr>
<td>857.4875</td>
</tr>
<tr>
<td>857.9255</td>
</tr>
<tr>
<td>857.9375</td>
</tr>
<tr>
<td>858.625</td>
</tr>
<tr>
<td>858.675</td>
</tr>
<tr>
<td>860.7125</td>
</tr>
<tr>
<td>860.7375</td>
</tr>
</tbody>
</table>

The fleetmap for this system is:

<table>
<thead>
<tr>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Block 0</td>
</tr>
<tr>
<td>Block 2</td>
</tr>
<tr>
<td>Block 4</td>
</tr>
</tbody>
</table>
There is a Fire and Rescue talk-around channel on 852.4125 MHz that is occasionally used while on-scene, but you have to be fairly close to the action to hear it.

Kempf Fire and Rescue units are also equipped with backup VHF radios set for the following frequencies:
- 858.4125
- 856.3875
- 856.4125
- 851.3815
- 857.4125
- 858.3815

Motorola system using:

Website

2001, column, and I've got more details on my vehicle. This silliness was covered in my August issue of Monitoring Times "Trucking the Trunks."

A Saginaw County, Michigan

Saginaw County, Michigan operates a Motorola Type I trunked radio system on the following frequencies:
- 866.5875
- 866.8125
- 867.0625
- 867.3125
- 867.5375
- 867.7625
- 868.0625
- 868.3500
- 868.6000
- 868.7875 MHz.

Lapeer County Fire Dispatch simulcasts on 151.130 primarily for department members with pagers and scanners. It's also reported that Lapeer County in southeast Michigan operates a three-site Motorola Type II trunked radio system on the following frequencies:
- 852.3125
- 852.7125
- 853.0125
- 853.1125
- 853.3625
- 851.0125
- 851.3625
- 851.7125
- 853.125
- 852.0125
- 852.2375
- 851.5625
- 851.9625
- 852.4125
- 852.8125
- 853.2125
- 853.6125
- 853.9125
- 854.3625
- 854.7125
- 855.0375
- 855.1125
- 855.3875
- 855.7125 MHz.

Central Dispatch for City and County Fire uses talkgroup 1360 and simulcasts on 154.250 MHz.

As a reminder, listeners should be aware that Michigan law requires a permit in order to legally possess and use a scanner in a motor vehicle. This silliness was covered in my August 2001, column, and I've got more details on my website at http://www.signalharbor.com/michigan.html.

Fulton County, Georgia

Fulton County, Georgia covers part of the Metro Atlanta area and operates a hybrid Motorola system using:
- 853.0375
- 854.5125
- 854.5625
- 855.6625
- 855.7375
- 855.8375
- 855.4125
- 855.875
- 856.125
- 856.3875

The fleetmap for this system is:
- Block 0
- Block 1
- Block 2
- Block 3
- Block 4
- Block 5
- Block 6

This corresponds to preset 1P13 on TrunkTracker scanners.

The Fulton County Fire Dept uses talkgroup 101-1 and simulcasts on 154.325 MHz.

Dayton, Ohio

The city of Dayton, Ohio, home of Hara Arena and the annual Dayton Hamvention, operates a Motorola Type III (hybrid) trunked radio system that includes the Cox-Dayton International Airport. Frequencies used are:
- 856.2125
- 856.4255
- 856.7125
- 856.9625
- 857.425
- 857.7125
- 857.9625
- 858.2125
- 858.4625
- 858.7125
- 858.9625
- 860.2125
- 860.4625
- 860.7125

The fleetmap for this system is:
- Block 0
- Block 1
- Block 2
- Block 3
- Block 4
- Block 5
- Block 6

Dispatch and paging from the Dayton Fire Department are simulcast on 154.430 MHz.

Other Simulcast Cities?

The municipalities I’ve listed here are just a few of the many places that make it easy for the casual scanner listener to hear public safety communications. Many towns make their frequency lists and talkgroup assignments available to anyone who asks, and a few cities even put their transmissions on the Internet!

I welcome further input from readers on trunked systems they monitor that also simulcast on a VHF or UHF channel. Perhaps with enough examples of open and available radio systems, people like Stephen will be able to convince their local officials to reconsider closing out scanner listeners.

Arkansas

In the Sept. 2001 issue, there was a list of Arkansas State Police frequencies, and a question was asked if anyone could confirm that the Arkansas Highway Police are still using 150.995 MHz. Yes they are, and I believe the input is 154.665 MHz. They also use 155.475 MHz simplex for chitchat. Also the Arkansas State Troopers use 154.785 MHz for their car extenders.

Lynn, Springdale, Arkansas

Several other readers also wrote in to confirm 150.995 MHz as the primary VHF frequency used by the Arkansas Highway Patrol.

The city of Phoenix dispatches 20 fire departments and fire districts throughout Maricopa County using the Phoenix Regional Communications Center located in downtown Phoenix. It is unclear how the other agencies would be affected by the new radio system. The police department is supposed to go digital once the system is in place, however one positive thing for scanner listeners is that the Fire Department has stated that they do not wish to go digital until there is a digital-capable scanner on the market, available to the media and general public. The Phoenix Fire Department has made it clear that they do not wish to provide digital radios to the media for monitoring purposes.

At this point, the Phoenix Fire Department and the many agencies they dispatch can all be heard on VHF frequencies in the 154 MHz band. The Police Department uses both VHF and UHF frequencies. I hope this helps, and if there are any further questions I will try to be of help.

Charles Simmont
http://www.incidentcommandpage.com

Great information, Charles, thanks for the detailed update.

That's all for this month. More information is available on my website at http://www.signalharbor.com, and I welcome your email at dan (q) signalharbor.com. Until next month, happy monitoring!

NOT CE: It is unlawful to buy cellular capable scanners in the United States made after 1993, or modified for cellular coverage, unless you are an authorized government agency, cellular service provider, or engineering/service company engaged in cellular technology.

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  - Spectrum scan
  - $699
  - Computer control
  - Flexible dynamic memory bank layout
  - Optional CTCSS & Extra memory boards

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  - Spectrum scan
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  - Channel scope
  - Superb sensitivity, Clear sound
  - Various scanning modes - Menu system

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  - Can be used with your Desktop or Portable PC
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SCATANA’s Trial by Fire

Shortly after the attacks on the World Trade Center and Pentagon in September, the President invoked a little known Air Defense Emergency plan – one that had never been used since its inception. Under this plan the North American Air Defense Command (NORAD), in conjunction with the Federal Aviation Administration (FAA) and the Federal Communications Commission (FCC), would order the immediate grounding of all commercial aircraft in U.S. airspace and offshore of the U.S. coast.

Developed in the 1960s, SCATANA – Security Control of Air Traffic and Navigation Aids – authorizes NORAD, the FAA, and the FCC to impose these restrictions in order to clear the skies for bomber and missile operations. According to the FAA, “Emergency security control of air traffic and/or the actual securing of navigational aids has never been accomplished.” Once SCATANA was implemented, a wartime air traffic priority list (WATPL) was established to allow essential personnel and aircraft to use U.S. airspace. Designated “priority one” on the WATPL was the President of the United States, the Prime Minister of Canada, their respective essential national security staffs, aircraft engaged in continental defense missions, retaliatory aircraft and their support aircraft (for example, refueling tankers), and airborne command posts.

While the military rationale for SCATANA is understandable, the feasibility of its implementation (particularly given the significant increase in air travel since the 1960s) was dubious. Until September 11, 2001, the program was tested regularly only via simulations. According to the FAA, “Emergency security control of air traffic and/or the actual securing of navigational aids has never been accomplished.” SCATANA has apparently been activated only once, by accident. During a false alert on November 9, 1979 – triggered when a technician at NORAD inserted a computer tape used to simulate a nuclear attack into the online warning system – FAA controllers at some locations were directed to order commercial airliners to prepare to land immediately. After six agonizing minutes, the indications of a full-scale Soviet attack were determined to be false, based on contrary data from early warning sensors, and the order was rescinded.

Who is NORAD?

The North American Aerospace Defense Command (NORAD) is a binational United States and Canadian organization charged with the missions of aerospace warning and aerospace control for both countries. Aerospace warning includes the monitoring of man-made objects in space, and the detection, validation, and warning of attack against North America whether by aircraft, missiles, or space vehicles, utilizing mutual support arrangements with other commands.

The military head of NORAD is known as CINC NORAD or Commander-in-Chief NORAD. That flag officer is appointed by, and is responsible to, both the President of the United States and the Prime Minister of Canada. The CINC maintains his headquarters at Peterson Air Force Base, Colorado, and a command and control center a short distance away at the Cheyenne Mountain Air Station.

Cheyenne Mountain serves as a central collection and coordination facility for a worldwide system of sensors designed to provide the CINC and the National Command Authorities of the U.S. and Canada with an accurate picture of any aerospace threat.

NORAD’s surveillance and control responsibility for North American airspace is divided among its three NORAD Regions headquartered at Elmendorf AFB, Alaska (Alaska NORAD Region, ANR), Canadian Forces Base Winnipeg, Manitoba (Canadian NORAD Region, CANR), and Tyndall AFB, Fla. (Continental U.S. NORAD Region, CONR)

The Canadian NORAD Region (CANR), which covers the entire country, is divided into two parts, Canada East and Canada West, each having a Sector Air Operations Center (SAOC). Both SAOCs are located in the underground complex at Canadian Forces Base (CFB) North Bay, Ontario. Each SAOC compiles and analyzes the data from its radars, then forwards any significant information to Headquarters CANR, at CFB Winnipeg. Pertinent information is then sent to NORAD in Colorado.

The Continental U.S. NORAD Region also covers the entire country and is divided into three SAOCs – West, Southeast and Northeast. Each SAOC compiles and analyzes the data from its radars, then forwards any significant information to the Region headquarters at Tyndall. Pertinent information is then sent on to NORAD at Cheyenne Mountain.

How do they do their job?

To accomplish the aerospace warning mission, CINC NORAD is responsible for providing integrated tactical warning and attack assessment (ITW/AA) of an aerospace attack on North America to the governments of Canada and the United States. This is done using information made available by the ITW/AA system. Portions of that system are under the operational control of CINC NORAD and other portions are operated by commands supporting NORAD.

For example, ground based radars to detect air-breathing threats are under operational control of CINC NORAD, while missile warning and space surveillance are provided by U.S. Space Command. To ensure the timely flow of warning information to NORAD, CINC NORAD is also the Commander in Chief of U.S. Space Command.

NORAD’s aerospace control mission includes detecting and responding to any air-breathing threat to North America. To accomplish this mission, NORAD utilizes a network of ground based radars and fighters to detect, intercept and if necessary engage any air-breathing threat to the continent. These fighters consist of U.S. F-15s and F-16s and Canadian CF-18s. As a part of its aerospace control mission NORAD also assists in the detection and monitoring of aircraft suspected of illegal drug trafficking. This information is passed to civil...
ian law enforcement agencies to help combat the flow of illegal drugs into North America.

To accomplish its surveillance mission, NORAD employs a variety of sensors. Aircraft penetrating each sensor’s area of responsibility are detected and reported to the appropriate SAOC for identification.

One of these sensor systems is the North Warning System (NWS) which consists of 15 minimally-manned, long-range radars (11 in Canada, four in Alaska) and 39 unattended short-range radars (36 in Canada, three in Alaska), which form a 3,000 mile long and 200 mile wide “tripwire” along the Arctic Circle from Alaska to Newfoundland. The NWS provides surveillance of potential attack routes via Arctic airspace and is currently operational.

**E-3 Airborne Warning and Control System (AWACS)**

Airborne radar coverage is provided to NORAD by the E-3 AWACS aircraft on an as-required basis. Canada contributes military personnel to AWACS operations. The United States Air Force AWACS assets provide an improvement in coverage over ground-based radars and augment the perimeter radar system in times of increased alert. AWACS aircraft can detect targets out to ranges of about 350 miles, then guide Canadian or U.S. interceptors to visually identify the unknown aircraft.

Two Canadian bases are used for AWACS operations: CFB Cold Lake, Alberta, and the Royal Canadian Mounted Police (RCMP) in Bagotville, Quebec. The main base in the United States for AWACS aircraft operation is at Tinker AFB in Oklahoma.

**Air Defense**

The Canadian Air Division is the military organization responsible for providing combat-ready air forces to meet Canada’s commitments to the defense of North America and to maintain the sovereignty of Canadian airspace.

Canadian air defense forces assigned to NORAD include 441 and 416 Tactical Fighter Squadrons at CFB Cold Lake, Alberta, and the 425 and 433 Tactical Fighter Squadrons at BFC Bagotville, Quebec. All four squadrons fly the CF-18 fighter aircraft. Additionally, 21 Aircraft Control and Warning Squadrions at CFB Cold Lake, Alberta, and the Royal Canadian Mounted Police (RCMP), NORAD monitors all air traffic approaching the coast of North America. Any aircraft that has not filed a flight plan may be directed by NORAD assets to land and be inspected by the law enforcement authorities.

**NORAD’s Newest Mission – Counter Drug Surveillance**

In 1989 the U.S. government decided to attack the drug problem along three lines: countering the production of illegal drugs at their source; detecting and stopping their transit into North America; and, reducing distribution and use throughout the United States. In 1991, NORAD was tasked with carrying out the second line of defense – the detection and monitoring of the aerial drug smuggling threat into North America.

The U.S. government consulted with the Canadian government on the counterdrug mission and Canada fully concurred with proposed NORAD drug interdiction efforts. In cooperation with U.S. law enforcement agencies and the Royal Canadian Mounted Police (RCMP), and NORAD monitors all air traffic approaching the coast of North America. Any aircraft that has not filed a flight plan may be directed by NORAD assets to land and be inspected by the law enforcement authorities.

**On September 11th where did everyone go?**

Shortly after the attack on New York and Washington, civilian aircraft frequencies went quiet as aircraft were commanded to land at the nearest airport. By early evening on September 11 there was an eerie silence throughout the 108-137 MHz civilian aircraft band. But just 1 MHz above the band edge, military air-to-air frequencies were hopping and the 225-400 MHz band was brimming with activity. For future reference, Table 1 is a list of NORAD air defense frequencies used nationwide.

And that does it for this edition of Milcom. Until next time, 73 and good hunting.
RDS and Automatic IDs

One of the biggest challenges for most radio hobbyists is identifying the stations they hear. Murphy’s First Law of Broadcast DXing is “The station will fade into the noise exactly on the hour, just in time to miss the identification announcement.” DXers would love to see a scheme that would allow automatic identification of their catches.

For FM DXers, such a system already exists. The “Radio Data System,” or “RDS,” got its start in Europe. In most European countries, large networks of simulcasting FM stations exist. For example, BBC Radio 3 is carried on over 100 transmitters throughout the British Isles. A system that would make it easier for the British listener to quickly find BBC-3 frequencies as he travels would be quite useful. Today, the use of RDS is nearly universal among European stations — even unlicensed “pirate” stations have been reported using it. European FM DX reports include long lists of RDS codes.

Here in North America, adoption has been much slower. Wide-area networks of simulcasting stations are a recent development; systems for automatically tuning radios to alternate transmitters aren’t nearly as important. However, a number of U.S. and Canadian stations are using RDS. Here, too, RDS can be a valuable tool for the DXer.

Actually, there is no such thing as RDS in North America; for some reason it’s called the “Radio Broadcast Data System,” or “RBDS,” instead. RDS and RBDS are essentially identical from a technical standpoint. A stream of digital data is transmitted at 1187.5bps on a 57 kHz subcarrier. FM signals have long carried subcarriers; broadcasting in stereo requires a “1-L” subcarrier. FM signals have long carried subcarriers; broadcasting in stereo requires a “L-R” subcarrier at 38 kHz. Subcarriers are ultrasonic signals, transmitted along with the program audio. (Those familiar with obsolete computer technology may ask why 1187.5bps instead of the more standard 1200? 1187.5 is exactly 1/48 of the 57 kHz subcarrier frequency. This makes it easier to synchronize decoders to the RBDS data stream.)

At least ten different types of message can be transmitted on this data stream. The most important are the Program Identification (PI); the Program Type (PTY); the Program Service (PS); the Alternative Frequency (AF); and the Radiotext (RT) messages.

Program Type indicates the “format” of the station. News, sports, rock, country, etc. A tourist, looking for a classic rock station, doesn’t have to wait through an interminable block of commercials to tell what kind of music he’ll hear when the ads end. Codes used in North America are different from those used in Europe; if you get a European RDS decoder, it may tell you your local top-40 station is religious.

Program Service is the name of the station. Transmitted about once a second, it’s intended to be the name the station is known by among its listeners. Luckily for the DXer, most stations choose to put their callsign in this field. However, there are a few exceptions — for example, WQLT in Florence, Alabama, uses “Q107.” Also, this message is sent only about one-tenth as often as the Program Identification.

Alternative Frequency messages inform the receiver of other transmitters carrying the same program. Code 005 tells the receiver to check 88.1 MHz; 007 checks 88.3; etc. Special codes indicate there are no other frequencies; or that between one and 25 alternate frequencies follow; or that an there’s an alternate frequency on AM. (Unfortunately there don’t appear to be any provisions for AM alternate frequencies in the Americas. AM AF codes are for the 9kHz European channels.)

Radiotext allows the display of short messages. On the stations I’ve seen, such messages simply display the station’s slogan. (“WYNU - Jackson / Classic rock that ROCKS”) In some other cities, stations are transmitting the name of the record that’s on the air. That doesn’t help the DXer very much, but it’s certainly valuable if you hear a record you like on one of those stations that never tells you what they play!

The most important code to the DXer is the Program Identification. It’s transmitted roughly 11 times a second. It’s a four-digit hexadecimal number, and maps directly to the station’s call letters. (A DXer’s dream — 11 IDs every second!) KAAA is assigned the code 1000; KAAB is 1001; KAAC is 1002, etc. KZZZ is 54A7; WAAA is 54A8. Mapping in Canada is less structured. Some Canadian stations are simply replacing the C in their callsign with a W and using the appropriate U.S. code. Blocks between C000 and CFFF are assigned specifically to Canada, and many CBC stations are using them.

The bad news: RDS receiving equipment is relatively difficult to find in North America. The Radio Shack DX-398 is probably the only reasonably-priced receiver available here that will decode RDS. (As I write, the DX-398 is on sale for $100 off, a very good deal! Whether it will still be on sale when you read this is a good question.) A number of DXers have obtained European decoders like the one in the photograph, but this model has been discontinued and is no longer available either in Europe or here. A demodulator is easy to build, provided you can obtain the necessary parts. (U.S. vendors seem to be demanding an unreasonable minimum order.) Some car radios now include RDS decoders. If your radio offers this feature, be sure to check it from time to time. You might find some surprise DX!

**Bits and Pieces**

Another long-standing radio tradition in New York City is going by the wayside. According to a Daily News item forwarded by Robert Thomas, WEVD-1050 has been leased to ABC for two years for $78 million, with an option for ABC to buy the station. WEVD will drop its liberal talk format and switch to ESPN Radio, an all-sports format. WEVD has a decades-long presence on the NYC dial. It’s moved around a bit — sharing 1330 with another station for years, moving to 97.9 FM, then trading that FM frequency to a Hispanic broadcasting company for the 1050 AM spot. ABC is already leasing WQXR-1560 for their Radio Disney network.

Have you been DXing with RDS? Write me at Box 98, Brasstown NC 28902-0098, or by email to w9wi@w9wi.com. Good DX!
Kirk Trummel, 1963-2001

Kirk Trummel, 37, one of the most prominent leaders of the North American free radio movement, passed away on August 15. Trummel lost a fight against pancreatic and liver cancer. It was Kirk’s desire that memorial contributions should be made to the Skoane Kettering Institute for Cancer Research.

Trummel’s influence on shortwave pirate radio was enormous. With John Cruzan, he started the Free Radio Network web site, still the best pirate radio web site on the Internet at the http://www.frn.net/ URL. He operated a number of pirate radio stations, most notably the widely heard Radio Doomsday, using an alias of Nemesis. He edited the Dialogs logging column in The ACE for a number of years. Kirk edited the very comprehensive "Black Book" Europirate address directory. His frequency coordination work is largely responsible for the fact that most North American pirates still operate in the vicinity of 6955 kHz.

Kirk had many scores of friends in the shortwave radio hobby, and we all miss him.

Biafra Back On

Veteran DXers will remember the Biafran separatist movement in Nigeria during the 1960’s. This old political struggle has now returned to shortwave via the clandestine Voice of Biafra International. It’s been widely heard for an hour at 1900 UTC on 12150 kHz. Interval signals from the Voice of Russia on the frequency have created speculation that the transmitter site might be in Russia.

An internet site at http://www.biafraland.com provides more information on the sponsoring rebel group. Thus far biafraland@biafraland.com has been announced for e-mail contact, and their postal address is the Voice of Biafra International, 733 15th Street, North West, Suite 700, Washington, DC 20005.

What We Are Hearing

MT readers heard all of these stations this month. Unless noted they operate near 6955 kHz, but it pays to tune around about 5 kHz on either side of this standard North American pirate frequency.

All Your Base Radio - We start with a new one this month. It features computer generated music. (Uses aybradio@yahoo.com e-mail)

Boredom Radio - The miscellaneous music on this new one is hosted by an announcer with a British accent. (None)

Crunch Radio - Their musical programming is not strictly formatted. One recent show specialized in female vocalists. (None)

High Sierra Radio - Best heard on the west coast, Houn-Toad Hal’s country music station uses a “station of the high desert” slogan. (None)

KBAF - This veteran has returned with rock music and pirate radio discussions. (None; asks for logs in The ACE)

KIPM - Alan Maxwell’s bizarre and elaborate dramas will either fascinate or repel you. (Elkom)

KRAQ - With an ID of “The Voice of Castlegar,” this new west coast Canadian pirate has created a stir with its occasional activity on 6940 kHz. (None)

KRMI - Radio Michigan International claims to broadcast its rock music from Port Huron. (Uses KRMI6955@hotmail.com e-mail)

Mystery Science Radio - Cherokee Jack normally hosts music on this evolving pirate. Note the return of a famous maildrop location. (Wellsville)

Paragon Rccio - The format on this one’s early shows was poetry read over blues music, but there has also been religious content. (None)

Psyco Radio - The new spelling that we use here this month is derived from this very active pirate’s new e-mail address. (Uses psychoradiodio@yahoo.com e-mail)

Radio Bingo - The radio bingo game usually includes cameos by other pirates and various audio clips in addition to the game. (Merlin)

Radio Doomsday - Some pirates fired up tapes of old programs from Nemesis, in memorium to Kirk Trummel. (None, of course)

Voices of the Angry Bastard - Despite his ID, this guy normally plays music and fails to display the anger. (Belfast)

WAIR - Not to be confused with Partial India Radio, this pirate is a new parody of the international broadcaster in India. (None)

WMFO - They still plug away with rock music, heavily laced with ID’s and promotion of the QSL process. (Providence)

Z-100 - Some pirates emulate commercial rock music formats; this is a fine example. (Uses bigz100fm@yahoo.com e-mail)

Reports and QSLs

Receipt reports to pirate stations require three first class stamps for USA mail drops or $2 US to foreign locations. This finances postage for a souvenir QSL to your mailbox. Letters go to these addresses: PO Box 1, Belfast, NY 14711; PO Box 28413, Providence, RI 02908; PO Box 422, Wellsville, NY 14895; PO Box 69, Elkom, NE 68022; 245 Elrod Martin Road, Somerset, KY 42503; and PO Box 293, Merlin, Ontario N0P 1W0, Canada.

A few pirates prefer e-mail, bulletin logs or internet web site reports instead of snail mail correspondence. Reports to the Free Radio Network (FRN) go to http://www.frn.net/ on the web. Free Radio Weekly loggings go via niel@ican.net e-mail. Sample copies of The ACE are $2 via the Belfast maildrop.

Thanks

Your input is always welcome via PO Box 98, Brasstown, NC 28902, or via the e-mail address at the column.

We thank all of our contributors: John T. Arthur, Belfast, NY; Kirk Baxter, North Canton, OH; Artie Bigley, Columbus, OH; David Carpen- ter, Southern Pines, NC; Ross Comeau, Andover, MA; Michael Folk, Covington, KY; Harold Frogge, Midland, MI; Captain Ganga, Belfast, NY; William Hassig, Mount Prospect, IL; Ralf Haenggi, Gfell, Switzerland; Vince Havrilko, Beale AFB, CA; Harald Kuhl, Germany; Chris Lobdell, Stoneham, MA; Dr. Love, Belfast, NY; Janice Laws, Montreal, Quebec; Greg Majewski, Oakdale, CT; Bill McClellan, Minneapolis, MN; Frederick Moe, Windsor NH; Alan P. Masysz, Winona, MN; Pat Nobel, Eugene, OR; Lee Reynolds, Lemmster, NH; Fred Roberts, Germany; Martin Schoech, Meersburg, Germany; Tom Sevart, Frontenac, KS; Lee Silvi, Mentor, OH; Bud Stacey, Setsuma, AL; and Niel Wolfish, Toronto, Ontario.
A/N Range Signal Retrospect

From time to time, we’ve mentioned the “A/N Radio Range” signals commonly heard on the longwave band up until the 1970s. In some ways, these stations were similar to today’s NDBs, but they also offered basic flight path navigation, using a directional-antenna array at the transmitter. Depending on which side of the beam an aircraft was flying, the Morse Code letters A or N would be heard by the pilot. Perry Crabill (VA) wrote to share some of his recollections of these stations from the 1930s. It offers unique insight into these now-extinct stations which have been almost forgotten. "As a youngster, I lived in Washington, DC, and in the 1930s I used to listen to these stations in the band from 200-400 kilohertz (kilocycles in those days). The Washington range station used the call letters WWX, and operated on 332 kHz, the same frequency as DC-332 uses now. It had a four-tower Adcock antenna system on the east bank of the Potomac River, more or less across from Washington National Airport. "Four-course systems had a radiation pattern with two azimuth quadrants at 180 degrees from each other where aircraft would hear the Morse letter ‘A,’ keyed with a 1020 Hz tone. If they were in either of the other two quadrants, the letter was ‘N.’ If you were on the beam, (i.e., on the overlapping boundary between two quadrants), you heard a continuous 1020 Hz tone. The phasing and amplitude of the currents in the four towers was controlled to put the overlap areas on the desired azimuths for leading aircraft to the nearby airport. "The ‘A’ and ‘N’ keying was periodically interrupted to send the call letters (WWX, for example), first in one pair of quadrants, and then in the other, whereupon the navigational keying was resumed. "The ‘beam’ frequency was also used for communication to and with aircraft. In addition, local aviation weather information was sent on a broadcast basis on regular schedules. Originally, it was necessary to interrupt the navigation signals to do this. If the broadcast was longer than three minutes, it was stopped and the navigational signals resumed for a period so aircraft would not be without guidance too long. "Later, techniques were developed that allowed simultaneous voice and range signal operation. Aircraft receivers could be equipped with an L/C filter that had a choice of bandpass operation at 1020 Hz for beacon reception, or band rejection at 1020 Hz for clearer reception of the voice signals. The filter could also be switched out, if desired. One of these was the FL-5 filter, a popular WWI surplus item. Added outboard to a ham receiver, it afforded excellent audio selectivity for CW reception. "The voice communication capability of the range station was also used to talk to aircraft calling in on shortwave. The planes usually called in on 3105 or 6210 kHz. The lower frequency was the night frequency for itinerant aircraft, and 6210 was the day frequency. "In those days all airport control towers used 278 kHz to communicate with aircraft, which transmitted to them on shortwave. To the best of my knowledge, these tower stations did not use call letters on the air. US call signs beginning with ‘WW’ were assigned to the US Department of Commerce, hence WWX for the range station at Washington. A well-known example of such a call is WWV for the standard time and frequency station at Boulder, Colorado, originally located at Greenbelt, Maryland. If you look at the longwave listings in Tom Kneitel’s Radio Station Treasury you will find a number of these calls listed, and I believe these were all for aeronautical applications." Longwave Loggings

We have loggings this month from Lou Rossetti, N1PUX (MA) and Bruce Collier, WB3HVV (PA). Lou uses a Sony 2010 receiver coupled to a 15" homebrew loop antenna. His receiving location is roughly 200 feet above sea level, giving him a view of the Boston skyline, and a clear view to the South. He is studying the effects of outside street wiring and solar activity on his LW reception.

Bruce Collier’s home QTH is Pennsylvania, but his loggings were made while vacationing in Chincoteague, VA. He used a Realistic DX-390 (Sangean 818) with the built-in antenna. Bruce adds that his loggings were made outdoors under a covered wooden swing bayside - talk about a great DX site! Table 1 lists this month’s loggings. I welcome all reader loggings in this column. Why not gather your best intercepts and send them to me at BELOW 500 kHz, 7540 Hwy 64 West, Brassstown, NC 28902? You may also send loggings via e-mail using the address in the masthead. It is appreciated if logs are submitted in the format shown in the table. To the Letter

One of the attractions of beacon DXing is that you don’t need to know the code to enjoy it. Beacons typically send their IDs slow enough to allow the dots and dashes to be written down and looked up on a Morse code chart. With the DX season now in “prime time,” I’m presenting a “clip & save” Morse Code chart in Table 3 for this purpose. Happy Thanksgiving to all. See you next month.

Table 1. Selected Longwave Loggings

<table>
<thead>
<tr>
<th>FREQ</th>
<th>ID</th>
<th>LOCATION</th>
<th>BY</th>
</tr>
</thead>
<tbody>
<tr>
<td>368</td>
<td>MFF</td>
<td>Meffs, VA</td>
<td>B.C. (VA)</td>
</tr>
<tr>
<td>404</td>
<td>YSL</td>
<td>St. Leonard, MD</td>
<td>B.C. (VA)</td>
</tr>
<tr>
<td>366</td>
<td>YMV</td>
<td>Monmouth, OR</td>
<td>B.C. (VA)</td>
</tr>
<tr>
<td>340</td>
<td>YJ</td>
<td>Mt. Joli, QC</td>
<td>B.C. (VA)</td>
</tr>
<tr>
<td>263</td>
<td>OY</td>
<td>Sydney, NS</td>
<td>B.C. (VA)</td>
</tr>
<tr>
<td>216</td>
<td>CLB</td>
<td>Wilmington, NC</td>
<td>B.C. (VA)</td>
</tr>
<tr>
<td>198</td>
<td>DWW</td>
<td>Dixon, NC</td>
<td>B.C. (VA)</td>
</tr>
<tr>
<td>162</td>
<td>ALL</td>
<td>Allora, Fr. (WBC)</td>
<td>B.C. (VA)</td>
</tr>
<tr>
<td>220</td>
<td>HMM</td>
<td>Mansfield, MA</td>
<td>L.R. (MA)</td>
</tr>
<tr>
<td>251</td>
<td>SKR</td>
<td>Bedford, MA</td>
<td>L.R. (MA)</td>
</tr>
<tr>
<td>327</td>
<td>FC</td>
<td>Fredericktown, VA</td>
<td>L.R. (MA)</td>
</tr>
<tr>
<td>332</td>
<td>BE</td>
<td>Bedford, MA</td>
<td>L.R. (MA)</td>
</tr>
<tr>
<td>338</td>
<td>DKY</td>
<td>Derry, NH</td>
<td>L.R. (MA)</td>
</tr>
<tr>
<td>356</td>
<td>SUH</td>
<td>Rockland, ME</td>
<td>L.R. (MA)</td>
</tr>
<tr>
<td>365</td>
<td>FIT</td>
<td>Fitchburg, MA</td>
<td>L.R. (MA)</td>
</tr>
<tr>
<td>375</td>
<td>BD</td>
<td>Boston, MA</td>
<td>L.R. (MA)</td>
</tr>
<tr>
<td>382</td>
<td>LD</td>
<td>Boston, MA</td>
<td>L.R. (MA)</td>
</tr>
<tr>
<td>407</td>
<td>RSS</td>
<td>Wiscasset, ME</td>
<td>L.R. (MA)</td>
</tr>
<tr>
<td>417</td>
<td>EK</td>
<td>Worcester, MA</td>
<td>L.R. (MA)</td>
</tr>
</tbody>
</table>

Table 2. Morse Code Chart

<table>
<thead>
<tr>
<th>MORSE CODE</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
</tr>
<tr>
<td>B</td>
</tr>
<tr>
<td>C</td>
</tr>
<tr>
<td>D</td>
</tr>
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<td>E</td>
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<td>J</td>
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<td>K</td>
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<tr>
<td>L</td>
</tr>
<tr>
<td>M</td>
</tr>
</tbody>
</table>
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Ham Radio in the Real World

It was a beautiful late summer day when I sat down to start writing this column. I had a repairman scheduled to come to the house, so I took a "Well Day" from work and figured on cranking out the old MT column during a leisurely day puttering about the homestead. The neighborhood was nice and quiet, only the birds singing and the sun shining in the windows of my office/radioshack. Life was good!

Then the phone rang. It was my compatriot Jon Cohen WB2KKS. "Somebody flew a plane into the World Trade Center!" Yes, I sat down to start this column on September 11, 2001...The day the world changed forever.

Well, obviously, like many folks, I didn’t get much done other than watch TV and listen to scanners for the next couple of days. I knew people who did business in both the World Trade Center and the Pentagon. The folks I know are, thankfully, now accounted for. I have talked with friends and coworkers who were not so lucky. As I pull this column together the United States stands on the brink of what can only be expected to be significant retaliatory action against the entities that perpetrated the horror in New York and Washington DC.

So what does this have to do with ham radio? I think I can make a couple of predictions that will hold true even though this column has been written well ahead of some very fast moving events.

First of all, amateur radio will play a significant role in the ongoing rescue and recovery efforts, especially in New York City. A good chunk of the city’s communications infrastructure was knocked out during the attack. Further, the existing system is overtaxed by normal needs as well as emergency and media use. In both the New York and DC areas the Amateur Radio Emergency Service (ARES) and the Radio Amateur Civil Emergency Service (RACES) systems came online without a hitch and began to give communications support to the rescue and relief efforts. ARES and RACES groups in other nearby areas went on standby to offer additional support. This is ham radio at its best, doing what it is chartered to do.

My second prediction has a somber side to it. At the time I write this the leaders of this nation are giving serious consideration to military action that could include the commitment of forces overseas. If this is the case (and I expect by the time you read this we will know the situation), should American men and women find themselves in harms way, amateur radio will once again be involved. The Military Auxiliary Radio Service (MARS) will be involved to handling traffic for these brave folks, just as they have done in past conflicts.

If you are a licensed Amateur Radio Operator, please do your part to support your local ARES, RACES or MARS programs. For more information on ARES and RACES you can link to http://www.arrl.org. For more information on the MARS program link to http://www.asc.army.mil/mars/

Now we turn to information of value to hams in more normal times. Let’s start out with a bit of information from Fox Charley Charley.

Lower Amateur Radio Vanity Fee

The FCC announced that the fee for a new or renewed Amateur Radio vanity call sign is $12 effective September 10, 2001. Applications received on or after that date will be subject to the new fee. This is down two dollars from the original $14 fee. This is still a great deal, given that you can have a unique callsign just like N2EI.

When the current Vanity Callsign program first went into effect back in the late '90s a lot of folks with older 1x2 calls groused a bit about the program. Actually, this was not the first time hams could pick their calls. Back when I was first licensed in 1976, hams who passed the Extra Class exam had the option of choosing their callsigns from an existing list of outstanding 1x2 calls. The difference then was that the examinations took place under the auspices of FCC field offices, so it was fairly easy to manage the program given the limited number of folks who sat for the Extra test at any given time. The current Vanity program opened up the opportunity to choose a call to a much wider audience.

Once I had my Extra Class ticket, I wanted to drop WB2GHA in favor of N2TA (my initials), but a funny thing happened along the way. These calls were issued on a first come first served basis and, at the time, the license request and the check sort of went to different places in the FCC organization. Another local ham applied and initially succeeded in getting N2TA but by an accounting error in his own checkbook he didn’t have the funds to cover the fee when the process went through and he lost the call. N2TA was then awarded to the next on the list, The Russian Speaking Radio Club International. Old Uncle Skip was apparently never in the running.

When I filled out the application I only really wanted N2TA. I hadn’t really given any thought to other callsigns at all. But the vanity form required that you enter a total of 25 possible callsigns. I had acquired a list of available calls from the Internet and decided that, if I couldn’t get N2TA I would shoot for any combination of letters that would make for quick sending in CW, my mode of choice. I was actually surprised that N2EI was still available after all those years. After all, it is nearly as short as a callsign can be. But while I was unlucky in drawing my initials as my call, I am happy to say that, after being N2EI since 1997, I have the sweetest sounding CW callsign on the air. I put a bit of swing in
between the E and I. You can’t miss it!

SSB is also fun with my call. While the preferred phonetics are “November Two Echo India,” it’s fun to throw in the occasional “November Two Electronic Interceptor” in honor of my years of writing the DC to Daylight Beginner’s Corner column here at MT.

If you, too, want something unique on the air, give the Vanity program a try. Especially now that it costs a bit less. For more information, visit the FCC Amateur Radio Web page, http://www.fcc.gov/wtb/amateur/VanityCS.html.

FCC Registration Number Mandatory

Starting December 3, 2001, everyone doing business with the FCC — licensed or not — must obtain and use a 10-digit FCC Registration Number, or FRN. The FCC called the move “a first step” toward streamlining fee collection and tracking. Many amateurs who were registered with the Universal Licensing System (ULS) were assigned a 10-digit FRN by the Commission Registration System (commonly called CORES) in a one-time cross-registration last year and were notified by mail.

There are still a few details to be worked out in this program. Anyone who participated in CORES from the start will tell you that the system has left quite a bit to be desired.

Now, I’d like to ask all my ham friends out there to do me a favor. Once you get yourself set up in the system, check in with some of the older hams in your area. Many of these folks do not have on-line capability, and some don’t even realize that their license may be put in jeopardy by failing to participate in the FRN/CORES system. I’ve helped a couple of Old Timers through the system. These folks gave a lot to the hobby over the years. Why not give something back?

The on-line filing system and further information on CORES is available by visiting the FCC CORES Web page, https://svartifoss2.fcc.gov/cores/CoresHome.html. (See p. 4 for more on FRN/CORES - ed)

On-Air Code Practice Legal - duh?

I was a little surprised when I read recently that FCC Special Counsel Riley Hollingsworth was asked to give his opinion on the legality of on-air Morse Code practice. The article indicated that Hollingsworth, in concurrence with the FCC’s Bill Cross, agreed that it was acceptable under Section 97.111(b)(5) of the Rules.

While I am glad for the official okey-dokey on this practice from the man who single-handedly cleaned up our bands, I guess I was a bit confused, because I can’t think of a time in my entire ham career (and even a number of years prior) that on-air Morse Code practice was not...well, common practice. My move up to General so many years ago was largely through the help of Monday night training sessions aired over my local repeater system.

Anyway, for the benefit of folks interested in setting up such training sessions, perhaps on their local repeater system, read over the Rule and then proceed using good amateur radio practice. Use a clear frequency with respect for other hams. Code groups of letters and numbers including call signs and prosigns are perfectly legit for training purposes so long as they do not violate the regulations of being codes or ciphers with the intent to send a covert message.

Good Web Site

MT HQ sent along information about a new Web site set up by Don Cassel VE3BUC. HamGuide: A Beginner’s Guide to Amateur Radio, http://www.qsl.net/hamguide/ is a web site for newcomers to amateur radio. Whether you are a newly licensed ham or just thinking about getting that first license, there is useful content here for you. Some of the content you will find includes: (a) What is Amateur Radio? (b) Amateur Radio Activities (c) How to get licensed in Canada and the U.S. (d) How to get started operating phone and CW (e) Operating various modes from SSB to IRLP.

In addition you will find information on (a) QSLing, QSL bureaus and eQSLs. (b) How to make propagation work for you (c) DXing (d) Contesting (e) Special Events, and much more.

Old Uncle Skip went poking around the site and, as someone who spent a lot of years writing almost exclusively for beginning radio hobbyists, I was very impressed. The site is a great guide for showing someone all that Amateur Radio has to offer and both a hobby and a service.

Cash for your Radios!

We’ll give you credit toward new scanners and receivers -- or we’ll buy your radios outright!

Replace your older equipment without the hassle, delays and uncertainties of selling it yourself.

Want to buy previously owned scanners or receivers?

The radios we take in provide budget-minded buyers a bonanza in low-cost equipment! Check our website often to make sure you don’t miss any of the great deals!

We’re the Trade-in Specialists! Call toll-free now! (800) 438-8155
Editor's Note: This column should have been published in October to complete the SW-54 restoration. We accidentally published the November column instead. Next month we will pick back up with the “Command” set begun in the October issue. Our apologies to the author and our readers!

In September, we realigned our recapped SW-54 to original factory specs (or so I thought) and it acquitted itself well in a casual test on the temporary antenna in my backyard radio shack. But a little more work had to be done before I could button up this radio and put it on the “completed” shelf.

A Mysterious Short Circuit
I had enjoyed my original listening session with the SW-54 so much that I decided to put in some more time SWLing with it. By this time, in addition to my temporary antenna, I had a good ground connection in the shack, so I used it. After I plugged the little set in, I was startled to find that the radio lit up and began to operate even with the power switch off.

Of course one does not use a ground connection with most ac-dc sets. Such a connection is usually made directly to the chassis, where one side of the line is also connected. Depending on the position of the a.c. power plug in the wall socket, grounding the chassis might either bypass the on-off switch and turn on the radio—has happened in my case—or create a direct short across the line and blow a breaker. With this set, though, the ground terminal is supposed to be isolated from the chassis by a .02 mfd capacitor.

Did I have a shorted capacitor? Seemed unlikely because that component was brand new. After a bit of probing and head-scratching, I found that the capacitor was fine. Furthermore, the mysterious ground disappeared when I removed the little metal link connecting the ground terminal to one of the antenna terminals. (Most communication receivers have a pair of antenna terminals to accept a balanced line from a dipole antenna. One of these terminals is link-connected to the ground terminal for use with a single lead-in wire."

This was peculiar indeed, because the two antenna terminals are connected only to the antenna winding of the r.f. coil for the band in use and should have no pathway to ground. I eventually traced the short to the antenna coil of Band “D,” the highest frequency band. Reluctantly I theorized that the primary and secondary of the coil might have been shorted together by a lightning strike. I did have a replacement coil in my parts set, but changing it out would be an exacting and lengthy task.

I was never happier to discover that I was wrong about something! This particular coil has a small 10 pf capacitor wired across the secondary. Its connecting leads are wrapped around the body of the cap for a few turns and are then connected to the coil. I noticed that at some point, the cap was pushed down flat on top of the coil so its ends were in contact with the primary terminals. I lifted the cap off the terminals and the short thankfully disappeared!

If you saved a copy of my August column, you can get a look at this problem cap. Study either of the underchassis views shown and direct your attention to the first detector trimmer capacitor for band “D.” It is the single trimmer sitting between the group of four and the group of three. You’ll see the little cap at the upper end of the trimmer pushed down against the coil.

Taking Care of Loose Ends
After correcting the ground problem, I thought it would be prudent to realign the oscillator and first detector circuits. For one thing, I felt that the removal of the spurious ground might make a difference in the adjustments. For another, I’d been uneasy about the original alignment method used ever since I completed the work.

The manufacturer’s specifications, reprinted in my Rider’s manual, seemed to call for the signal from the r.f. generator to be injected into the signal grid of the 12BE6 converter for the input. The usual strategy for the latter adjustments is to inject the signal into the “front end” of the set—either by coupling to the loop antenna, as with the Philco Transitone alignment done in an earlier column, or by direct connection to the antenna input.

Studying the wording in Rider’s again, I found some oddities that suggested the omission of a paragraph or two. And since I had been somewhat concerned about the mushy action of a few of the first detector trimmers, especially the broadcast band trimmer, I decided to ignore the apparent dicta of The National Company and strike off on my own using a conventional hookup. I redid all oscillator and first detector adjustments with the signal generator connected across the antenna terminals in series with the 300-ohm dummy antenna resistor recommended by National. I was gratified to find that all first detector trimmers now tuned quite sharply, even the “problem” broadcast-band trimmer.

Now all I needed to do to complete the restoration was to recondition the metal back I had salvaged from my junk set and to replace the brittle and dangerous line cord. The back was badly rusted and scuffed and—much as I would have preferred to keep the original finish—no amount of polishing and rubbing was going to

Refinished back from junker set fits nicely and matches well. Line cord runs through opening formerly occupied by interlock plug (see text). Earphone pin jacks are just to the right of the opening. Antenna and ground connections are at far right.
broadcast with an old-fashioned TV interlock plug. Older Model SW-54, was set up to use a line was that this back, which had come from an airyies are at upper left; their unused center taps are at upper right. Line Inferior of isolation transformer cabinet. Tied-together 12-volt second-

After removing the interlock plug by drilling out its rivets, I steel-wooled and sanded all of the rust and other gloop caked onto the back. Visiting the touch-up paint section of a local auto parts store, I selected a gun metal gray shade intended for GM cars: "plasti-kote" brand GM7221 to be exact. After building up a finish by spraying on several thin coats, I obtained a very nice surface which dried completely in less than an hour and was a very credible match.

The new line cord was passed through the old interlock opening in the back, and then through the hole provided on the rear chassis apron. The original cord had an integral grommet and strain relief, but I was able to find a separate grommet that fit the entrance hole and fed the cord through that - providing a knot in the zip cord leads.

A second listening test now satisfied me that the SW-54 was working very well and that its dial calibration was proper. All local

make it look decent. Another small problem was that this back, which had come from an older Model SW-54, was set up to use a line cord with an old-fashioned TV interlock plug. (The power cord was automatically unplugged when you removed the back).

After removing the interlock plug by drilling out its rivets, I steel-wooled and sanded all of the rust and other gloop caked onto the back. Visiting the touch-up paint section of a local auto parts store, I selected a gun metal gray shade intended for GM cars: "plasti-kote" brand GM7221 to be exact. After building up a finish by spraying on several thin coats, I obtained a very nice surface which dried completely in less than an hour and was a very credible match.

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ends. Slip both ends through the grommet, then solder the plug wires to one of the transformer primaries and the socket wires to the other. Insulate the connections with tape or wire nuts. Secure the two pieces of zip cord under the clamp and tighten the screw. Install the cover on the cabinet and your isolation transformer is completed.

Theory of operation is simple. The transformer with the plug wired to it converts the 115-volt line voltage at its primary to 12 volts at its secondary. The 12-volt secondary is connected to the 12-volt secondary of the second transformer, which - being hooked up backward - is used as a primary in this application. Since transformers work just as well backward as forward, the second transformer obediently converts its 12-volt input to 115 volts, which is available at the socket end of the extension cord.

With a volt-ampere rating of 36 (3 amps X 12 volts), this transformer is pushed to its limit (but not over its limit) when running a typical small a.c.-d.c. radio. As a test, I powered the SW-54 from this hookup for about two hours. The transformers got hot enough so you knew they were working, but not dangerously hot. A word to the wise: at first I depended on wire nuts only to fasten the connections, and found that the output of the second transformer dropped to from 115 to 100 volts under the load of the radio. After soldering each connection and reinstalling the wire nuts, I measured a satisfactory 110 volts.

A Quick and Dirty Isolation Transformer

I promise not to harp too much longer on your need to use an isolation transformer while working on a-c-dc sets. Nor do I intend to repeat any of the fervent caveats I expressed in past columns. However, knowing that formal isolation transformers are not easy to find (except in the catalogues of a few national parts dealers, where minimum orders or high shipping/handling charges may turn you off on purchasing even a modestly priced unit), I'd like to show you how you can build one using Radio Shack parts in less than two hours.

You'll need two heavy duty power transformers. I had two #273-1511 (12.6 Vct @ 3.0 A) units on hand, so I used them for my model. These fit comfortably in a #270-253 "Vented All-Metal Cabinet," which by great formers. I had two #273-1511 (12.6 Vct @ 3.0 A) units on hand, so I used them for my model. These fit comfortably in a #270-253 "Vented All-Metal Cabinet," which by great formers. I had two #273-1511 (12.6 Vct @ 3.0 A) units on

Interior of isolation transformer cabinet. Tied-together 12-volt secondaries are at upper left; their unused center taps are at upper right. Line voltage input and output connections are below.
Some Basic Antenna Concepts

Last month we talked about the idea that a 6-foot long wire could be a satisfactory HF receiving antenna for some applications. This month let’s talk about some of the things that can make an antenna perform differently – and sometimes more satisfactorily – than a 6-foot piece of wire.

Gain and Directivity:
Gain and directivity are usually heavily interdependent so let’s cover them both together. Consider an antenna so tiny that it is a point in space. Let this antenna also be nondirectional. This imaginary antenna is called an “isotropic” antenna. Engineers often compare the theoretical performance of this antenna to real-world antenna performance.

Because this antenna radiates equally in all directions its radiation-reception pattern (R-R pattern) is a sphere centered on the antenna (fig. 1A). An antenna’s gain patterns are the same for transmission and reception. If we think of the isotropic antenna’s R-R pattern as a balloon, and we squeeze the balloon around its circumference then the pattern would extend farther from its center in some places, and less than before in others (fig. 1B). Such a pattern would indicate greater gain for the places where the balloon protruded farther out, and less gain where the balloon extended less than before.

In a sense this is how antenna gain is derived – by taking the existing amount of signal the antenna has to deal with, and shaping the R-R pattern of the antenna to concentrate more signal in directions where higher gain is desired, and reducing it in directions where less gain is desired.

As you can see an increase in antenna gain in one direction means that some other direction must have less gain. There are antenna designs for a wide variety of situations where directivity and gain in specific directions are important, where reducing gain to signals or noise from one or more directions is important, or some combination of increasing and decreasing gain in various directions (fig. 3).

Horizontal and Vertical Directivity:
When we speak of antenna “directivity” we typically are thinking of an antenna which can emphasize its radiation or reception to different directions of the compass. If we want to work stations to the west of our location, and also reduce interference from stations or electrical noise from other directions then we want an antenna with horizontal directivity. We call this a “beam antenna.”

The vertical directivity, or patterning of waves, is also important in determining our signal’s path between transmitter and receiver. For MF and HF work utilizing ionospheric propagation, an antenna which concentrates its patterning upwards supports short-haul communication best. In contrast, MF and HF antennas which direct their radiation lower, support longer ionospheric communication paths better. These are sometimes called “DX antennas.” At VHF and higher frequencies, line-of-sight propagation predominates. Here, low-vertical angle patterns allow the signal’s line-of-sight access to the horizon, whereas high-angle radiation is often undesirable unless it is directed to hill-top stations, aircraft, satellites or spacecraft.

One Piece of Wire Has Two Different Lengths!
Antennas deal with radio waves, and waves...
This site has study material about antennas as a part of a really fine course for the study of radio and electronics in general. It is interactive, including tests, and feedback is given on test performance. "The only cost is your willingness to learn, and do some work." I salute the wonderful spirit of the person or people who prepared this course, and who so generously offer it free to internet users:

http://members.nbci.com/ronber/about.html

have what we call "wavelengths." In fact the term "shortwave" refers to the relative shortness of waves on the shortwave (3-30 MHz) band as compared to the longer waves on bands lower in frequency.

The wavelengths of signals with different frequencies are different. For example a wire measuring 10 foot in length would seem short as compared to a wavelength of 270 feet, but long to a wavelength of one foot. Antennas are designed for specific wavelengths (which also means a specific frequency), and this determines the physical size of their elements, and the spacing between those elements. For this reason we should develop the habit of thinking of our antenna's length in relation to the wavelength it is to work with. In fact many antennas are named or described with this in mind as when we speak of a "halfwave dipole," a quarterwave groundplane," or "a beam with 1/10 wavelength spacing between elements." A 10 MHz halfwave dipole is around 47 feet long. This length will not be a halfwave at any other frequency. It may perform well, but differently, at various other frequencies. And it will also perform poorly at various other frequencies.

We sometimes hear the term "capture area" or "aperture" used in relation to an antenna's length, size or gain. There is the temptation to believe that larger antennas necessarily have more gain or "aperture" used in relation to an antenna's length in relation to the wavelength it is to work with. In fact many antennas are named or described with this in mind as when we speak of a "halfwave dipole," a quarterwave groundplane," or "a beam with 1/10 wavelength spacing between elements." A 10 MHz halfwave dipole is around 47 feet long. This length will not be a halfwave at any other frequency. It may perform well, but differently, at various other frequencies. And it will also perform poorly at various other frequencies.

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For reception, matching between antenna and feedline, and between feedline and receiver, can also be important. On VHF and higher frequencies, decent matching between antenna, feedline, and receiver antenna-input is definitely important. On HF and lower frequencies, good matching is usually not as important unless the reception location is electrically very quiet (little received electrical interference).

Feedpoints on antennas are usually designed to match the impedance of the feedline used, and an antenna-matching unit (ATU) is often used to provide a match between a transmitter and the feedline. With modern equipment ATUs are seldom of value between a feedline and receiver.

This Month:
What was the simplest radio receiver ever built? You might think until your brain Hertz, and still not know this one.

You'll find an answer for this month's riddle, another interesting, antenna-related web site, and much more, in next month's issue of Monitoring Times. 'Til then Peace, DX, and 73.
Mobile Scanning in Style

Dave Downing, N9DAV, gave me a tour of his impressive mobile installation (fig. 1 and 2). His 1998 Ford Explorer XLT “communications vehicle” contains multiple VHF and UHF radios. Dave said, “The planning started a year prior to the actual installation. As with any big project, proper planning is the first order of business. This project took me approximately 4 weeks to complete.”

There are eight antennas, not counting the AM/FM radio antenna. Six of the antennas employ Maxrad NMO mounts on the roof fed with 800 MHz low loss Teflon coax. Dave standardized on the same mount and coax throughout so he can fit them with any matching antenna, regardless of radio/band. He enlisted the help of an experienced installer to drill the holes, install the mounts, and dress the feedlines, a 5 hour job. Dave observed that the low profile NMO mounts provide a very “clean” look.

All the radios are switched on and off simultaneously by a heavy-duty toggle switch. A key switch enables Dave to lock the power off when the car needs service or when parked by a valet.

There are six speakers: one amplified and two non-amplified Motorola, two amplified and one non-amplified Radio Shack models.

On the inside, starting from the top right is:
- Motorola UHF Systems Saber (HT)
- Optoelectronics Scout frequency counter/recorder
- Uniden BC-780XL trunktracking scanner
- Radio Shack Pro-2066 trunktracking scanner
- Uniden BC-9000XL conventional scanner
- Icom 2710 dual band transceiver (50W)
- Motorola UHF Syntor X9000 transceiver (110W)
- Motorola VHF Syntor X9000 transceiver (110W)
- Uniden Pro-538W CB

Except for installing the antennas, Dave performed all the other installation work. He removed the Explorer’s stock center console and installed bracketing made by Lund Industries of Wheeling, IL (http://www.lund-industries.com). Lund is a major installer/supplier to the public safety sector. He avoided drilling new holes by using existing holes intended for the stock console and seats. The wiring was purchased from both Lund and The Cable Experts (http://www.cablexperts.com) also located in Wheeling, IL.

Though Dave uses the Syntors for ham radio, he spends about 70% of his time monitoring vs. 30% hamming. He scans over 40 fire departments, local law enforcement agencies, and the Illinois State Police. Dave also listens to four different ham repeaters simultaneously.

Some of the transmitters interact with the scanners. Dave reduces the BC9000XL’s volume when transmitting to avoid feedback. He reports the trunk tracking scanners aren’t afflicted, but the ICOM dual-bander squeals sometimes, depending on what frequency it’s tuned to.

Dave is understandably satisfied with his mobile monitoring station: “In the end, I feel the installation turned out exactly as I planned.”

If you have any questions, contact Dave via email at studioded@aol.com.

Channel Labeling Hint

Maury Midio uses an interesting technique to keep track of the channels programmed in his Icom IC-R7100A. The IC-R7100A has 900 memory channels but does not support alphanumeric channel labeling. So “Mid” stores the channel numbers and licensee names in a Sharp Electronics YO-520 electronic organizer.

When a channel is active, Mid enters the channel number on the organizer’s keypad and sees the agency name displayed on the organizer’s screen.

Mid writes that the YO-520 organizer has 1 MB of memory and sells for about $50 at Radio Shack.

Uniden/Bearcat BC200XLT Loss of Audio and Dial Lamp

We are reprinting this tip by request. If you can program frequencies into your
BC200XLT portable scanner, but there is no audio and the green backlight no longer functions, a tiny transistor may have failed.

Check for a defective PNP surface mount transistor, Q201 (2SB815B6-YDY). Q201 is used as a switch to furnish 8 VDC to several stages of the BC200XLT. Its main purpose is to switch off power hungry stages of the BC200XLT when the CPU thinks the NiCd voltage has fallen below a threshold. That's an attempt to limit the current drain on weak NiCds to avoid permanent damage.

Q201 is located on the foil side of the "Micom" board, adjacent to the black multi-pin connector that mates the Micom and main boards together (fig. 3).

Q201 can be destroyed by a few different causes, primarily, by something in the scanner drawing too much current through it. In one case, capacitor C36 shorted. It's a 220 uF 10v electrolytic, located on the component side of the main board, connected from pin 8 of the audio IC (IC2 NJM386SL) to ground.

Capacitor C55 shorted in another BC200XLT. Gary Bean reports he substituted a 2SA1298 for Q201 and it worked fine. In a pinch you can bypass Q201 by soldering a short piece of bare wire between the collector and emitter (as shown in fig. 3), but you must first fix the component that caused Q201 to fail. Adding a jumper wire is only a temporary fix and it would be better to replace the transistor instead.

Figure 3. Transistor Q201 location on BC200XLT Micom board.
not too long ago, to find a receiver with all the features of the Uniden BC780XLT selling (from Grove) at $349.95 would have been an impossibility. Heading the impressive list of 780XLT capabilities are computer control, 500 channels, a large display showing (among other useful data) frequency and user-inputted station details, and multiple system trunk tracking capabilities and tone decoding. Of course, it was the computer control capability that caught the eye of yours truly.

A Quick 780XLT Overview

Although small in size at approximately 7 x 6.5 x 2.25 inches (176 x 167 x 61 mm), this diminutive receiver covers 25 to 512, 806 to 956 (excluding cellular) and 1240 to 1300 MHz. It only weighs in at 42 oz. (1.33 kg). On its own, without computer control, it scans at 100 channels per second and moves out at 300 steps per second in the turbo search mode.

The 780XLT has an internal speaker that does a reasonable job, and it is powered by a large “wall wart” 110 volt AC supply. This does a reasonable job, and it is powered by a large “wall wart” 110 volt AC supply. This time we will take a look at the first two, and ScanPro Scanner Software’s BC780XLT.

780XLT’s Computer Control

Uniden has made computer interfacing a snap by including a standard 9 pin serial interface on the back panel. All that is needed to connect it to a computer is a simple serial cable; no other interface/level shifting hardware is required. Perhaps it is due to this simple serial port configuration that a number of companies have produced software packages for the 780XLT. These include: Scanner Master’s WinScan780 (made by Popzilla Software, Signal Intelligence’s TrunkStar780, Computer Aided Technologies’ ScanCat V8.0 and ScanPro Scanner Software’s BC780XLT). This time we will take a look at the first two, and keep the others till next time.

Software for the Do-Everything BC 780XLT

Sure Looks Like It!!

Scanner Master/Pozilla Software’s WinScan780 version 1.00 comes on a CD and has modest system needs: Pentium 75 MHz with Windows 95/98/NT 4.0, 15 MB of Ram, 10 MB hard drive space for program, a free com port and a CD ROM drive.

Loading was simple, fast and without problems. The 780XLT must be placed into the Remote computer control mode by pressing and holding the “E” key on the radio for 2 seconds. The radio will display “RMT” on the LCD indicating it is now ready for computer control.

When WinScan780 version 1.00 is run the result is displayed in Figure 1. The top part of the display is a very accurate representation of the front panel of the radio. Even the off segments of the liquid crystal display’s indium tin oxide electrodes (they look like very lightly lit labels and small rectangles) have been programmed into the computer display. Very impressive! All buttons are functional using the mouse.

Just below the black “front panel” sit the five functional screen keys: Frequencies, TalkGroups (for trunk tracking), Banks/Lists, Options/Commands and Search Results/Misc. Once the user selects one of these keys the area below the keys displays the scanning variables which can be controlled.

A Closer Look

For example, in Figure 1 the Options/Commands key has been selected, and the bottom display region now allows the user to perform a number of commands. In the center of the bottom screen, search range frequencies and names can be added or modified and the computer’s serial port (COM) can be changed.

On the left side, parameters dealing with the 780XLT’s settings such as activation of key beep, port speed, attenuator control, record WAV file and many others can be set.

Looking at the buttons on the bottom right side, data can be read into the 780XLT, or data can be programmed into the radio. Most important, file handling commands can be accessed from this screen. Finally, the “Quick View” button shrinks the display down to a size that can be conveniently tuck into a corner of your computer screen while you do other work (like writing this column).
This Help file is very useful. Frequency and label data from word processing files, HTML and other sources can easily be incorporated into WinScan via their “Paste” button. All that is required is to copy the data from whatever source using the Windows copy command. Using WinScan’s “Paste” command it will be easily transferred into the program. I tried it with MS Word and HTML files and it worked great.

**Another “Star” – TrunkStar**

Signal Intelligence is a company that should be familiar to most computer scanner people. They are the makers of the much-used ScanStar products: Scan*Star Deluxe and Scan*Star Industrial Radio Analysis Suite. Users of these fine programs will see similarities in TrunkStar780.

The system requirements for TrunkStar780 are a bit more than WinScan. However, they are still quite modest for today’s PC. A Pentium CPU running Windows 95/98/ME/NT/2000/XP, with 64 MB of RAM, a free COM port and a CD ROM drive are required.

**A Little Different Look**

The main screen of TrunkStar780 in the Air Band search mode is displayed in Figure 3. It bears little resemblance to the actual 780XLT front panel except for the layout of the keyboard (on the right). It is divided into two main sections, the top section being for control of the radio and the bottom for all logging data display and inputting.

Starting at the top, let’s take a quick tour of the upper section. True serial communication is established with the radio by clicking on the radio icon (fourth from the right). The first slider on the right side of the huge signal strength meter sets the operation mode of the 780XLT: service search, frequency search, memory scan, frequency input via keypad or dialed-in frequencies.

The middle slider selects trunk scanning modes and the right one selects reception mode. The slider below the small tuning meter at the lower left selects squelch mode. The knobs on the lower left of the upper section are a bit unique. One is for changing megahertz, and one for kilohertz. I have not seen this arrangement for many years. The icons along the top are for various file handling functions. The ten toggle switches under the word “AIR” enable ten different service searches.

**How Does It Work?**

TrunkStar780 was simple to install, easy to use and operated without a problem. The help “bubble” which appear when the cursor hovers over a control, together with its simple layout, makes the very limited Help file almost unnecessary. All in all, TrunkStar780 lives up to its name when it comes to trunk tracking.

With the 780XLT’s audio output connected to the input of the computer’s sound card via a separate cable, both WinScan780 and TrunkStar780 have easy-to-use digital audio recorders.

In my humble opinion, WinScan780 is better suited to the general scanner enthusiast, while TrunkStar780 is aimed squarely at trunking enthusiasts. However, I was very impressed with both programs and you cannot go wrong with either if you own a 780XLT.

**Where & How Much?**

WinScan780 is available from ScanMaster/Pozilla Software at [http://www.scanusa.com/pozilla](http://www.scanusa.com/pozilla) for $69.95, plus $3.95 for USA shipping and handling. A demo version is available at their site. They can also be contacted via ScanMaster Corp., 40 Freeman Place, Needham, MA 02492. Alternatively, it is currently available in the Grove catalog at [http://www.grove-ent.com/software.html](http://www.grove-ent.com/software.html).


**What’s Next?**

Next time we will continue with programs made for the BC780XLT scanner. We’ll look at an offering from one of the oldest radio software manufacturers – Computer Aided Technologies, and from one of the newest – ScanPro Scanner Software. The new guy, and the old pro: It should be an interesting comparison. See you then.

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MAX RESEARCH
Mobile SWL Alternatives - III

By Ken Reitz, KS4ZR

In October's installment on mobile shortwave listening, we looked at using an in-dash shortwave receiver from Sony or Becker, and I tried using my home rig in the car with a variety of antennas. Noise suppression is also critical to the success of any installation and we explored some resources for learning more about this complicated subject.

This month the topic turns to converters - tricking your car radio into tuning the shortwave bands. Converters are available in both preassembled and in kit form.

The LFB 4 Band Converter

Shortwave converters have been on the market for decades but have earned a reputation for poor performance. While this is no doubt due to engine-related radio frequency interference (RFI), converters can provide excellent listening once the problem is tackled. Their common shortcomings, compared with communications receivers, are smaller frequency coverage and lack of sensitivity.

Of the converters on the market, the LFB 4-band digital shortwave converter is likely the best. Its heavy metal case and shielded wire connections certainly help keep noise down to a minimum before active noise suppression. Setting up to use the LFB, as with all converters, is fairly simple if you can get into your dashboard. The unit uses your existing AM/FM antenna and your own in-dash radio to tune the 19, 25, 31 and 49 meter bands. It is designed to work with modern digital readout AM/FM car radios, but I found it worked nicely on my analog car radio.

The unit is made in Brazil and was shipped with instructions in Portuguese. However, nearly all of the instructions are available in English on the LFB web site which I simply printed out. Of the converters on the market, the LFB 4-band digital shortwave converter is likely the best. Its heavy metal case and shielded wire connections certainly help keep noise down to a minimum before active noise suppression. Setting up to use the LFB, as with all converters, is fairly simple if you can get into your dashboard. The unit uses your existing AM/FM antenna and your own in-dash radio to tune the 19, 25, 31 and 49 meter bands. It is designed to work with modern digital readout AM/FM car radios, but I found it worked nicely on my analog car radio.

The Ramsey Converter

Ramsey Electronics makes a converter kit (see sources) which is the cheapest alternative of all. But, be prepared to get out your soldering iron. Ramsey estimates that total assembly time for advanced hobbyists is 1.3 hours and for beginners is 3 hours. The unit is limited to 1 MHz on two bands, which are switchable from the front panel and labeled “Day” and “Night.” In the assembly process you can set your converter to tune a combination of frequencies between 60 and 16 meters. As with all converters, the audio is heard through your car radio speakers.

The unit comes with a fully detailed 20-page manual with step-by-step instructions, including a schematic diagram and a large “parts finder” sheet which shows where all the parts go. There are even tips for other circuit additions and applications. Measuring just 5”x 5”x1-1/2” and weighing just ounces, the Ramsey converter takes the least amount of room and is the easiest to set up. You’ll need to add a cigarette lighter power cord with an output of 9 volts and cable adaptors, as it has RCA jacks in the back.

I found the Ramsey converter worked exactly as described in their catalog, providing a range of international broadcasters which made a real difference on AM and FM reception. There are at least two other converters on the market. Vectronics makes a kit nearly identical to the Ramsey model, but with a metal cover. It uses a built-in 9 volt battery for a power supply. As with the Ramsey, it covers only two bands which are switchable from the front panel and set by the builder. Price for the Vectronics kit is $28 plus $15 for the cover.

MFJ also offers a converter, but it is not a kit. The MFJ-306 World Band Explorer comes completely built and covers the 19, 25, 31, and 49 meter bands. Measuring 5”x 3-1/2”x1-1/2”, the MFJ-306 requires a connection to your car’s battery and uses Motorola plugs on the back. Audio is through your car’s radio. The MFJ-306 is $90 plus $7 UPS shipping. If you have any doubts as to your kit building ability, I recommend the MFJ-306.

Quick Comparisons

No matter which SWL option you choose, if you don’t address the noise problem you’ll be dissatisfied. That said, folks with deep pockets and interested in serious shortwave DXing will have to opt for any of the high ticket, general coverage communications receivers. With total HF reception and AM, SSB, and CW capability, built-in noise blankers, and dozens of memory presets, why go any other route?

High rollers who want the best audio, ease of operation, and less worry about theft, will opt for the Becker Mexico 2340. With coverage between 5.9-15.7 MHz and 10 memory presets, this model has received good reviews. Expect to pay about $500 for the Becker, extra for professional installation.

Low rollers who want good audio and a cheaper price tag will opt for Sony’s XR-CA620X or XR-4950X, both of which offer 12 shortwave memory presets and coverage between 2.9-7.7 MHz and 9.5-18.1 MHz. While they’re advertised at $127 and $110, respectively, expect to pay extra for courier delivery, insurance and import duty. That could end up doubling the price. Pay extra for professional installation.

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Listeners opting for the converter can choose between the LFB 4-band converter at the high end and the Ramsey and Vectronics kits at the low end, with the MFJ-306 in the middle. The LFB is the most expensive but is the best built, most convenient to use, and has the most features. The kits are the cheapest and take up the least amount of room, but offer the least coverage.

♦ One Final Note

On the subject of being able to hear the audio from portables, mobile SW receivers etc., there are a couple of critical issues. Many newer vehicles’ cassette decks have an automatic reverse mode which wants to continuously kick in when an audio adaptor cassette is inserted, causing it to keep searching for the end of the tape (which, of course, it never finds). An excellent alternative is to use a mini-FM transmitter, which takes the audio from your portable or mobile unit and plays it at an open frequency on your car’s FM radio.

However, these transmitters present two more problems: (1) they’re battery eaters and really need to be powered from the cigarette lighter adaptor (which may already be in use for the radio) and (2) it’s more gadgets floating around in the console of your car or sitting on the passenger seat and more hook-up time when you get ready to get on the road.

These complaints give an added edge to the transmitters which automatically play through the AM radio (and finally give you a chance to use the AM presets on the radio!) as well as in-dash AM/FM/SW radios which give you all the advantages and keep the interior free from extra boxes, cables, adaptors etc.

Experimenting with audio in your own car, you’ll soon find out which method works best for you.

Sources:

Find out more about products and articles mentioned here:

**LFB Short Wave Converter**
http://angelfire.com/ia/lfb ($140 + 20 shipping)
Contact: Luis Lodi angefie.com.br; LFB Ind. & Com. Ltda; Phonefax 55 11 3115 0397

**MFJ World Band Explorer**
http://mfjenterprises.com ($90 + $7 UPS)
Contact: MFJ Enterprises, Inc. P.O. Box 494 Mississippi State, MS 39762; 800-647-1800

**Ramsey Short Wave Converter**
http://ramseyelectronics.com ($28 + $15 +$7 shipping)
Contact: Ramsey Electronics, Inc. 793 Canning Parkway Victor, NY 14564; 800-446-2295 or 716-924-4560

**Vectronics Short Wave Converter**
http://www.vectronics.com ($28 + $15/case + $ Shipping)
Contact: Vectronics 300 Industrial Park, Starkville, MS 39759; 800-363-2922

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**Satellite Radio in Your Car**

**POISED TO TAKE ADVANTAGE OF MOTORIST’S DISAFFECTION WITH TERRITORIAL RADIO AND WEARINESS WITH STALE TAPE AND CD COLLECTIONS ARE THE TWO LICENSEES FOR THE DARS (DIGITAL AUDIO RADIO SERVICE) XM RADIO AND SIRIUS SATELLITE. WITH EACH OFFERING 100 CHANNELS OF DIGITAL AUDIO, COMMUTERS WILL FIND MORE THAN ENOUGH DISTRACTION TUNING THROUGH THEIR PROGRAMMING LINE-UPS. BUT, IT WON’T BE CHEAP.**

Aside from the initial system purchase price and installation cost (XM Radio units will be available in-dash in only the Cadillac Seville and DeVille for the 2002 model year), listeners will have to pay $10/month for XM Radio and $13/month for Sirius. At between $120 and $156 per year many subscribers will probably wonder why they’re still listening to commercials on many of the program channels.

**Sony:**

While music programming on these services hopes to be bright and entertaining, the non-music DAR experience promises to be audio simulcasts of cable fare you thought you left at home. On XM Radio you’ll hear CNN headline News, the Weather Channel, C-SPAN Radio, CNN/SI, etc. Sirius plans to offer similar fare as well as programming from ABC Radio Networks which are already simulcast on 4,600 affiliate radio stations across the country. Both services hope to eventually drive the other under in a radio version of DISH vs DirectTV and become the final sky radio monopoly.

The only exciting news for shortwave listeners is that XM Radio will carry the BBC World Service on their channel 131. This is one of the reasons the 3BC recently cited for dropping its shortwave service to North America. But, the excitement could be dampened by the expense of tuning in as well as the possibility that the service could just as easily be bounced in favor of a new music fad or popular sports channel. Sirius has no plans to carry shortwave programming.

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Citizens Radio Corps

Radio is a weapon that can help win the war on terrorism. Many Americans, I suspect, felt sadness, frustration and rage as a result of the terrorist attack of September 11. I know I did.

But we needn't feel helpless, not by a long shot. We can learn a lesson or two from history.

Radio is a weapon that can help win the war on terrorism, strike a blow for security on the Home Front and give people a positive means of contributing to everyone's safety. Just as the British had their Royal Observer Corps during WWII and the Pacific Campaign had its Coast Watchers, I think it's time for the creation of a Citizens Radio Corps to empower properly trained ordinary citizens to keep watch on potential targets of terrorism and provide early warning of possible terrorist activity.

During World War II, when the German Luftwaffe was trying to reduce Britain to rubble, tens of thousands of people participated in the Royal Observer Corps. They kept watch on the coasts, spotting incoming aircraft and reporting their position and heading so that fighters could be scrambled to fight back. It was an enormous success.

And in Pacific island chains, the Coast Watchers kept a careful eye on Japanese ships and troop movements, relaying their observations to those who could take action where it would do the most good.

In the same way, the purpose of the Citizen Radio Corps (CRC) would be to observe, detect, and notify authorities — what I call “watch, point and scream.” There is plenty of reason to keep such a watch on the Home Front. There are literally millions of potential targets for terrorists in the United States: power stations, water supplies, natural gas pipelines, tunnels, bridges, hospitals and factories to name just a few. Civil authorities simply do not have the manpower to keep watch over all of these.

But you and I can. We can extend the eyes and ears of the authorities to the benefit of all.

A widespread force of civilians keeping watch would greatly expand low-level intelligence gathering throughout the nation and provide early warning of suspicious activity.

It emphatically would not be the job of the CRC to respond to a potential threat, any more than it was the job of the Royal Observer Corps to shoot down German aircraft. Dealing with actual or potential terrorists is the duty of properly trained authorities.

Many of national experts have already observed that it is time that we start thinking the way terrorists do. I agree. Perhaps the CRC should maintain a low profile, operating with stealth and cunning — becoming, in effect, a guerrilla observer corps. As a result, potential terrorists could never be sure if someone is watching their activities or not. A friend says this notion is “positively Orwellian.” Maybe so, but as I recall, 225 years ago, some dissatisfied colonists defeated a world power by wearing buckskin and shooting from behind rocks and trees, while the enemy marched in straight lines wearing red coats. The Bad Guys are “thinking sneaky,” so should we.

The place to start building the CRC is with the existing base of amateur radio operators. Ham radio already has a considerable communications infrastructure in place that can provide both local and coast-to-coast communications. Many hams have emergency capabilities that would permit them to operate even when parts of the civil infrastructure — cell phone towers, phone lines, and the like — are down. Radio hams have been licensed by the federal government and have unique call signs. That lowers the possibility of people hiding behind anonymity to make false or misleading reports.

In addition, many ham radio operators have computer and Internet capability. That makes it easier to coordinate across the country. So, for example, if someone in California detects a possible threat to dams, that information could be quickly spread to other locales where dams might be a target.

CRC observers would have to be trained and procedures put in place for coordination and reporting to proper authorities. A model for the CRC already exists. For the past five years, I have spent thousands of hours running a Ham Radio Commuter Assistance Network in the Albany area of New York State. The Network detects problems on the roadways and reports them to the authorities. More than 130 hams have reported thousands of incidents, ranging from disabled vehicles to life-threatening accidents, with me funneling them to the proper jurisdiction for action. This operation is unique in the country and has been very successful.

There still are problems to be solved in creating the CRC. Security, for example, is an issue. If CRC spotters are operating “in the clear” on readily intercepted frequencies, it would probably be better to say, “there’s activity in Sector 12,” rather than “there’s suspicious activity at the dam.”

Here, though, is the bottom line: it isn’t just up to “the other guy” — the police or the military — to protect us. We are all in it together. The CRC is a way to rally our resources and help protect each other. I’ve sent a memo on this concept to the President and Secretary of Homeland Security, and I welcome your feedback by mail via Monitoring Times, or to CRC@monitoringtimes.com.
AM/FM/TV-Audio Pocket Portable

For those on the move who can’t stand to miss their latest radio or TV program, Sangean has released a pocket portable with AM, FM and VHF-TV (channels 2-13) audio. Operated by two AA cells (not included), the new SR-25V uses simple analog tuning with a thumbwheel, making fine tuning a bit touchy, but pretty standard for pocket portables.

A small LED tuning indicator flashes when stations are properly tuned in, and an “oversized” speaker produces more bass than on comparable radios we’ve experienced. Even so, loud audio produces considerable speaker distortion, so an earphone (not provided) should be used when modest sound levels are not adequate.

An internal loopstick antenna is engaged for AM reception, while a telescoping whip brings in the FM and TV signals. In strong signal conditions the receiver is easily overloaded, producing multiple signals across the band, but we found that compressing the length of the whip, thus reducing signal levels, helped considerably.

The SR-25V should be available over the counter and at a very attractive price wherever Sangean products are sold.

PAR AM Broadcast Filter

In a previous issue we reviewed a PAR filter intended to prevent strong, local medium-wave broadcasters from interfering with shortwave reception. Now PAR has addressed another part of the spectrum: VLF. This low portion of the RF spectrum is often besieged by intermodulation and other spurious signal mixes from the medium wave broadcasters, and even higher frequency sources, resulting in interference to weak VLF signals like non-directional beacons (NDBs), maritime data transmissions, and amateur beacons.

The new BCST-LPF is a well designed, ruggedly encased, low-pass filter capable of delivering 0-340 kHz signals from an antenna, while steeply attenuating local AM broadcasters (and shortwave-through-VHF signals as well) as much as 70 dB (average attenuation 45 dB). A toggle switch allows the filter to be instantly disabled, bypassing the five-pole elliptical filter and permitting the full spectrum to be heard.

The new BCST-LPF is available for $49 plus shipping from PAR Electronics, PO Box 645, Glenville, NC 28736; phone (828) 743-1338, or email par@parelectronics.com.

Avcom Ramsey SDM42B Spectrum Display Unit

Avcom of Virginia, a leading American manufacturer of affordable test equipment, has recently joined corporate forces with Ramsey Electronics, a prominent producer of kits for the radio hobbyist. The fusion, now called Avcom Ramsey Technologies, Inc., is expected to evolve a series of new releases of interest to both the hobbyist and the professional.

Most recent is the SDM42B spectrum display unit (SDU), a highly-useful accessory for the serious searcher of the radio spectrum. The SDU connects to the IF output of any compatible receiver, and displays the active signals as vertical spikes across the baseline of the screen.

The signals are spaced in frequency order, proportionately spaced by their relative frequency separation. The higher the spike, the stronger the signal. A swath of spectrum at least 10 MHz wide may be visually monitored at any one time, limited by the bandwidth of the receiver filters.

High input sensitivity at 10 dB per division displays weak signals, while 80 dB dynamic range handles the strong ones, too.

The microprocessor-controlled SDM42B is a compact, LCD version of the long-standing SDM42A CRT model. The new one is smaller, lighter in weight, and features a crisp, bright, drift-free, 3-1/2” x 4-1/2” LCD screen. A 10 kHz RBW filter and rapid sweep provide crisp, real-time signal spikes.

A host of control functions is readily accessible from an on-screen menu, allowing adjustments for contrast, video flip, sweep reversal, baseline adjustment, grid configuration, and peak amplitude dB. Manual controls are provided for sensitivity adjustment, span, centering, and selection of either of two IF input frequencies (second frequency optional).

The SDM42B comes with a standard 10.7 MHz IF input, making it an ideal companion for off-the-shelf receivers like the Icom R8500 (and earlier R7000, R7100, and R9000) and AOR AR5000, but is available with 21.4, 45, or 70 MHz input for high-end receivers on special order.

Measuring 9-1/2”W x 4-1/2”H x 9-1/2”D, and weighing a mere 8 lbs, the compact SDM42B SDU contains a universal power supply, operable from 85-264 VAC @ 47-440 Hz, or 9-15 VDC. It is also available in a rack mount (SDM-42BRM).

Both the new and the old versions are currently in production, with no immediate plans to discontinue the less expensive CRT model.

The SDM42B LCD spectrum display unit and the SM42BRM are available for $1595 and $1849 respectively from Grove Enterprises (800-438-8155 or http://www.grove-ent.com).
Cool Stuff for the Radio Buff

**Timewave ANC-4**

You may remember the ANC-4 RF Noise Canceller which was regrettably discontinued a couple of years ago when JPS closed their amateur radio division. Well, it's back! If you have problems with noise from power lines, electric motors, TVs, or other home electronics interfering with your radio reception, you'll be glad to know Timewave has put the product back on the market. This digital noise canceller connects right to the antenna connector of the receiver or transceiver to cancel locally generated noise before it gets into the receiver and affects the receiver AGC circuits.

To cancel locally generated interference such as power line or computer noise up to 40 dB, a short wire antenna or collapsible whip picks up the local noise. The ANC-4 detects the interfering signal and adjusts its phase and magnitude so that it matches the offending interference at the receiver input, but is 180 degrees out of phase, effectively canceling the interference. The front panel controls allow adjustment of both the phase and magnitude of the local interference. The ANC-4 operates as an active antenna by using the noise antenna and the noise gain control to amplify the antenna output. The unit can also be used as a diversity combiner to peak weak signals or null interfering signals. Its effective frequency range is 500 kHz to 80 MHz, though it's usable down to 100 kHz.

The Timewave ANC-4 Noise Canceller is available from Grove Enterprises and other Timewave dealers for $199.95. For shipping and further information call Grove Enterprises 1-800-438-8155, write 7540 Hwy 64 West, Brasstown, NC 28902, or visit [http://www.grove-enter.com](http://www.grove-enter.com).

**Grove Universal Telescoping Whip**

For ham and commercial handie-talkies as well as hand-held scanners, the Grove ANT-6 features a swivel BNC base, allowing the whip to be used straight or turned to a right angle for those special applications. Adjustable length from 6" to 16" allows frequency optimization. The whip shows quarter-wave resonance at VHF hi band, and 3 dB gain or more over rubber duckyes at UHF. (Collapsed to 6" and straight, or extended to 16" and swiveled 90 degrees)

This inexpensive but universally-appreciated accessory is only $19.95 from Grove (contact info above).

**Fun Kits from Ramsey Electronics**

**Van DeGraff Generator**

For education or just plain fun, here's the ideal gift for a budding scientist or the hobbyist who already has everything. Although the VanDeGraff generator produces up to 250,000 volts, it's perfectly safe. Create your own lightning and have fun demonstrating all the effects of high voltage.

**MFJ Morse Code Reader**

Need that CW identification, but you don't know Morse Code? Or just rusty and want to follow a CW ragchew? Just place this tiny pocket sized MFJ Morse Code Reader near your receiver's speaker and watch Morse code signals turn into solid text messages as they scroll across an easy-to-read LCD display – No cables to hook-up, no computer, no interface, no other equipment needed!

The reader automatically tracks the correct speed. Its phase locked loop (PLL) augments weak signals and even tracks slightly drifting signals. The two-line LCD display has 32 large 1/4 inch high-contrast characters. You can display decoded CW as text and speed or switch to all text on both lines. The reader can instantly replay the most recent 140 characters – a great feature if you're using the reader to practice your own copy skills.

Better yet, if you need to store the decoded text, a serial port lets you display CW text on a monitor using a computer and terminal program. The MFJ-4612 can also be connected to your receiver with a cable, in case it's too noisy for microphone pickup or you don't want to listen to the signal. The pocket-sized reader operates on a 9-volt battery and defaults to sleep mode during periods of inactivity.

The MFJ-4612 is $79.95 from MFJ Enterprises (P.O. Box 494, Mississippi State, MS 39762; 800-647-1800; [http://www.mfjenterprises.com](http://www.mfjenterprises.com)).

**Alinco DJ-X3 Scanning Receiver**

Alinco has announced the FCC Type-acceptance and imminent release and of its new DJ-X3 scan-

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The DJ-X3 places the speaker behind the display, so that audio is heard from ports on either side of the display window. The DJ-X3 can reproduce FM stereo when optional stereo headphones are connected to the unit. The DJ-X3 features 700 memory channels (10 banks of 70 channels), is powered by a rechargeable Ni-MH battery pack. The triple conversion IF stage provides excellent reception.

The operator also has four selectable antenna choices: an internal AM bar antenna, a shortwave bar antenna, the earphone cable may be used as an antenna or the SMA whip antenna terminal can be activated. The unit is supplied with a removable whip antenna but an external antenna can also be connected to the SMA port. An attenuator function is available to reduce very strong signals. The receiver also has a "bug" detector, useful in searching for hidden transmitters.

The DJ-X3 has three operating profiles: VFO, Preset AM, FM and TV frequencies, and the Memory mode. The operator can make manual selections or scan in any of these modes. In the memory scan mode, the operator can choose one specified bank, certain banks can be linked by frequency, and memory scan options. The DJ-X3 is capable of tuning in eleven user-defined steps or an auto-step mode that selects the appropriate step for the band currently in use.

The illuminated display is large and easy to read. In addition to frequency information, it will also show the operating mode, memory channel, battery strength, signal strength, and a number of other user-selected operating parameters. A charger, belt clip and strap are also included. The DJ-X3 can also "clone" to other DJ-X3 units, sharing its programmed parameters through a wire connection.

The DJ-X3 is expected to be available in stores soon. It will be available from Grove Enterprises for under $300, call for price and availability at 1-800-438-8155.

Grundig Millennium 800

Grove Enterprises notes that the Millennium 800 shortwave receiver has received some upgrades over the past year. "Although there have been gradual improvements in shielding to reduce the 'birdies' and 'spurs' in the receiver, the biggest change was a complete redesign of the tuning mechanism. The old wobbly shaft and hollow knob have been replaced by a solid brass shaft with ball-bearing stability and a solid knob as well, giving the tuning dial a feel that is quite reassuring."

For more information, or to request a copy of Grove Enterprises' new 2002 catalog, visit http://www.grove-ent.com or call 800-438-8155.

Police Call 2002

Gene Hughes' Police Call Frequency Guide is the de facto standard for scanner listeners. Painstakingly updated each year, and containing frequencies, locations, call signs, and base/mobile/portable counts for land mobile users across the country, Police Call is a "must" for every scanner enthusiast's bookshelf.

Licensees listed include police, fire, rescue, ambulance, aircraft, hospitals, military bases, schools, hotels, railroads, highway departments, forestry, security agencies, amusement parks, racing and sports, and more.

An excellent trunking guide for major cities reveals talk groups and system providers. Introductory chapters explain repeater systems, analog and digital transmissions, antennas, automated tracking systems, and much more.

And this year for the first time, the Police Call CD-ROM is included with every book! Quite a listening package. Choose your state and order the appropriate volume.

$19.95 plus $3 book rate shipping from Grove Enterprises; also available from other MT advertisers.

Free Computer Guide


The 340 page reference defines more than 1250 contemporary computer and Internet terms in easy to understand language. The book contains articles on shopping for a computer, online shopping and travel, investing online, how to avoid frauds and scams on the Web, the history of the Internet, how to get the most from search engines, and much more.

Books and equipment for announcement or review should be sent to "What's New?" c/o Monitoring Times, P.O. Box 98, 7540 Highway 64 West, Brasstown, NC 28902. Press releases may be faxed to 828-837-2216 or emailed to mteditor@grove-ent.com.

Of course, Passport has more than just its famous "Blue Pages" which visually display world broadcasters by frequency, time, language, and station power. It also carries receiver reviews and ratings, program profiles, listening post tips, Internet Web radio, clandestine listings, and more. Passport is $19.95 plus $3 shipping in U.S. from Grove Enterprises and other MT advertisers. (Grove Enterprises 1-800-438-8155, write 7540 Hwy 64 West, Brasstown, NC 28902, or visit http://www.grove-ent.com)
HERE'S WHAT OUR READERS ARE SAYING ABOUT MT EXPRESS:

“No doubt about it, the future is here! Sure nice to get the magazine so early, this has got to be the way! Thanks for a great job!”

- Charles (Chuck) Boehnke Keau, Hawaii

“You and the MT staff that put this project together have done a FANTASTIC job. You would seem to be the leaders in the field presenting material in this manner so it can be archived so easily. This is the way to receive a magazine.”

- Don Nauer

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NOTICE: It is unlawful to buy cellular-capable scanners in the United States made after 1993, or modified for cellular coverage unless you are an authorized government agency, cellular service provider, or engineering/service company engaged in cellular technology.

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November 2001 MONITORING TIMES 91
In the wake of America's catastrophic attack by terrorists, a distressed Middle-East resident questioned the US media's use of "Islam" and "terror" used together. "Terror is a satanic act apart from religions, and must be damned by all people," he said.

Many Americans are indeed learning that the Islamic faith is not inherently evil; throughout time, and throughout the world, there have been many extremists who misuse religion to effect their own means. We know that our own Judeo-Christian heritage has not been immune from committing atrocities in the name of God.

We are sympathetic to those populations throughout the globe who have been subjected to armed conflict for generations; they are born, live and die in terror. This time it is we Americans who reek in horror to see the unthinkable happen here on our soil.

It is hard for most of us to believe the evil incarnate that we witnessed on that black Tuesday. How could anyone harbor so much hate against us that he would spend years orchestrating a devastating blow, not just against Americans, but against world citizens – Christians, Jews, Muslims and more – who were peacefully attending their business, or simply touring one of the greatest cities of the face of the earth on that fateful morning?

It is prudent that we exercised discretion by not reacting with blind force against another country without exhaustive investigation and deliberation. Our retaliation must not resemble the original attack. The wrong of this terrorist act has been decried by world leaders – allies and adversaries alike. America’s resolve, tempered by caution, has earned global respect. If you don’t believe it, visit this extraordinary web site: http://thankyou.fast-networks.net/

Assessing our Right to Know

We are the land of the free and the home of the brave but, sadly, with this new awareness of the danger in our midst and our resolve to root it out, one wonders how many of our own freedoms will we lose? How much freedom will Americans rush to give away in the interest of security? Or will we even be asked as our freedoms are taken away?

Following the collapse of the World Trade towers, radio hobbyists on the Internet soon found themselves at each others' throats, accusing each other of compromising national security by reporting frequencies and call signs overheard on scanners and shortwave receivers.

But is this concern legitimate? As the leading publication of such information, Monitoring Times has a lot at stake in the answer. The fact is, any agency utilizing communications in this technological era is well aware of our citizens' ability to listen in. When the military and other federal agencies don't want us to hear something, we can't. They scramble it, move transmissions to satellite, you name it. It's that simple.

We believe in an open society, and we would mourn the loss of more freedoms than are absolutely necessary. Regrettably, the freedom to listen to the airwaves is sometimes misused for illegitimate ends. Our country would not bear such a burden of cumbersome legislation if it weren't for those who exploit their freedoms as far as the law will allow.

Freedom is best maintained by self-discipline. In our two decades of publication, Monitoring Times has never resorted to sensationalism to sell magazines nor, to our knowledge, divulged classified information. We consistently try to balance the public's right to know and the hobbyist's enjoyment in solving the mysteries of communications without compromising an on-going investigation or endangering law enforcement personnel.

What Does the Future Hold?

Although we see no present movement by the government to restrict our listening, we do see various agencies pressuring Congress to increase their ability to listen to us. The Justice and other departments have been asking for greater leeway in "wiretapping" (both wired and wireless), access to privacy codes, and Internet surveillance. Only time will tell if this increasing loss of privacy will target the criminals rather than our democracy.

Many of us fear that increased powers will be abused by administrative and law enforcement agencies. This concern is a major argument in the fight to retain the ability of the public and the media to monitor public safety communications. The more open our society remains, the less likely such potential abuse can go undetected and unchecked.

The sentiment has been repeated many times in the media that America lost its innocence through these terrorist attacks, and that the world will never again be the same. As agonizing and heart-rending as this event was, the truth is the world was already a different place. Wireless technology has freed us from the phone line; it's made it possible to call for help from underneath the rubble of a destroyed building, and to watch a disaster unfold in real time.

Technology has shrunk the world through computers and the Internet; it's made world economies interactive; it's made us more vulnerable and more dependent upon the rest of the world (as they are dependent upon us). And it has helped lead us toward a more global family; "Today, we are all Americans," said one French official.

This is a different world we live in, and we can't turn back the clock to a Cold War mentality of fear and paranoia. We pray and trust that America, this immigrant nation which has so often offered refuge to the victims of terror, will continue to stand for liberty and freedom now that we have become victims ourselves.

Monitoring Times wishes to acknowledge the outpouring of sympathy from well-wishers around the world. We join in our sorrow for the families who have been torn apart, in our admiration for those who participated in rescue efforts, and in our support for troops around the world who find themselves in a new kind of war.
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