Monitoring for the VOA's "Dream Team"

Also in this issue -
Experiments with Radio in Education
MT Goes to "Area 51" with TLC
Kennedy Space Center Update
Tactics of Successful Scanners
The AR-ONE gives law enforcement and government professionals total command of frequencies, modes, tuning steps and more. It is possible to tune in increments of one Hz.

Monitor Any Frequency from 10 KHz to 3.3 GHz

Ultra-stable reference frequency oscillator (0.1ppm)

The AR-ONE is a new beginning for wide-range monitors.

The AR-ONE is designed to support computer controlled operation. Link up to 99 receivers for control by a single PC. The AR-ONE can be used for mobile or fixed monitoring operations.

Surveillance operations are enhanced. Monitoring multiple frequencies is easier and faster. Computer control gives you maximum flexibility and unleashes the many features found in this advanced technology receiver.

The AR-ONE is the right choice for the new world we now monitor.

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- 1000 memory channels
- 10 VFOs
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- Ultra-stable reference frequency oscillator
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- High intercept +2dBm (-1 dBm above 2.5 GHz)
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- Excellent sensitivity

The AR-ONE is designed for use by the monitoring professional. The AR-ONE is so advanced, you’ll be thinking of new applications for its powerful capabilities.

Available only to authorized users in the USA. Documentation required.
Shortwave is back
(and this time you'll love it even more)

A Shock to the System

When Short Wave Magazine reviewed the WiNRADiO G303i receiver, they called it "a shock to the system." Other reviewers seem to agree. What is it that makes the WiNRADiO G303i receiver so special?

The WiNRADiO G303i is the first commercially available software-defined shortwave receiver. As the entire last IF stage and demodulator are performed in software running on a personal computer, this brings about a significant improvement in performance and flexibility compared to conventional receivers - as well as extraordinary sensitivity, very low phase noise, and impressive spurious signal suppression.

And there is more: The software-defined radio concept makes the G303i exceptionally well prepared for new, exciting communication technologies, such as DRM broadcasting.

What's Included?
The receiver comes as a complete hardware/software package, which installs in minutes. Just plug in the PCI card, connect its output to your sound card using the provided cable, install the supplied software, and let the world's most innovative shortwave receiver surprise you with its performance and amazing new features.

The Hardware

This elegant PCI card represents a culmination of many years of our experience with PC-based radios, designed with maximum reliability and performance in mind. No adjustable parts have been used in the design. There are two high-performance DDS units, and thousands of ultra-miniature surface-mount components delivering a performance comparable to receivers costing many times more. A custom-made gold-plated SMA connector complements the picture of quality - and as you would expect from a WiNRADiO product, an SMA-to-BNC adapter is also supplied, for your convenience.

The Software

The G303i control panel features seven different methods to tune the receiver. There are additional features such as a real-time spectrum analyzer, three scanning options, a highly accurate S-meter displaying signal strength in user-selectable units, sweeping wide-band spectrum scope, powerful memory facilities, and many others.

The optional Professional Demodulator expands the receiver capabilities yet further, by introducing additional innovative features: continuous selectivity setting (1 Hz to 15 kHz in 1 Hz increments), interactive demodulator diagrams with real-time audio spectrum scopes and vector voltmeters, built-in performance test facilities (it even lets you measure the receiver's own sensitivity), and many others.

Additional demodulators for various applications are progressively becoming available, including the DRM demodulator.

Reviews

The receiver has attracted numerous reviews in publications worldwide. Here are quotes from several:

On spurious signal rejection: "As far as I can remember I have never found any receiver, analogue or digital, which had such cleanliness, and the WR-G3C3i has set a new standard for others to emulate." [Short Wave Magazine, SWMJ

On sensitivity: "...higher than necessary in a receiver of its type...." [SWMJ] - "Much of this sensitivity is contributed by the low phase noise of the oscillator, typically -148dBc/Hz @ 100 kHz. Clearly this radio meets or exceeds the competition head on..." [Radio & Communications, R&C]

On variable IF bandwidth: "...a very useful feature and allows you to exactly match the filter bandwidth to the incoming signal... once experienced never to be forgotten." [SWMJ] - "The experience of being able to finally tune selectivity to suit a particular signal you are listening to is truly incredible, especially if you have been used to having just a few fixed bandwidths on your old radio." [R&C]

The verdict: "If I had to choose between a Collins 95S-1 and the WR-G303i (ignoring the obvious fact that the 95S-1 tunes to 2 GHz), I would take the WR-3303i." [SWMJ] - "This receiver is a gadget-owner's dream! But it isn't fantasy; for the first time in consumer technology, the shortwave listener can tailor his receiver to his own requirements, independent of factory-set parameters." [MT] - "The WiNRADiO-WR-G303 receiver, in addition to being an excellent receiver on its own right, has a certain exciting feeling about it. Perhaps this is because of the promise of a change of an entire paradigm which makes a difference between just another run-of-the-mill product and a truly innovative sm product, sparking an entirely new following." [P&G]

Just when you thought that there is nothing in shortwave that can surprise you anymore, here comes the new WiNRADiO G303i. It will impress you. We guarantee it.

WiNRADiO
For detailed information visit:
www.winradio.com
"Distance Learning" in India........................................14
By D. Prabakaran
Developing countries like India, with huge land mass and diverse cultures, have been experimenting with technology – especially radio – in some very modern ways. In an effort to make education available to all, a number of approaches have been tried over the years. While not all have been successful, this summary of educational radio in India is educational to anyone interested in combining radio with learning.

My New Old Hallicrafters S-38C......................................19
By Brian Rogers
In September 1999, Monitoring Times published a nostalgic piece called "My First Radio" in which Brian Rogers recalled his first radio and his regret at having sold it. This September, Brian has a new story to tell... with a much different ending!

On Scene at the Big E..................................................20
By Ken Windyka
One of the largest and oldest fairs on the East Coast, The Eastern States Exposition takes place every September in West Springfield, Massachusetts. The "Big E" sports plenty of action, a million visitors, and lots of scanning opportunites.

The Learning Channel Studies Area 51..............................22
By Bob Grove
As part of its spooky fall line-up, the Learning Channel's "Mysterious Places" program visited the scientific complex in Nevada known as "Area 51." Bob Grove was invited to go along to "spook out" the radio waves...

Cover Story:
Monitoring for the IBB
By Victor Goonetilleke
In this modern day of remote monitoring stations and automated broadcasting, is there really a need for human monitors? Yes, indeed, says this member of the crack monitoring team employed by the International Broadcasting Bureau - the Voice of America's parent organization. But the best system is a combination of the two.

Working in conjunction with the Remote Monitoring System, the Technical Monitoring Team ensures that each scheduled broadcast is reaching its target audience. If it's not, then the monitors analyze the problem (adjacent interference, possible jamming, transmitter problems, inappropriate frequency...?) and suggest solutions based on their knowledge of the area and spectrum usage. It's a DXer's dream job.

Cover photo: Victor Goonetilleke and the log periodic he uses for low band.
Reviews:

Larry Van Horn put the PAR End Fed Z EF-SWL antenna head-to-head with the best he had on his antenna farm and the results were “fantastic.” If you are looking for a good broadband, pass we shortwave wire antenna for use in restricted space, then the EF-SWL is your ticket, he says (p.82).

The Icom PCR1000 “black box” wx-band radio doesn’t really shine until paired with software. John Catalanaro reviews a new package designed especially for the PCR1000 – Datafile’s PROBE1k – and finds it a well-executed program equally well-suited to professional or casual monitors (p.80).

The Gadget Guy revisits a couple of worthy items already reviewed: the Icom IC-706 transceiver which has beer in almost daily use in his shack for two years, and the Minelab Explorer II metal detector reviewed last month, which has now fully proven its “mettle” with a unique find (p.86).

This month the “Scanner Equipment” column covers “Tactics of Highly Successful Scannists” – not a review, but some really great advice on making the most of your equipment (p.78).

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The Indiana Court of Appeals ruled in June that illegally intercepted cordless telephone calls cannot be used as evidence in Indiana’s courts, even when police play no part in intercepting the calls.

In two decisions—one of which is for publication, which means it can be cited as legal authority in Indiana—the court held that Indiana would not recognize a “clean hands” exception which allows the government to use evidence that falls into its hands. The State of Indiana had urged the court to adopt such a holding from a federal 6th Circuit Court of Appeals case U.S. v. Murdock.

In Murdock, the federal court recognized such an exception to the Electronic Communications Privacy Act (ECPA = also known as Title III)—the federal law that regulates electronic monitoring and surveillance by police and the public. The Indiana Court of Appeals, however, was more persuaded by three other federal appeals courts which have refused to create or adopt such an exception.

The purpose of the federal law is to protect an individual’s private communications from disclosure, regardless of whether a private party or the government intercepts the communication, the court said. “Congress’ primary concern when it passed Title III was the protection of privacy and section 2515’s importance as a protection for ‘the victim of an unlawful invasion of privacy’ could not be more clear.” In contrast, the primary purpose of the Fourth Amendment exclusionary rule “is to deter future unlawful police conduct and thereby effectuate the guarantee of the Fourth Amendment against unreasonable searches and seizures.”

“Therefore, while we agree with the State that suppression of the evidence in this case would have no deterrent effect on future police conduct,” the court went on to say, “Congress’ dominant concern when enacting Title III was not deterrence...”

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The court said. “Congress’ primary concern when it passed Title III was the protection of privacy and section 2515’s importance as a protection for ‘the victim of an unlawful invasion of privacy’ could not be more clear.” In contrast, the primary purpose of the Fourth Amendment exclusionary rule “is to deter future unlawful police conduct and thereby effectuate the guarantee of the Fourth Amendment against unreasonable searches and seizures.”

“Therefore, while we agree with the State that suppression of the evidence in this case would have no deterrent effect on future police conduct,” the court went on to say, “Congress’ primary concern when enacting Title III was not deterrence...”

The court continued “is to shield an individual’s private communications from disclosure, regardless of whether a private party or the government intercepts the communication. As other cases have held, the protection of privacy from invasion by illegal private interception as well as unauthorized governmental interception plainly play[s] a central role in the statutory scheme. Furthermore, an invasion of privacy is not over when an interception occurs, but is compounded by disclosure in court or elsewhere.”

Returning to the language of Title III the court wrote “…the language of section 2515 is unambiguous: ‘[w]henver any wire or oral communication has been intercepted, no part of the contents of such communication and no evidence derived there from may be received in evidence in any trial, hearing, or other proceeding in or before any court...’ if the disclosure of that information would be in violation of Title III. The literal application of section 2515, which requires the exclusion of illegally intercepted communications from being admitted into evidence in court proceedings, is consistent with the intent of Title III, protection of privacy.”

The court’s decision in June stems from an attempted murder conviction in which the illegally intercepted telephone calls were introduced as evidence. In September of 2001 Timothy Henson and his girlfriend were engaged to be married and living together in the same apartment. Later that month, Henson’s girlfriend ended the relationship. On the day she moved out of their apartment, she obtained a protective order against Henson, but it was of little help in keeping him away from her. Shortly after she ended the relationship, Henson began to follow her, call her at work, and even page her; Henson also left voice messages for her saying that he wanted to make-up and that “he couldn’t live without” her.

On November 9, 2001, at approximately 8:00 p.m., Henson’s ex-girlfriend was in the parking lot of the American Bandstand restaurant on the northeast side of Indianapolis when she saw Henson drive up behind her. She quickly drove out of the parking lot and headed home. As she waited for a traffic signal, Henson pulled up alongside her vehicle and starting yelling at her to pull over. She became upset and when the light changed, she drove west onto 86th Street past the Fashion Mall towards Keystone Avenue. After she passed Keystone Avenue, she turned onto Woodfield Crossing which leads to an office park and stopped. Henson caught up with her, and when he arrived at her vehicle, he reached in through her open driver’s side window, grabbed her, and stabbed her in the neck. Eventually, Henson's ex-girlfriend was able to drive away and get help.

After she was admitted to the hospital, she stated Henson was responsible for the stabbing. Henson was charged with attempted murder and aggravated battery, but he was not arrested because he could not be found at the time. Marion County Sheriff’s Deputy Scheid was assigned to investigate the case.

During the course of his investigation, an unidentified individual contacted the hospital to inquire about Henson’s ex-girlfriend. The hospital contacted Deputy Scheid and gave him the caller’s telephone number from their caller-id system.

On November 27, 2001, Deputy Scheid, accompanied by another detective went to the caller’s residence to speak with him about the calls. When Deputy Scheid arrived, Paul Carey, the homeowner said, “Thank God you’re here, he’s on the phone again, come with me.” Carey then grabbed his arm and drugged the deputy into his kitchen. Carey explained that he had a police scanner, which “was on all day long,” that was intercepting telephone conversations, and that he “knew all of the frequencies for [the phone numbers] of all of his neighbors.” Deputy Scheid and Mr. Carey then listened to a telephone conversation between Henson and his sister on the police scanner.

During the conversation, Henson’s sister warned him that the police were looking for him. Henson also told his sister that he needed clean clothing and money, and arranged to meet her. Deputy Scheid and the other detective remained at Carey’s residence for over two hours listening to Timothy’s various telephone calls over the police scanner.

As this issue went to press, Deputy Attorney General Ellen Meilaender, who argued for the Indiana Court of Appeals to adopt the “clean hands” policy regarding the intercepted phone conversations, said the state had not decided whether to appeal the ruling.

Monitoring and the Law would like to thank Spurgeon Geisten for writing and telling us about the Henson case.

 Corrections and Omissions Monitoring and the Law would like to recognize and thank Kenneth Koenitzer who, along with Attorney Frank Terranella, and John Norton, helped change the old New Jersey state scanner law discussed in the July issue.

Disclaimer: The column is provided for its news value and nothing here should be construed as legal advice. Persons seeking specific legal advice should consult an attorney licensed in their jurisdiction about the specifics of their matter.
Is your antenna ready for the harsh winter cold?
Do Your Signals Seem a Little Weak?

It’s Time to Upgrade Your Reception with These Fine Grove Products!

**Grove OMNI II**

Designed by Bob Grove, this exclusive Grove product offers 25-1300 MHz coverage; lightweight, compact design, high performance, and low cost! Designed especially for wide-area metropolitan listeners, the 68” Omni can be mounted on a mast, in an attic crawl space, against a wall—just about anywhere convenient.

BONUS FEATURE! Although the Omni is essentially non-directional, a metal mast gives it useful directional properties. Overload interference from paging transmitters, weather stations, FM or TV broadcasters, or other sources may be reduced or eliminated when positioning the antenna on the mast at the time of installation! Similarly, a distant, weak signal may be peaked by the same technique!

Order ANT 5
$29.95
plus $3 UPS
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**SCANNER BEAM II**

A standard of unexcelled performance for more than 20 years, our world-renowned Scanner Beam has been improved to provide better directivity!

Ideal for 30-50 MHz low band reception, 54-800 MHz FM Broadcast and TV, 108-137 MHz aircraft, 137-174 MHz high band, 225-400 MHz military aircraft and satellites, 406-512 MHz UHF, and 698-960 MHz extended microwave mobile. The major lobe pattern is directional from 100-900 MHz, non-directional outside of that range.

HAMS NOTE: The Scanner Beam can be used for transmitting up to 25 watts on VHF/UHF with the following average VSWR: 50 MHz @ 1.9:1, 144 MHz @ 3:1, 222 MHz @ 3:1, and 430 MHz @ 1.5:1. 50-72 ohms nominal impedance.

May be used with inexpensive TV antenna rotator or fixed in favored direction. Local signals still come in loud and clear from all directions. Balun transformer, offset pipe and all mounting hardware included (requires TV type F connector on your coax).

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**THE SCANTENNA**

This omnidirectional scanner antenna will equal or outperform any competitor on the market. Its dipole-cluster design utilizes broadband techniques to provide continuous frequency coverage from 25-1300 MHz, offering superb reception of public safety, civilian and military aircraft, hams, personal communication devices, maritime, CB—anything in its frequency range!

Approximate size 7-1/2’H x 4-1/2’W.

SPECIAL: Now includes 50’ of coax cable plus Motorola and BNC connectors!

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**Grove Skywire Dipole**

High performance and low cost—an unbeatable combination! Why restrict your frequency coverage with the gaps found in expensive trap dipoles or unpredictable random wire when you can get unsurpassed full-frequency reception with the Grove Skywire? Comes assembled with Budwig center connector ready for your PL-259 (UHF male) equipped coastal cable (50 or 75 ohms); includes two professional porcelain end insulators and complete instructions.

HAMS! Ideal for transmitting when used with a transmatch. (1.8-30 MHz at up to 250 watts)

Order ANT 2 for only $29.95!

**Professional Wideband Discone**

The discone antenna is used by government and military agencies worldwide because of its wide bandwidth characteristics and non-directional coverage. Now Diamond offers a professional grade discone at a popular price.

Designed for use with wide-frequency coverage VHF/UHF scanners and receivers, the Diamond D130J discone consists of 16 rugged, stainless steel elements and is capable of transmitting up to 200 watts in the amateur 50, 144, 220, 432, 900, and 1200 MHz bands.

As a receiving antenna, the D130J is omni-directional for continuous 25-1000 MHz (and above) coverage. A base-loaded, vertical top element is used as a low band (30-350 MHz) frequency extender.

The elements are arranged on a 24-inch support pipe equipped with two strong mounting brackets to accommodate any standard mast-pipe (1”to 2-1/8” diameter).

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Ground

**Additional Products**

- CBL 50 50’ RG-6U $19.95*
- CBL 100 100’ RG-6U $24.95*

*shipping free when ordered with antenna, or $3 each if ordered separate.

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Order ANT 18 includes 50’ of coax plus Motorola and BNC connectors!
For Love of a Radio

"Just picked up my May copy of MT, and the pic of the Realistic DX-66 in your article (Beginner's Corner) caught my eye right away! I also am the owner of a 66 (I've had to take it off my wife's rummage table three times in as many years). Yours looks much better than mine. I wanted to share a couple items with you.

"First, I think I saw the light on mine work once...remember thinking 'That's the dimmest light I've ever seen!' It must have taken my thoughts as an insult, since that's the only time it worked.

"Second, on battery life...I put a set of Energizers in this thing I believe three years ago this July (it's a great portable for 4th of July picnics). It now resides in the almighty throne room (bathroom). I listen to the morning news and weather about 30 minutes a day 5 days a week, and I am still on the same set of batteries! I know of at least one occasion that I inadvertently left the darn thing on, and didn't discover it until the next morning.

"I believe you and I may have the only two radios left that actually may generate their own power to replenish the batteries! (It's either the radio, or those Energizers that are worth their weight!). Maybe we can patent that claim :)"

"All kidding aside, it has been a great, dependable radio. It has been superceded by at least six scanners and a two or three other shortwave radios (my wife likes to remind me of that fact also) since the '80s. Heck, who counts radios any ways? (Besides my wife :) )

"I also like the very directional ferrite antenna built in; you can almost point the radio directly at the city you are listening to on the AM band.

"I'm laughing at myself right now...I was looking for a serial number on it to share with you...heck, we're lucky it's got a zip code on it from that long ago!

"Enough on the 66...let's talk about my Heathkits now, then I'll show you my home movies...

"Thanks for the article...hmm...toothbrush, linen cloth and vacuum got yours looking that good? I hope my wife doesn't get the wrong idea when she sees me with that vacuum cleaner..."

Ken Kruska, Saginaw, MI

Monitoring Times Express

"I can't begin to tell you how pleased I am with Monitoring Times Express. Since its inception I have labored under the misconception that it was available only to those who already subscribed to the print version of Monitoring Times. I have no clue where this idea came from, but I found the price unreasonable when added to the cost of the print version. Imagine my surprise when I renewed my subscription on your web page only to receive confirmation via email for Monitoring Times Express. I called on the phone the next day to correct the problem and the nice lady on the phone informed me that yes I could get Monitoring Times Express by itself for just $19.95. This, in my opinion, is a very good deal. Monitoring Times in machine-readable form fits me quite well.

"Now one of the few sore points my wife has with my various hobbies is that each comes complete with its own magazine or magazines. She has claimed for years that my only REAL hobby is reading. Being a true man I just can't bear to part with any of the magazines that I collect. Never know when you will need that one paragraph or letter that tells how you can replace a 6SN7 with a P2N222. :)

"Seriously, though, I have found that anytime I explore a new facet of any of my hobbies be it ham radio, scanners, SWL, hand loading or photography, my back issues of magazines are a good starting point to bring myself up to speed on something new.

"So when she found out that I would continue to receive Monitoring Times but that all of the issues would reside on the hard drive in my computer, she was ecstatic. Her only question was 'Why don't I get all of my magazines in this format?' to which I replied, I wish I could.'

Ken Sprouse / W13FKG Oakmont, PA

Kommercial Kudos

"This electronic delivery of MT Express is simply awesome. My high-speed broadband connection meant I went right for the high-res version, and it is as shiny and bright as any graphics I've seen on the web anywhere. Great E-Zine technology!

"For reasons I can't completely explain (operator error most likely), this is the first issue I have successfully downloaded and examined. Many kudos to all of you!

"Keep up the great work.

Jesse Rotman, Marketing Director Midland Radio Corp.

GPS Jamming?

"I read Perry's problem with phantom loads and noisy sources with interest (June Ask Bob). In the January '03 issue of GPS World, there's an article that tells of two engineers trying to track down jamming interference to GPS signals. It all came down to two VHF/UHF powered antennas used for pleasure boat TVs. Once unplugged all was okay."

Mike DeFreitas W1WEA

MT History Buffs

"Mae" wrote on the Scan Atlanta listserver -

"John Mayson wrote a good article on conventional monitoring on I-75 through the state of Georgia in the May 2003 Monitoring Times. It's a great article and definitely one to file away for future use; it gives you not only frequencies, but background and usage info. If you don't subscribe to MT, you might want to hunt down this month's issue at a bookstore and get a copy for the article."

The same John Mayson wrote to Gayle Van Horn -

"I loved your article on Colonial Scanning (July MT). I'm in a history buff of sorts. I was a little worried I included too much history in my Georgia I-75 article last month (see above). Apparently it interests someone else besides me.

"Now here's a little interesting tidbit. I have traced some of my ancestors back to Westmoreland County, Virginia. I have an ancestor who served in the House of Burgesses along with Larry's. Imagine, almost 400 years later their descendants are still crossing paths."

John Mayson, Austin, TX

"Reading Colonial Scanning by Gayle Van Horn brought back a lot of great memories. My wife and I visited Williamsburg a number of years back (before I started scanning) and it was a great learning experience. I'm proud to say that I was asked to serve on the jury of the Colonial Court. The thrill of being a part of the past was exhilarating.

"If you close your eyes and use your mind's eye while visiting Yorktown ... the thrill. It would have been that much more exciting if I was scanning at the time. Next time I will be prepared.

"Great magazine." 

Joe Grisafi, KDSV/JW

Pancakes, Anyone?

Reader Wilson asked for more information about the "pancake" antennas mentioned by John Treadgold in his February feature on TV Rovers.

"Monitoring Times asked me to send you info on what I called pancake antennas. These are low profile antennas mainly for receive purposes that have a coiled antenna inside. I believe Max rad and others offer them in their catalog, they are mainly 450 MHz UHF and 800 MHz. They also make them with 3 db gain.

"The flat rounded shape seals them against moisture and allows them to go under parking cover cars. They come in white or black to match your car and cost around $60.00 each. Except for data transmission I have not seen them used for transmit purposes."

J Treadgold
On the Show

Glen Childress asked for airshow frequencies for the Thunderbirds. Larry Van Horn chided him that if he'd been a subscriber he would have already had them in our annual March airshow issue. He added, "We actually put that online after a few months so it is always worth checking the MT website for the stuff you are looking for." (http://www.monitoringtimes.com/html/mtaisshows.html)

Glen sent a picture from (we assume) the Greenville, SC, show April 26 -

"I enjoyed the show. Here are a few pictures I thought you might like.

"These are not the T-birds, though. I am sure you have seen enough of them. This is of the largest US Flag ever flown under a parachute. At least that is what they said at the show."  
A. Glen "Glennie" Childress, Lake Hartwell, GA

Some websites Glen recommends:
http://www.bocdude.com - great military aviation shirts.
http://www.vfa203.navy.mil/photos.htm - here are some of my pictures of VFA-203
http://www.av8rstuff.com - great source of military aviation patches.
http://www.robertlundquist.com - great aviation art work

More on Michigan


"You mentioned that "Free Mobile Scanner Permits" are still available from Michigan State Police.

"I wanted to inform you that the application requires the applicant to write an explanation for the need for such a permit. Persons reading your paragraph may think that the State Police are simply giving these away. That is not the case. The applicant has to show a need and/or reason for having the scanner in the car. If the State Police are not satisfied with the explanation, the application will be rejected."
Ira Paul, Royal Oak, MI

NJ State Police

"This is a follow up to the article that I recently published on the New Jersey State Police Radio System (July MT). Since the article was written, the following changes were uncovered. First, a new transmitter in the Hudson County area of Northern NJ will greatly enhance the 800 MHz coverage of a few dead spots.

"Secondly, all North Jersey talkgroups (Troop B), will be Type I trunking by Labor Day. The fleetmap has yet to be released. Once the new talkgroups are fully operational and all units have been converted, then the talkgroup simulcasting will be turned off, thus greatly reducing the amount of radio failures.

"Due to the cost of the equipment, these upgrades have to be done gradually. Over the course of the next three years, the NJSP System will be a mixed analog/digital type II trunked system."
Michael J. Coppola, Police Officer, Firefighter, EMT
http://www.metrofireradio.com

We welcome your ideas, opinions, corrections, and additions in this column. Please mail to Letters to the Editor, 7540 Highway 64 West, Brasso, NC 28902, or email editor@monitoringtimes.com. Letters may be edited for length and clarity.

Happy monitoring!
-Rachel Baughn, KE4OPD, editor
Radio for Peace Under the Gun

On Monday, July 21, 2003, a University for Peace representative delivered an eviction notice to Radio For Peace International (RFPI) which has been operating since 1987 by mutual agreement on the University campus in El Rodeo, Costa Rica. The radio station's access gate was locked with chains and patrolled by armed guards employed by the University for Peace. In addition, the radio station was advised to vacate its facilities in two weeks.

By the time you read this, the immediate situation will have evolved, and it is unknown whether the station will have been able to remain on the air (as it is at press time). RFPI is appealing contributions to help with its legal defense. According to General Manager James Latham, the action was unexplained and legally questionable. Latham said, "What is most shocking and sad is that this action comes from an international peace organization."

University for Peace co-founder, former Costa Rican President Rodrigo Carazo Odio, invited RFPI in 1985 to build and manage its own office and studios on the university's Costa Rica campus. Consequently, RFPI constructed studios and transmitters, and has been broadcasting peace and social justice programs, such as "Peace Watch," "Middle East Radio Project," "Disability Radio Worldwide," "Honoring Mother Earth: Indigenous Voices," as well as daily United Nations programming. RFPI is a longtime carrier of "The World Today," "Honoring Mother Earth: Indigenous Voices," and "Continent of Media." RFPI is the only listener-supported shortwave radio station.

"The university is just defending its rights to its property," said Luis Alberto Varela, the university's lawyer, who says the station actually received notice in 2002 that the university would be terminating the agreement. RFPI's Oregon-based umbrella organization, World Peace University, Inc., and they were given 90 days to leave by July 2002. Some reasons given by the university are issues of money owed for telephone and internet access and illegal use of radio frequencies (which are registered with the international coordinating body, HFCC).

The Committee for the Defense of Radio For Peace International encourages you to write Kofi Annan in support of the radio station at: annan@un.org or sg@un.org, and/or to leave a message of concern with the Public Inquiries office at 212-963-4475. Contributions may be sent to: RFPI, PO Box 3165, Newberg, OR 97132, earmarked for "Legal defense fund."

Congress Poised to Overturn FCC Ruling

MT reported last month on the controversial move by the FCC to raise the cap on the number of stations a network may own from 35 percent to 45 percent. The FCC said the move was in response to its mandate from congress, the courts, and the president. Apparently, however, congressional members from both parties have taken note of the storm of vocal protest from the public (including the National Rifle Association and the National Organization of Women). The House of Representatives overwhelmingly passed legislation (included in a spending bill) to return the cap to 35 percent. The Senate, which was already working on similar legislation, is expected to agree. President Bush has stated he would veto the bill, but this is doubtful since it appears Congress will have the votes to override it.

Record Radiocommunications Conference

The World Radiocommunications Conference (WRC-03), the tri-annual meeting sponsored by the International Telecommunications Union (ITU) to revise the global radio regulations and spectrum rules, concluded in July, after four weeks of negotiations. The ITU's World Radiocommunications Conference...
allocates and manages the radio spectrum on a global basis for a variety of wireless uses, products and technology.

A number of landmark decisions were taken by the conference to deal with the increasing pressure placed the radio frequency spectrum, which is a limited natural resource. The demand for spectrum was reflected in the more than 2,500 proposals from Member States. The conference agenda was the largest ever, resolving 48 major issues.

Topping the agenda were the frequencies governments and industries will use for services such as Wi-Fi (wireless broadband), spectrum for the European Union-backed Galileo satellite navigation system, Internet access for airliner passengers, digital broadcasting below 30 MHz, global positioning and dozens of issues of lesser importance.

The 189 countries affiliated with the ITU sent delegations totaling more than 2,600 participants to the conference armed with their national, regional and global priorities and proposals for spectrum use. In addition, regional telecommunications organizations and standards bodies lobbied behind the scenes.

5 GHz Wireless LANs Go Global

WRC-03 successfully established new frequency allocations to the mobile service in the bands 5.150-5.350 MHz and 5.470-5.725 MHz for the implementation of wireless access systems including RLANs. Delegates worked hard to accommodate new allocations into an already tightly packed 5150-to-5725 MHz band, which is also used by radar, aircraft navigation systems and earth-sensing satellites.

World telecom conference delegates agreed on 455 MHz of new global wireless LAN spectrum at 5 GHz. The lower part of the 5 GHz spectrum will be predominantly indoor, with the first 100 MHz (5.150-5.250 MHz) restricted to indoor use. Member ITU states may choose whether they want to restrict the 5250-to-5350 MHz portion of the band to indoor use only.

Global Positioning Satellite issues

Allocation of frequencies for the EU-backed Galileo satellite navigation system in the 1164-to-1214, the 1260-to-1300 and the 14.000-to-14.500 GHz band so airlines may offer their passengers e-mail and other Internet services as they fly. The Boeing Company currently operates "Connexion," a satellite-based broadband Internet service under an experimental license. Lufthansa, Japan Airlines, and Scandinavian Airlines System have committed to installing the service on future long-haul flights.

Amateur Radio Issues at WRC-03

Although Amateur Radio matters were but a small part of the conference, several items on the conference agenda were of great importance to radio amateurs. The two high profile agenda items that were especially important to ham radio are: Realignment of 7 MHz allocations (Agenda Item 1.23) and the revision of the regulations governing the amateur and amateur-satellite services (Agenda Item 1.7).

Following is a recap of final conference action on the various WRC-03 agenda items impacting Amateur Radio.

Agenda Item 1.7: (Article 25) It had been predicted that the need to master Morse code as a requirement to obtain an amateur radio operators license, would be coming to an end. However, it was resolved to leave this to the discretion of the individual countries whether it would be necessary to demonstrate knowledge of Morse code in order to be granted an amateur radio operators license.

Agenda Item 1.72: (Article 19.68) A modification was approved that permits an Amateur call connect a "...not more than four characters, the last of which shall be a letter..." A provision was made for temporary use of more than four characters on special event occasions.

Agenda Item 1.7.3: (Article 1): No changes were made to the definition of the Amateur Services.

Agenda Item 1.23: (7 MHz realignment): The conference took a major decision to add 100 kHz of bandwidth to the Amateur Service on a global basis. There will be a dramatic improvement in the 40-meter band! The conference agreed to shift broadcasting stations in Regions 1 and 3 out of the 7100-7200 kHz band and to reallocate the band to the Amateur Service in those two regions. The allocation in Region 2 of 7000-7300 kHz remains exclusively amateur.

The HF Broadcasting band in Regions 1 and 3 will become 7200-7450 kHz and in Region 2, 7300-7400 kHz. The change will take effect on 29 March 2009. In Regions 1 and 3 the 7100-7200 kHz band will become exclusively amateur on that date.

Never before in the history of radiocommunication has an HF broadcasting band been shifted to accommodate the needs of another service.

Agenda Item 1.36: (HF broadcasting expansion around 4 to 10 MHz): Most WRC-03 delegations opposed additional spectrum for broadcasting. A resolution was adopted inviting the next WRC to consider additional spectrum requirements for broadcasting between 4 and 10 MHz.

Agenda Item 1.38: (70-cm SARs...satellite-borne synthetic aperture radars at 432-438 MHz). A SARs allocation will be secondary and subject to ITU Recommendations that are designed to provide protection to, among others, the Amateur and Amateur-Satellite Services.

WRC-07

HF matters will again be on the agenda for WRC-07, subject to the approval of the ITU Council, but the bands 7,000 to 7,200 kHz will be excluded from this study. It does, however, give the opportunity to realign the 40-meter Amateur allocation in ITU Regions 1 and 3 with that of Region 2.

Excerpted from the W5YI Report

W5YI Report Ceases Publication

The familiar pink sheets of Fred Maia's bi-monthly W5YI Report have long been a fixture around the ITU headquarters. Many bulletin subscribers have been with it since its inception, when all you had to do was mail Fred a batch of stamped, self-addressed envelopes. The report was originally started more than 25 years ago for the benefit of the Richardson (Texas) Wireless Klub, but it got out of hand when a handful of mail-outs turned into thousands.

Also being discontinued is The New RTTY Journal. Fred sold his company in 2000 but agreed to keep the publications going until July 15, 2003. He is retiring from the twice-monthly schedule he has kept for 25 years, but will continue to write his monthly column for CQ Magazine. Unfulfilled subscriptions of the two newsletters will be honored by CQ.

Thank you, Fred, for so many years of concise, cogent, and in-depth reporting on amateur radio and emerging technologies. It's a retirement well-deserved, but your insights will be missed.

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Monitoring for the International Broadcasting Bureau

By Victor Goonetilleke 4S7VK

With 60 Remote Monitoring Systems and 40 experienced human monitors located in five continents, the International Broadcasting Bureau’s (IBB) Monitoring Service is a state of the art technical operation, blending the best in man and machine to achieve the highest standards possible in Technical Monitoring.

What is Technical Monitoring and what is its role today in International Broadcasting?

Technical Monitoring, to put it plainly, is keeping a constant ear on the technical quality of radio broadcasts to give the highest possible reception quality to listeners in the target areas of the broadcaster.

Do stations need reception reports in this age of remote monitoring systems scattered in many parts of the world? Aren’t stations using state of the art systems to analyze their reception quality? Do broadcasters need listener reports anymore? It is obvious that many short-wave listeners and almost every DXer would wonder about these questions.

The IBB, like any major international broadcaster, spends large sums of money making programs. Gathering news and information, conducting interviews, writing scripts, editing, traveling, and finally getting the finished product to the studio control room cost a great deal of money and human effort. Above all, it is the task of the IBB to carry the message of the American people to all corners of the world. If the transmitted signal which carries the finished product doesn’t reach the listener at a useful level, that effort would all be in vain. Therefore, it is evident that the IBB must deliver a satisfactory signal to people all over the world, be they Afghans high up in the Kyber, Iraqis demonstrating on the streets of Baghdad, or even the casual listener in the comfort of his bedroom with a portable radio. It is the constant evaluation of the technical quality of IBB’s broadcasts that will enable it to succeed in that task.

Traditional Method of Collecting Reception Information.

Most stations depended on listeners to inform them about reception quality. However, sporadic letters from listeners were not sufficient on which to base their judgment. Therefore, some stations went to the extent of even printing special reception report forms so to enable listeners to fill them up easily over a period of some days or a month and send the reports to the stations. The SINPO code (Signal, Interference, Noise, Propagation, Overall-reception) was invented to facilitate this reporting system. Listeners were sent gifts from time to time in appreciation of their assistance and some broadcasters even met out-of-pocket expenses. The broadcaster would take necessary measures to solve reception problems in the target areas, taking note of feedback from listeners and their monitoring panel. A few had reciprocal arrangements with other broadcasters to monitor each others’ broadcasts. This worked well and still does for many broadcasters. However, for big international broadcasters, sporadic voluntary feedback from such monitoring is insufficient.

The author’s low band Yagi antenna at his home in Sri Lanka.
The International Broadcasting Bureau

Today, without a doubt, the most important international broadcasting network is run by the International Broadcasting Bureau (IBB), which is the parent body of the Voice of America, Radio Free Europe and Radio Liberty, Radio Free Asia and Radio Marti. These stations use transmitting sites located all over the world to get the strongest possible signal and the clearest possible reception in its many target areas. Millions of dollars are spent to operate these transmitting stations.

The IBB also owns and operates many relay stations. In addition, it also hires airtime from other broadcasters. Ironically, some of the transmitters in the former Soviet Union and Eastern Europe which jammed the VOA and RFE/RL transmissions, now carry IBB programs to their people today.

The IBB’s goal is to carry the voice of the United States to every corner of this world. The IBB thus needs a very efficient monitoring service to achieve this task.

IBB Monitoring System

The IBB runs a network of Remote Monitoring Systems in almost 60 locations, and this number is steadily growing. In addition, the IBB employs some of the finest human monitors in very important target areas. Together, the RMS and the Technical Monitors form a state of the art monitoring system unparalleled in the history of international broadcasting.

Remote Monitoring System (RMS)

The RMS consists of a communications receiver with a ground plane (nondirectional) antenna, connected to a computer. The computer, through specially designed software, is controlled and programmed from Washington and from designated Technical Monitoring Offices (TMO) to do many tasks. These include scanning a complete frequency range and recording frequency occupancy in a graphic format. This is an invaluable tool which helps to find unoccupied frequencies to replace frequencies that are interfered with, or to locate clear

A typical IBB remote monitoring system

A typical IBB remote monitoring system

frequencies for new transmissions. The RMS also sets the receiver to record a sampling of any program transmitted on any number of frequencies.

The system is so effective and fast that it is possible to tune into more than a hundred different frequencies within a span of thirty minutes and record sound bytes in the computer. These are then transmitted to Washington via the Internet.

The data thus collected goes into a master server. These sound samples in turn can be listened to by frequency managers, program producers and even members of the public. The system – the brain child of IBB Monitoring Division Chief Bill Whitacre – is such an incredible tool that many international broadcasters depend on it to manage their frequencies and check their reception.

The RMS revolutionized technical monitoring and frequency management. A detailed description of the IBB’s Remote Monitoring System complete with sound samples can be accessed at http://monitor.ibb.gov/rms/

Technical Monitoring Offices (TMO)

With a worldwide network of RMSs and human monitors, it is important for the IBB to have regional Technical Monitoring Offices (TMOs). These are located in Vienna, Helsinki, Hong Kong, New Delhi, Bahrain and Accra. Technical Monitoring Offices carry out live monitoring of IBB broadcasts as well as maintaining the network of RMSs and coordinating monitoring with the IBB’s human monitoring force.

Each TMO is responsible for a number of RMSs and monitors. With the advent of the Internet the old mail system became obsolete and has been replaced by connecting all technical monitoring locations, RMSs and TMOs via the Internet with Monitoring Headquarters in Washington DC.

The Super DXers/SWLs

Perhaps the most interesting part of the IBB’s monitoring force for hobby radio enthusiasts (DXers) might well be the human monitors scattered all over the world. The IBB uses the services of around 40 monitors who tune in to every broadcast on every frequency that the IBB broadcasts almost 365 days of the year. What do these monitors do?

They are equipped with simple receivers that are considered to be typical of the region that they live in. Using simple antennas and, in some instances, only the built-in telescopic whip antenna, they record reception of IBB signals beamed to their area. Every reception observation is entered into a Newton or a Palm V handheld computer using specially designed applications. A technical monitor checks reception of every frequency of every broadcast specified by the TMO, at least once every 30 minutes.

This data is then sent via the Internet to a central database known as Frequency Monitoring Data System (FMDS). The data is tabulated and is available per broadcaster frequency, time, language and location within a matter of hours of the data being transmitted from the monitoring locations in far-flung outposts.

In addition to simple domestic receivers, professional communications receiving equipment and excellent antenna systems are also used by the Technical Monitors for specialized work. This may include frequency measurements, finding clear frequencies, and also identifying interference – be they other broadcasters or other man-made sources. The monitors occasionally carry extensive manual “bandscans” from time to time to determine frequency occupancy.

The monitors also listen to the broadcasts to find any irregularities, such as modulation problems, transmitter breakdowns, spurious signals and anything which should not be happening to spoil the listening pleasure of the IBB audience. There are times that the wrong program could get on a frequency which should be carrying a different language. Suddenly a previously un jammed language service could get jammed or even the type of jamming might change.

Depending on the nature of the irregularity, the monitors immediately contact either the regional TMO office, the transmitting station...
to determine whether a broadcast is good enough within the target.

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urban to remote areas to check on reception and are not tied to one location, but can move out from urban to remote areas to check on reception and can communicate with listeners to seek their opinions about reception. Therefore, these monitors are a flexible, intelligent human resource for the IBB. Some of them even conduct listener surveys and gather other feedback useful to program producers as well as to frequency managers.

Why Human Monitors in this Age of Automation?

This is a question that is often asked, not only by listeners but also at the higher echelons of the IBB. Do we need human ears when we could have automated systems to listen, record and send back data? In fact, there is an incredible amount of data that the RMS system records and sends back. It is possible for program producers and frequency management personnel from Washington to listen to the program quality in far distant targets of the world just minutes after the broadcast or even while it is still on the air. It doesn’t require much stretch of the imagination to realize what a tremendous tool the RMS is.

Yet, all this data wouldn’t make sense unless humans evaluate them. The simple fact is that all the data that is gathered, even if sorted and tabulated for easy dissemination, needs to be viewed by humans. A whole team of technical people to listen to the technical quality of the recordings and disseminate that information will be absolutely necessary so that programmers and frequency managers can use the information.

Often there are times when the data itself calls for human input from the target areas. The RMS still cannot identify on its own whether an interfering source is a broadcasting station, jammer or a problem of a technical nature. A bandscan can show spots not occupied, but ideally, real listening is needed to verify whether the free channel is really free and that another broadcaster is not occupying a channel adjacent though weak in strength to the same area. Sometimes, frequency registrations are not as accurate as the industry would like them to be. Radio stations change frequencies according to their needs. Some don’t even inform their usage to the High Frequency Co-Ordinating Committee (HFCC).

Bottom line: The work of the monitor is to determine whether a broadcast is good enough for average reception. If not, then to do everything possible to make it satisfactory.

The monitors are also an invaluable source of information to the broadcaster due to their knowledge of the target areas, including listener habits and the regional culture of the different regions to which the IBB broadcasts. They are not tied to one location, but can move out from urban to remote areas to check on reception and can communicate with listeners to seek their opinions about reception. Therefore, these monitors are a flexible, intelligent human resource for the IBB. Some of them even conduct listener surveys and gather other feedback useful to program producers as well as to frequency managers.

Marina Gukasova, IBB monitor in Georgia or financially not viable to have a human monitor, it is easy to have an RMS. There are areas very important to the IBB where it cannot find a suitable monitor technically competent or willing to do the task.

At the same time there are locations where the IBB would greatly value an RMS or a human monitor, but finds it impossible due to lack of proper technical support such as Internet connectivity, stable electricity and a non hostile location for a US facility to be located. Or, where freedom is too restricted to allow a monitor, such as in North Korea, to mention but one.

The simple truth that has surfaced from “on the job experience” is that there are tasks that a machine can do better than a human. There are also tasks that a human can do which a machine cannot. There are also tasks that both machines and humans can do, but one can do better.

Therefore, the basis of the best system is to get a machine to do what it can do best and a human to do what he can do best, so that together they may do the job better than ever before.
Who Are IBB’s Human Ears?

The IBB’s monitors come from all walks of life and from all over the world – reflecting IBB’s global nature. These monitors could be termed super DXers, if you like to put them in that class. Most are top DXers and Amateur Radio Operators. Take TMO Helsinki, headed by Arto Mujunen, well known in European DX circles for his many years in the hobby and services to the European DX Council, and top medium wave DXer Mauno Ritola, and Ham operator Timo Toru.

Anurag Parashar at the Technical Monitoring Office (TMO) in Delhi

Then there is Bogdan from Poland, who amazes everyone in the team by being able not only to identify any language and broadcaster, but often the name of the announcer of East European broadcasts – such is his dedication and expertise. In Oceana there is Craig Tyson, who needs no introduction – one of the best DXers in Australia, contributor to Passport and WRTH for many years. In Japan, the IBB’s man is top DXer and computer wiz-kid Sonny Ashomori. In South Asia, Alok Das Gupta and Victor Goonetille, along with some of the better known DXers in the region, have been IBB monitors for decades.

IBB Monitor Feodor Brazhnikov from Irkusk

The IBB also has a fine network of monitors in the former Soviet Union, stretching from Vladivostok to Leningrad, Estonia, Latvia and Lithuania in the Baltic to Georgia and Uzbekistan in Central Asia.

These are only a few of IBB’s men and women. Each one of these monitors is a very experienced professional radio person, either a technically competent DXer, radio amateur and/or computer expert. They all share one thing in common, and that is a love for their work.

Unlike before the advent of the Internet, all these monitors are interlinked through many internal e-mail lists and form a very close knit family. Every day, Monitoring Chief Bill Whitacre communicates with the monitoring team, coordinating operations and sending information of use to the monitors. These include the latest changes to IBB’s frequencies, requests for monitoring from broadcasters, schedules of other broadcasters, information snippets from DX bulletins, newspapers and the Internet.

For their part, TMOs and Technical Monitors keep a stream of information flowing that is of use to other monitors – even DX tips! It is, however, no DX club or weekend radio extravaganza. For the many monitors in the IBB team, it is a virtual home of a family of radio experts from five continents, who have a job to do and believe in doing it better than anyone else. It is a way of life that they (we) are proud of, and a service that is invaluable for the International Broadcasting Bureau.
Radio has been used extensively as an educational medium in developing countries. It has supported educational programs in a wide range of subject areas and in many different countries. This article explains educational radio developments in India.

**"Distance Learning" in India**

By D. Prabakaran

The educational system in India is being reorganized to changing needs and realities. It has undergone several assessments in order to improve and to become responsive to the challenges of modernization and goals of national development. Educational content/curricula/teaching-learning materials are becoming more functional and less academic, more diversified and less universal, and more operational and less disciplinary.

Educational methodologies are also undergoing substantial changes due to correspondence education, computer-assisted instruction, educational technologies, micro-teaching, distance learning, informal education, programmed instruction, personalized instruction, radio-vision, systems approach, ungraded schools/units, video-education, work-experience, instructional television and open school education. Radio as an electronic media has been a part of this modern evolution in India, and it still has a vital role in bringing education to areas and individuals with special needs.

Though sometimes overshadowed by television, radio represents a medium capable of reaching a wide geographic audience at a low production cost, with proven educational results. Studies by the U.K. Open University have demonstrated that radio has a greater value for weak students who benefit from radio as a supplementary learning tool. The Agency for International Development has shown that radio is more cost-effective (when compared to results) than textbooks or teacher education.

Radio has the advantage of teaching subjects in which classroom teachers are deficient or untrained. In multigrade classrooms it provides instruction for one group of students while the teacher works with another group. Radio can also bring new or unavailable resources into the classroom. To summarize three main advantages of radio for education: it can improve educational quality and relevance; it can lower educational costs; and it can improve access to educational resources, particularly for disadvantaged groups.

Some of the limitations of radio for education are that interaction is limited; instructor feedback and clarification is generally unavailable; the instruction is unreviewable and not reviewable; the pace of the lesson is fixed for all students; note-taking is difficult; and time for reflection on the content is minimal. To overcome these drawbacks, preparation, supporting materials, and follow-up exercises are recommended.

The popularity, availability, and low cost of radio make it a convenient and practical medium for use in programs for learning at a distance and is mostly used in combination with other media.

**Setting the Radio Scene**

The Radio Club of Bombay broadcast the first radio program in India in June 1923. Later, a Broadcasting Service was set up and began broadcasting on an experimental basis in July 1927 from Bombay and Calcutta simultaneously. This was done under an agreement between the Government of India and a private company called the Indian Broadcasting Company Ltd. In the year 1947 (when India became independent), the All India Radio (AIR) network had only six stations, located at Delhi, Bombay, Calcutta, Madras, Lucknow and Tiruchirapalli, with a total complement of 18 transmitters—six on mediumwave and the remaining on shortwave. Radio listening on mediumwave was confined to urban areas.

As against a mere 2,75,000 receiving sets at the time of Independence, now there are about 111 million estimated radio sets in about 105 million households in the country. Presently the broadcast scenario has drastically changed with 198 broadcasting centers, including 74 local radio stations, covering close...
Trends in Educational Radio

Of late, FM radio has been gaining momentum in the developing countries. Many developed countries, such as the US, have set up specialized FM Radio Stations exclusively for education. The trend is to set up local FM Radio stations, for example, the KQED Education Network Public Radio California; WQED at Pittsburgh since 1921; Connecticut Public Broadcasting Inc. which is the parent company of Connecticut Public Television and Connecticut Public Radio, etc. Radio Cadena enables thousands of Spanish-speaking people in Central Washington State to remain informed about the events around them, and connects them with each other in a radio community.

This movement is now catching up in developing countries, especially in Africa and the South East Asian region. For example, portable, low-cost FM transmitting stations have been developed, and digital radio systems that transmit via satellite and/or cellular are being implemented in many parts of the globe under the COLME project, which includes support for computer-based software systems and networks, radio, and video production models.

New technologies like Internet streaming audio software technology, wind-up and solar radios have also enabled the global audience to listen to news from around the world. The case of Nepal’s Radio Sagarmatha (run by a body of environmental journalists) and the Community Radio Station in Kotmale, Sri Lanka, are used to help villagers to get access to the information superhighway. Also the Bangladesh Coastal NGOs Network for Radio and Communication has attracted the attention of lots of listeners.

Major Educational Radio Projects in India

In India, educational broadcasting is available from 44 stations which originate the programs and 27 auxiliary stations which relay them.

The main projects that describe the growth of educational radio are:

1. School Broadcast Project
   This project was commissioned in 1937 and targeted school students. The program started from Delhi, Calcutta, Madras and Bombay. In the beginning, the school programs were not strictly governed by the curriculum. With time and experience, the AIR tried to make its radio broadcasts more curriculum oriented, but in the absence of common syllabi and time tables in schools, even within the same state, it could not succeed.

2. Adult education and community development project (Farm Radio Forum)
   One of the most widespread examples of the use of educational radio is known as “Farm Radio Forum.” It was started in Canada in 1941 as a radio discussion program and served as a model which was adopted subsequently in a number of developing countries. After ten years, its sponsors, the Canadian Broadcasting Corporation (CBC), the Canadian Federation of Agriculture (CFA), and the Canadian Association for Adult Education (CAAE), invited UNESCO to cooperate in carrying out a reappraisal of the program and its effectiveness as an instrument of adult education. The lessons learned from Canada, such as the use of forums, multi-media, printed materials, two-way communication and various production techniques (drama, interview, panel discussion), were then introduced in India early in 1956.

   Beginning in 1956, the residents of 144 villages in the vicinity of Poona (in Maharashtra state) tried the project, with the help of UNESCO. The “Radio Forums Project” was a great success. The members of the forum could listen to a thirty-minute radio program on some agricultural or community development program, then discuss and decide its possible adoption in their own village. Many action programs were planned and put into practice as a result.

3. Farm and Home Broadcast Project
   This project was commenced in 1966 and again targeted farmers and villagers. These broadcasts were designed to provide information and advice on agricultural and allied topics. The aim was to educate the farmers and provide them assistance in adopting innovative practices in their fields as appropriate. The experts also conducted occasional farm radio schools, which proved to be very effective.

4. University Broadcast Project
   This project for University students was initiated in 1965, with an aim to expand higher education as widely as possible among the different strata of society. The program consisted of two types: General and Enrichment. The general programs included topics of public interest and enrichment programs supported correspondence education offered by universities in their respective jurisdictions. School of Correspondence studies, University of Delhi, and the Central Institute of English and Foreign Languages, Hyderabad, are well known for preparation and broadcast of their programs through AIR.

5. Language Learning Program
   The project, popularly known as “Radio Pilot Project” was started in 1979-80 jointly by AIR and the Department of Education Government of Rajasthan, with an aim to teach Hindi as first language to school-age children in 500 primary schools of Jaipur and Ajmer districts on experimental basis. The project was found useful in improving the vocabulary of children. With its success, a similar project was repeated in the Hoshangabad district of Madhya Pradesh with some modifications but had limited success.

6. IGNOU-AIR Broadcast
   In collaboration with Indira Gandhi National Open University (IGNOU), AIR stations of Mumbai, Hyderabad and Shillong started radio broadcasts of IGNOU Programs from January 1992. The main target group of this project were students of Open / Conventional Universities. Shillong no longer participates, so presently it is being broadcast from AIR Mumbai (every Thursday and Saturday from 7:15 a.m.-7:45 a.m.) on 4840 kHz or 7240 kHz and AIR Hyderabad (every Tuesday, Thursday and Saturday from 6:00 a.m.-6:30 a.m.) – 7140 kHz only. This program is still popular in the respective regions.

7. IGNOU-AIR Interactive Radio Counseling (IRC)
   Started in 1998 for students of Open / Conventional Universities, this project is also very successful. Interactive Radio Counseling is a recent concept in Indian Distance Education. In this scheme various experts at AIR stations provide live counseling across the country. The students, especially those from remote areas, can interact with teachers on the forum and can get their doubts clarified.

   With the success of the experiment with AIR Bhopal, the program was extended to eight other AIR stations (Lucknow, Patna, Jaipur, Shimla, Rohatik, Jalandhra, Delhi and Jammu). Presently Interactive Radio counseling is being provided on every Sunday for one hour (4:00 p.m. - 5:00 p.m.) from 186 radio stations of All India Radio. This includes two Sundays on the National hook-up. The toll-free telephone facility is available from 80 cities (effective from February 2001) enabling the learners to interact with experts and seek clarification without paying for their telephone calls.

   The first and third Sundays of the month, AIR stations of Delhi (Hindi) and Kolkata (in English) broadcast from national hook-up, and 186 radio stations relay either of them. The 2nd and 4th Sunday are slotted for programs of various regional centers of IGNOU and State Open universities respectively. The slot of 5th Sunday (if any) has also been given to region-based programs of IGNOU.

8. Gyan-Vani (Educational FM Radio Channel of India)
   This project was launched in 2001 and again the target group is students of Open / Conventional Universities. The Indira Gandhi National Open University (IGNOU) has in recent times taken a giant step in the area of distance education. IGNOU is the country’s most important national-level open university that conducts distance education pro-
Gyan Vani (Gyan = Knowledge, Vani = aerial broadcasting) is the Educational FM Radio Channel of India, a unique decentralized concept of extending mass media for educational and empowerment, suited to the educational needs of the local community. Each station will have a radius, covering the entire city or town and the surrounding environs with extensive access. Gyan Vani stations will operate as media cooperatives, with day-to-day programs contributed by radio programs on All India Radio and to Radio Channel of India, a unique decentralized concept of extending mass media for education and empowerment, suited to the educational needs of the local community.

The concept of Broadcasting is a means of communication and, therefore, a medium of speech and expression. Hence in a democratic polity neither any private individual, institution or organisation nor any Government or Government organisation can claim exclusive right over it. Our Constitution also forbids monopoly either in the print, or electronic media. Gyan Vani's main intention is to take education to the doorsteps of the people. In addition to basic education, it will also deal with awareness programs including those for local administrators, women's empowerment, consumer rights, human rights, health education, science education, vocational and teacher education, education for the handicapped or impoverished, education for the tribal and so on.

The content for broadcast is currently a hodgepodge of what is available (for free), and what a variety of educational institutions around the country can rustle up. In Bangalore several universities and institutes are providing the educational component. The community component is engendered by the NGO VOICES, which has in the past produced community radio programs on All India Radio. Similar arrangements provide educational and cultural programs for the station in Allahabad.

Presently Gyan Vani stations broadcast eight hours a day, 6 a.m. to 10 a.m. and 6 p.m. - four hours of original programming, which is then repeated. One hour is reserved for interactive phone-in counseling by IGNOU. IGNOU contributes one hour from its audio library of 700 programs. One hour is reserved for music related education, and one hour is now contributed by local organisations. Programs for competitive exams are being mounted. Career counseling is undertaken daily. The broadcasts will go up to 16 hours, when more local programs are available.

Presently these stations function using a temporary antenna. The transmitters are collocated with AIR stations. Local steering committees have been formed and each station will be manned by contract staffs or students, one will be a station manager who is a superannuated broadcaster. He is responsible for ensuring Broadcast code compliance.

Gyan Vani is not only for the conventional educational system but also a primary tool to make the dream of education for all a reality. Gyan Vani's main intention is to take education to the doorsteps of the people.

Gyan Vani is becoming popular due to the mixture of programs aired on it. It is not just a drab list of boring lectures but a judicious mix of educational, cultural and musical programs to lift up the mood of the listener as well as fulfilling his or her educational needs.

Besides, one of the unique selling propositions of the programs on Gyan Vani is the interactive session where a student sitting anywhere in the country can ask questions of experts, who participate in the programs. Thus, a student is able to talk to an expert on education in a chosen field and get guidance from him or her, at no cost whatsoever.

From present, the course material of IGNOU and various other institutions is disseminated through these channels. The main advantage of these channels is that students just have to tune in to their FM or television sets and the course modules are within their reach – free of cost.


Pioneered by the BBC, the technique of radio-vision allows the subject matter to be presented through two channels – the audio and the visual. The visuals are presented in the form of still filmstrips, charts, slides, models, etc, while the explanation is given through recorded narration. Educational institutions use this as a substitute for educational television. Radio-vision has its own advantages:

- It is economical
- It can cater to different categories of learners
- It is easy to produce such programs at the institutional level or at the learning centers
- It provides visual support to the concept that is taught.

A small experiment in the use of the radio-vision technique was carried out by The National Council of Education Training and Research, India, in 1975-76 using it as one of the components of the multi-media package for in service teacher training program. A series of charts and picture cards were presented to about 24,000 participating teachers in 2,400 centers along with verbal explanation provided through specially prepared radio broadcasts. The results were found to be encouraging.
A pilot project was carried out in IGNOU in 2001 under UNESCO support for testing the feasibility of using the new digital technology for cost-effective transmission of audio-visual courseware. The project proved that FM Radio transmitters and Satellite Radio transponders can be used successfully to transmit, downlink and download multimedia courseware, in this case using the Asia Star of WorldSpace Satellite radio.

10. Radio-text
Radio has been used simultaneously with textual data transfer via computer networks to create a “radio-text” environment. The teaching end is normally an FM radio station having data broadcast facility through a computer network. The main points of the radio broadcast are sent in textual mode to the receiving end via the network.

The learning end has a radio as well as a computer screen to receive the text. Since both audio and text are broadcast simultaneously, the learner at the receiving end gets high-quality and low-cost teaching.

An experiment using radio-text at Yashwant Rao Chavan Maharashtra Open University, Nasik, India, was rated a success by more than 80 percent of the students. It also used for peer group discussion at the receiving end after the broadcast, which indicates radio-text could be used for varieties of objectives (Chaudhary, 1996).

11. Low power FM radio for educational institutes
Recently the Indian Government has allowed well-established educational institutions and organizations recognized by the Central or State Government to set up their own low power FM radio stations. These will include the universities and institutes of technology/management and residential schools and universities across the country. These stations will begin airing at the end of 2003.

Licenses will be granted for FM transmitters of 50 Watts or less, and will be issued in the shared frequency band from 87.5 to 100 MHz. However, in the event of frequencies not being available in this band, the exclusive broadcast band of 104 to 108 MHz may also be considered, as in case of private FM broadcasters. The frequency band from 100 to 104 MHz, earmarked exclusively for the use of AIR, may not be used.

The decision has been welcomed by many universities previously unable to get licenses. The government will not charge any license fees for the new radio stations which will be created at a time when India is opening up radio frequencies for the private sector. Radio broadcasting in India began in 1927—but it is now seen to be time for the country’s university students to tune into something closer to their hearts.

The university stations will be amongst a number of FM radio stations which are soon going to be launched with educational and entertainment programs. The Indian Information and Broadcasting Minister, Sushma Swaraj, said all universities, Indian Institute of Management, Indian Institute of Technology and residential schools would be granted permission.

AIR will offer total turnkey solution to these institutes by providing transmitters, transmission towers, antenna, cable, playback facility and helping them get licenses. The institutes will of course have to shell out some amount for the facility. To popularize the concept in India, AIR is planning seminars and exhibitions over the next few months.

12. Used medium wave and tropical band SW transmitters for education and community radio
Old transmitters belonging to All India Radio (AIR) are being turned into money makers. With the state broadcaster on a phase-out drive, as far as mediumwave and shortwave are concerned, time on the old AM transmitters is up for rent. The idea to turn old transmitters into a source of revenue struck AIR when advised by the government to phase out and hand over shortwave and mediumwave transmitters to education and community broadcasters and focus on FM instead.

Although the educational-community radio program was launched with much fanfare a few months ago, it has yet to pick up in a big way. Instead, many organizations are seeking a wider area coverage than what is being offered under the community radio scheme. And this is where old mediumwave and shortwave transmitters can come in handy.

In the first case, it was decided to give 8-10 hours of airtime on a mediumwave transmitter to a Hyderabad-based institute (National Institute of Agricultural Extension Management) for one year. More MW stations are likely to follow. While the operations at the stations would be handled by AIR, content will be provided by the organization taking time on the mediumwave transmitter.

AIR Resources (a division of AIR) had already entered into a pact with private FM operators for co-locating their transmitters on the AIR towers in Delhi, Chennai and Kolkata. While that has been a good source of revenue for AIR Resources, the arrangement to rent out time on old mediumwave and tropical band shortwave transmitters will add to the pot. Out of the 39 mediumwave stations, only 11 are left. The remaining have been shifted to FM.

13. Distance Education Through WorldSpace - under development
Broadly defined, distance education is the communication between teachers and students who are physically separated and must rely on technology to facilitate the educational process. The common delivery systems include print, video, voice and data. The technologies for transmitting distance education include broadcast TV, broadband cable, terrestrial links, satellite, CD-ROM interactive discs and the Internet. Given that definition, one criterion for distance education systems is obvious: technologies must reach students who cannot or would not be able to physically access a classroom.

The WorldSpace System meets the requirements of providing distance education to vast stretches of the developing world, the very areas that face the greatest need. Because the system employs digital transmission, it can deliver information in the form of audio, text, images and even streaming video. WorldSpace Radio employs satellite technologies to reach a geographic area (or footprint) of 14 million square kilometers. All users within this area can receive digital sound and digital data with a 10 cm wide satellite antenna.

WorldSpace offers Direct Media Service (DMS) which can deliver huge amounts of web-enabled data to a user’s PC directly from satellite. The user’s PC is connected to a WorldSpace digital receiver coupled with a PC Adapter or is provided with a PC Receiver Card. Data is loaded directly into the hard drive of the user’s Pentium-class PC, without the need for a telephone line or connection to an Internet Service Provider. DMS is a one-way broadcast system and is not an interactive Internet system.

DMS supplements traditional Internet services by offering gigabytes of popular, educational and informative web-style content without “per-minute” telephone line charges. It is like getting a CD-ROM filled with web content delivered right to your PC every day. The download rate can be as high as 128 kbps and, since it’s automatic, may take place while the user is at work or otherwise engaged. Access to cached content, therefore, seems virtually instantaneous, like a high-speed connection or a CD-ROM.

Because reception terminals are small, easy to use and inexpensive, it should be practical and economic to distribute receivers to a considerable number of people. No, this is not a dream. All these possibilities could soon be a commercial reality with the WorldSpace CLASS (Combined Live Audio and Slide Show) initiative. WorldSpace France with the support of an Indian software company, Sankya, is developing a prototype instruction tool that has already been successfully tested and demonstrated in Delhi, Nairobi and Johannesburg. The listener benefits from real-time audio and simultaneously has full access to the slides as well as the speaker’s annotations. The CLASS approach combines the advantages of Instructor-led Learning with the visual effects of the slides.

Best of all, this approach is readily scalable, making it possible to add features as they are needed.

The advantages of transmission over WorldSpace satellite radio are that the transmission is via satellite and therefore its footprint covers all of India. Sound quality is far superior to what is experienced over mediumwave or shortwave transmission.
There is no signal attenuation. Secondly, text and images also can be uploaded and downloaded as the transmission is digital. Particularly, Internet content can be downloaded offline. This cannot be done on AM or FM Radio.

14. Radio for Schools Movement

"Radio for Schools," launched in select schools in Delhi and Bombay by some non-government organizations like "media arc," gives the students basic familiarity with broadcasting, and, more importantly, put them in the drivers seat by way of editorial leadership for a series of radio programs. This movement uses local AIR MW stations.

Depending on the response, the movement will be extended to other Indian metros and capitals of neighboring South Asian countries. The facilitators conduct broadcast workshops in schools to give the students basic orientation to radio and help them feel comfortable with equipment and studios and encourage them to unleash their creative energies. The professionals, after giving the students lectures and demos, play assistant producers to the student "bosses."

15. The Satellite Instructional Television Experiment in India

The Satellite Instructional Television Experiment in India (SITE) was the result of an agreement signed in 1969 between India's Department of Atomic Energy and the National Aeronautics and Space Administration (NASA) of the United States. This experiment provided India an opportunity to stimulate national development and gain experience in satellite broadcasting. The primary objectives are to demonstrate how satellite technology can be used for mass communications, undertake instruction in the fields of family planning, agriculture, national integration, education, teacher training, etc. SITE developed and transmitted various programs, such as a series on science for children, and a series on cottage industries aimed particularly at landless laborers. Science programs for schools formed an important dimension of SITE activity. Altogether 150 science education programs for schools, each of 10-12 minutes' duration, were broadcast.

ATS-6, a powerful satellite sent into space by the United States, was used for the SITE program. The satellite was capable of receiving signals from earth transmitters and broadcasting directly to antennae located in remote villages. These 3m antennae were part of earth stations that fed signals from the satellite to large television sets in schools across a large geographical area.

In addition to the satellite television, which served as a dominant technology, printed materials were also used to a moderate extent. As with most broadcasts and communication channels, the delivery configuration was mostly point-to-multipoint, with a very limited point-to-point and face-to-face support.

16. Indian National Satellite Project (INSAT)

The INSAT series of satellites were a landmark in the history of Indian Educational technology. Educational Television broadcasts were inaugurated through the INSAT series of satellites on 15th August 1982 in Orissa and Andhra Pradesh. Today INSAT covers the whole country. One of the stated objectives of the INSAT scheme was to bring the rural population into the national mainstream. The topics covered include most of the areas of interest to these populations.

Like Gyan Vani, The Gyan Darshan educational television channel is a collaborative effort with IGNOU. The Electronic Media Production Centre (EMPC) is the coordinating and transmitting agency for the programs. Regular transmission of programs from EMPC started on January 10, 2000. Cable operators are being encouraged to make available the programs of Gyan Darshan to all their customers to ensure a countrywide reach. Currently Gyan Darshan is available for viewing both in India and abroad.

Community Airwaves Still Blocked

The airwaves in India so far are under the central government's control. The right to manage and regulate airwaves is solely the responsibility of Government of India. The airwaves so far have not been opened to the public. Non-profit and development organizations have been lobbying for more than five years to get permission to broadcast information that could help the "information poor" to get an understanding of issues critical to their lives.

Recently, neighboring countries like Nepal and Sri Lanka edged past India by allowing non-profit community radios to be set up. Asian countries like the Philippines have already shown the beneficial impact of such locally-managed, non-profit initiatives taken up by citizens themselves. Some universities and NGOs have applied for licenses to run low-powered radio stations with a range of few kilometers, for educational or development purposes. These include Shantiniketan, Deccan Development Society, VOICES, National Law School of India, etc. Only government-owned universities like IGNOU have been granted the license so far.

India is one of the few democracies in the world to disallow community radio, in which local communities own and operate radio stations. When the government decided in 1999 to open up FM radio to the private sector, it chose not to open up frequencies for the community to use. Privately, officials cited nervousness about it falling into the wrong hands (i.e., militants and terrorists). Though it has opened up its radio airwaves to the commercial sector, but a democratization of the airwaves still hasn't reached the grass roots level.

The government argues that AIR's low-powered stations in semi-rural areas could offer one-hour time slots to panchayats [village administration] or bonafide representatives of the communities. Of course, it is difficult to ascertain which non-profit or voluntary organization is a true representative of the community. Also the government fears that the medium could be hijacked by separatist groups in the country (in Kashmir and in the Northeast, for instance) for propaganda.

In a country like India where most people are literate or semi-literate, community radio could play a key role. Very poor people can, at best, afford one electronic device, like the simple radio which could cost as little as $2 in India. Low-powered transmitters for FM are available for less than $200, but the Indian government does not allow their use for broadcasting. Non-profit organizations were hoping that they, too, would benefit from the opening up of radio in India. But the benefits went largely to the commercial sector.

Conclusion

Although many viewers are using television or internet for education, news and entertainment, radio as an educational tool has not been abandoned. Various agencies at the level of conventional and distance universities are making use of radio for broadcasting for their educational content as a cheap, local, supplementary alternative. The above-described educational radio projects indicate that radio can be an effective medium in extending quality education and training to those in need of it.

Radio is a very powerful technology that can allow information to reach large sectors of the population quickly and economically. Yet, due to national broadcast regulations in countries like India, this potential could not be fully realized in the past. Neither did community radio stations develop as they should have. In addition, the cost of transmitters, infrastructure, and equipment, has placed most potential community broadcasters at a disadvantage, especially those in remote rural areas. Despite significant government efforts to initiate educational radio, the rural corners of India -- where even national broadcasters may be heard with a weak or non-existent signal -- still experience a distinct information gap.

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My New Old Hallicrafters S-38C
By Brian Rogers

My pulse and breathing quickened when I walked into Jerry’s garage. I was still dealing with his sudden death the week before and felt like I was trespassing.

“Help yourself to anything you want,” his widow said.

I was looking for musical instruments. Jerry and I had played together in bands for several years, and he was one of the best trombone and euphonium players I’ve known. He repaired and sold instruments, too, and had quite a collection. His weekends were filled with trips to garage sales and flea markets to search for fixable clarinets, French horns or saxophones.

I took a clarinet out of its case and began popping keys down to make sure they covered what was supposed to be covered, when something on a shelf across the garage caught my eye and held it as if in a vise.

There, looking as it might have looked half a century before, was a Hallicrafters S-38C shortwave receiver exactly like the one I’d bought as a high school student in 1953 and regrettfully sold three years later to finance a college prom date.

It could have been the same radio.

I wrote about the first Hallicrafters radio in an article headed “My First Radio” that appeared in the September 1999 Monitoring Times. Finding a photograph of that radio when we were cleaning out my mother’s house prior to sale had unleashed a torrent of pleasant memories that found their way to paper.

Jerry once told me he owned a shortwave receiver, but he couldn’t remember the manufacturer or model number.

“Pat,” I shrieked to Jerry’s widow, “how much do you want for that radio?” She jumped when I hollered her name, but I was so eager to take her radio is tuned.

I tried to return to looking at clarinets and trumpets, but the effort was hopeless. I had to get my new/old radio home and give it a place of honor on my desk alongside my other shortwave receiver, a Drake SW8.

My shack is in the basement, and my only antenna is a piece of insulated wire running the length of the ceiling, about 30 feet. I’d had the wire connected to the Drake, but quickly switched it to the back of the S-38C.

All the articles I’ve read about finding old radios say resist the temptation to plug them in and turn them on until you’re sure of their conditions, but at that moment I didn’t remember reading any of them. Besides, Pat had said Jerry listened to the radio several times a week.

What a thrill to again hear the click of the on/off switch of a tube-type shortwave radio and feel its mass! Just like my first S-38C, the dial light flared when I turned the switch, then faded while the set warmed up.

The tubes began glowing as I sniffed the air and looked for smoke wafting up from under the chassis. But there was no smoke, just a brighter orange glow from the tubes.

I made sure the “speaker/phones” switch was set to “speaker” and slowly rotated the volume control clockwise.

Recalling how I’d operated my first Hallicrafters set, I put the “bandspread” dial in its mid-range and tuned across the 31 meter international broadcasting band. My excitement grew as I discovered the band was alive with signals. My new old radio worked!

But through my excitement, I realized a major limitation of old tube sets: I didn’t know the frequencies on which the signals were being received.

Without the digital frequency readout found on most good shortwave receivers built in the last 20 years, the listener can only make an educated guess regarding the frequency to which his or her radio is tuned.

It was around 9:00 pm local time (0100 UTC) when I heard the familiar “0, Canada” tuning signal of Radio Canada International. My RCI schedule told me the station had an English language transmission to North America then on 9,755 kHz. But the schedule, not the radio, told me the frequency.

I recalled how I used to check the frequencies on which I heard stations operating when I wrote for their QSL verification cards. When I listed the date, time in UTC, frequency, reception details, program details, and equipment necessary for a verification, I gave the source of the frequency in my report if I could.

Sometimes I just told the station I had heard them in the 31 meter band, or the 25 meter band, or whatever the band was. But, if possible, I would write that the frequency I was reporting had been found in their printed schedule, a club bulletin, a magazine article, or another source.

Today, reporting a frequency as found in the “Shortwave Guide” section of Monitoring Times would be an excellent source for those using old radios.

I love having another Hallicrafters S-38C and I’ve promised myself I’ll never sell it to pay for a prom date or any other reason. The thrill of turning it on and watching its tubes warm glow is renewed every day.

But, as much fun as it is, its use is confined to listening to stations strong at my location near Detroit, broadcasters such as Radio Nederland and Deutsche Welle in the evening, Radio Canada International in both morning and evening, and Radio Australia in the morning. Trying to dig weak stations out of interference and determine their frequencies is simply too cumbersome on the Hallicrafters set when compared to modern ones.

I’ve started prowling the garage sale circuit and checking local classified ads for other Hallicrafters sets. There are three books available from Monitoring Times advertiser Universal Radio and other sources that have contributed greatly to my knowledge of the value and rarity of old communications receivers, along with their histories and where along the continuum of shortwave lore they left their marks.

They are “Shortwave Receivers Past and Present,” by Fred Osterman; “Communications Receivers/ the Vacuum Tube Era: 1932-1981,” by Raymond S. Moore; and “Radios by Hallicrafters,” by Chuck Dachis.

While some material overlaps between the volumes each is unique in some way. For example, the Moore book begins with an excellent history of the tube-type communications receiver era.

Now that I own another S-38C, I hope that I can add to my collection of old radios.

But I’ll keep a modern one with digital frequency readout around for digging out those weak and rare DX stations.
On Scene at the "Big E"
By Ken Windyka

The "Big E," Eastern States Exposition in West Springfield, Massachusetts, is held annually in mid-September for a 17 day period. It is one of the oldest and largest fairs in the United States. Last year more than 1,165,000 visitors came through the gates. The exposition offers a wide range of activities for every age group's enjoyment, including amusement rides, agriculture exhibits and competitions, arts/crafts exhibits, competition and sales, musical entertainment encompassing rock, pop, R&B, '50s/’60s, and country; circus, dare devil driving, 19th century museum, a daily 'Mardi Gras' parade; and consumer "gadgets" information, demonstrations, and sales.

Additionally, each of the six New England states has a separate building with information/exhibits pertaining to tourism, public safety, and cuisine specific to that state. Furthermore, many nonprofit volunteer community service organizations such as Amateur Radio, Coast Guard Auxiliary, 4-H, Scouts, emergency medical, Red Cross, etc. also have separate buildings for their informational exhibits and potential recruitment of members/donors.

"On Scene" radio communications monitoring, as well as family radio/personal communications, can be a challenge because of the sheer number of events, radio systems, and people attending this event. I would classify radio communications into four distinct areas: internal administration, operations, security, public safety support and operations, vendors, and personal communications.

Internal Administration, Operations, and Security
The following systems support the "within the fence/gate" operations:

Security and Parking Control Primary: 152.90 Repeater

Security and Parking Control, simplex secondary: 154.60

Administration, Maintenance, and Operations Primary: 462.70 Repeater

Administration, Maintenance and Operations alternate/phone patch: 461.8125

There are approximately 100 portable units being utilized, and radio discipline is strictly maintained. Since there are about 35 buildings within the exhibition grounds, lengthy communications are usually transferred to a landline telephone extension within the buildings the communicators are located in. Key operations/management personnel also have cellular telephones.

Public Safety Support and Operations
The sheer magnitude of vehicle traffic and people requires a well-coordinated effort by local and state law enforcement. West Springfield and Massachusetts State Police, West Springfield fire department, and emergency medical all have facilities within the Big E grounds. Uniformed officers are stationed at all entry parking/exhibition entry gates and engage in roving patrols. Also, undercover/plain clothes teams utilize primarily cell phones with radio backup. Additionally, other communities nearby are affected by the exhibition and influx of visitors.

Local Law Enforcement and Major Roadways
West Springfield Police Repeater/Simplex: 867.7875
Massachusetts State Police Troop B simplex: 42.46, 42.50
Massachusetts State Police Troop B Trunking System (Type II Motorola): 852.2625, 857/858/859/860.7875
Massachusetts State Police Troop E (MA Turnpike Interstate Route 90): 42.42 (simplex), 159.225 Repeater
Massachusetts State Police, simplex (mobiles/portables): 868.9375, 868.95, 868.9625, 868.9875
Law Enforcement Area Coordination Nets: 155.475, 460.225, 858.7375
Local and State Law Enforcement ITAC (simplex): 866/867/868.0125, 866/867.5125

Fire Department and Emergency Medical Services
West Springfield Fire Department Dispatch: 866.475R
Connecticut State Police Dive Team

W. Springfield Fire Department Emergency Medical Response
West Springfield Fire Department fire ground: 866.675
Area Fire Coordination Net: 154.28
Area Fire Coordination Net (repeats 154.280): 453.4125
Emergency Medical Disaster Coordination: 453.4125
Ambulance to Hospital direct/phone patch: 155.23
Local private ambulance service paramedic backup support: 159.4125
Ambulance Phone Patch to Area Hospitals (MED 1): 463.000
Ambulance Phone Patch to Area Hospitals/Paramedic supervisors coordination (MEDS): 463.100
Ambulance Phone Patch to Area Hospitals (MED 6): 463.125
Other Medical Emergency Frequencies: 463.025, 436.05, 463.15, 463.175

Other Adjacent Communities
Agawam, Massachusetts
Police dispatch: 154.0925 Repeater
Police secondary 153.98 Repeater
Fire Dept Dispatch: 151.000 Repeater

Massachusetts State Police Cruiser

Area Fire Coordination Net (repeats 154.280): 453.4125
Emergency Medical Disaster Coordination: 453.4125
Ambulance to Hospital direct/phone patch: 155.23
Local private ambulance service paramedic backup support: 159.4125
Ambulance Phone Patch to Area Hospitals (MED 1): 463.000
Ambulance Phone Patch to Area Hospitals/Paramedic supervisors coordination (MEDS): 463.100
Ambulance Phone Patch to Area Hospitals (MED 6): 463.125
Other Medical Emergency Frequencies: 463.025, 436.05, 463.15, 463.175

Other Adjacent Communities
Springfield, Massachusetts
Police Dispatch: 460.10

Ambulance Phone Patch to Area Hospitals/Paramedic supervisors coordination (MEDS): 463.100
Ambulance Phone Patch to Area Hospitals (MED 6): 463.125
Other Medical Emergency Frequencies: 463.025, 436.05, 463.15, 463.175

Rhode Island State Police Cruiser

Police Records checks: 460.45
Police (various uses) repeater/simplex: 460.0375, 460.1625, 460.30, 460.3375, 460.3625, 460.3875, 460.50, 460.975
Fire Dept Dispatch: 154.175 Repeater, 154.40 Repeater
Fire Dept fire ground: 153.80, 153.83

Aeronautical Coordination
Westover ARB Tower/CTAF: 134.85/348.4
Barnes MAP/ANGB Tower/CTAF: 118.9/251.1
Bradley International Airport Approach/Departure Control: 125.35/325.8
Air to Air "On Scene": 123.05, 123.45

Transportation and Utilities Support
Peter Pan Bus Lines (shuttle service from outlying parking areas): 452.725
Northeast Utilities/Western Mass Electric Dispatch: 47.98
Bay State Gas Dispatch: 159.855 Repeater

Vendors/Exhibitors/Performers Support Communications
With over 700 exhibitors, amusement ride operators, and performers, there is great potential for intermittent radio communications, such as wireless microphones, low power business band VHF/UHF portable usage, Coast Guard Auxiliary, Civil Air Patrol, and amateur radio repeaters/simplex. Please refer to past editions of Monitoring Times, especially "Scanning Report," "Who's Who in the Spectrum (9 Parts)") and "Fed File" for hints on what frequency ranges to search for action.

Family and Personal Communications
All major cellular/wireless carriers have a presence in the Springfield Massachusetts area, but you should expect to experience a busy signal at times when attempting to use your cell phone. Another option is to bring your Family Radio Service portables. Your range will vary on the fair grounds depending upon your location inside an exhibition building or outside. There appeared to be quite a few people using FRS and GMRS simplex frequencies (in most instances without any CTCSS or DCS enabled), especially FRS channel #1.

Charlie Belknap's Hollywood Stunt Show—stunt truck

Conclusion
This year's "Big E" will be held September 12th through September 28, 2003. Additional information can be found at the official website: http://www.thebige.com. I've attended this event almost every year for the past twelve years and am amazed at the information that can be obtained (plenty of "take home" brochures/information) as well as the excitement of monitoring.

I use an ICOM R2 wideband portable scanner/receiver, with a Comet SMA 501 "short stub" antenna (see photo). The new ICOM R5 available from Grove would be another excellent choice. I also use a Motorola Talkabout T6400 GMRS/FRS portable (can instantly find CTCSS in use as well as scan all FRS/GMRS frequencies). I highly recommend visitors plan to arrive at the vehicle parking area by 8:30 a.m. any day to ensure on site parking and easy return to your vehicle with all those informational brochures!
In June I was invited by producers of The Learning Channel's "Mysterious Places" to serve as a technical resource and on-air guest for the production of a special investigation of an intriguing scientific complex in Nevada popularly known as "Area 51." Of course I went: How could I say no?

Our crew met in Las Vegas and set out the next morning for Rachel, Nevada, a tiny population explosion of 98 in the middle of the desert, some 200 miles north of the big city. It was originally an old mining town named for the first child born there. (I wonder what they called it before she was born?)

I brought a variety of test equipment - a Geiger counter, Bearcat scanner, Win RADIO notebook-computer-hosted receiver, AVCOM spectrum analyzer, an infrared detector, two-way communications equipment - just about anything to detect physical phenomena that we might encounter on this fact-finding expedition. And for intercommunication between our field parties, I brought Midland FRS transceivers for the car caravan and ICOM radios for longer links.

It's in Rachel where you can get any of a wide variety of cute, if over-priced, extraterrestrial souvenirs at the Little A-Le-Inn, and talk to residents who will fill your ears with eerie stories - sort of dinner theater over hamburgers.

This is the border-town home of super-secret Area 51, also known colloquially as Groom Lake, the Skunk Works, Dreamland, and perhaps more historically accurate, a section of Nellis Air Force Base near the old nuclear flats of the Nevada Test Site where the U-2 spy plane was developed.

Leaving the Little A-Le-Inn, we settled down for the night in the sands along a lonely desert road just outside of the restricted area. We couldn't see beyond the intervening mountain ridge, but we knew we would be able to hear activity if it should occur.

Another team selected a more ambitious venue - a mountain climb that would provide a lookout point where they could mount a telescope to get a better view inside the restricted area. It was a long, steep climb but, as we were to learn later, well worth their trouble.

Keeping a Sharp Lookout

The first night I found out that despite the summer-solstice daytime heat, the temperatures plummeted as soon as the sun set. Even protected by a tent, I could only stay warm by sleeping fully clothed, wearing an additional jacket, wrapped with yet a blanket and an opened down jacket on top of that.

Although the skies were clear, revealing a spectacular stellar light show, the winds began to gust; at several points my sleep was interrupted by my tent walls flapping so violently, I imagined that I was about to depart as an ultra-lite!

We worked in shifts around the clock, rarely getting more than two to three hours of sleep.
We saw some non-descript lights — perhaps distant car lights from the sparse residents, or even security patrols — but no suspect activity, and no radio traffic on the military and government frequencies variously reported.

The following morning at 7:30, a little forlorn by the quiet, and daunted by the sheer logistics of trying to see, hear, or even experience — who knew what — we began to pack up our gear to leave. I was narrating the scene of silence on-camera when suddenly the heavens exploded, and we were rocked by a thunderous sonic boom! We heard, but could not see, what exploded, and we were rocked by a thunderous silence on-camera when suddenly the heavens parted by the quiet, and daunted by the sheer logistics of trying to see, hear, or even experience — who knew what — we began to pack up our gear to leave. I was narrating the scene of silence on-camera when suddenly the heavens exploded, and we were rocked by a thunderous sonic boom! We heard, but could not see, what exploded, and we were rocked by a thunderous silence on-camera when suddenly the heavens parted...
Amateur radio Field Day can be boiled down to one word: Murphy. Field Day is supposed to be a preparedness drill involving ham radio operators and their ability to put a functioning two-way station on the air and make contacts throughout the two day event. For me it usually becomes a graphic illustration of Murphy’s Law, in which anything that can go wrong, will.

Some readers may recall this column exactly one year ago in which I issued a terse statement about Field Day not going well and that I would try again next year. Well, this past June was next year and I’m happy to report that things did go better. Just barely.

♦ Preparing for Preparedness

The spirit of Field Day supposes that some event or other may someday make it so that you have to put your ham station on the air without benefit of permanently placed antennas, commercial power, or air conditioning. I say AC because, arriving as it does at the end of June, Field Day generally finds all but the northernmost reaches of this country in the grips of a heatwave, experiencing a line of severe thunderstorms, or suffering infestations of flying, biting insects, the only known salve of which is to sit indoors watching baseball and having an ice cold beer.

The truth is that many amateur radio clubs have Field Day (FD, as it’s fondly known by many hams) down to the slick workings of a NASCAR pit crew. With carefully chosen committees of highly skilled individuals these clubs can turn a vacant lot into what looks like a Star Trek set in minutes. Erecting circus-sized tents, firing up 5 kW diesel powered generators and maneuvering 100-ft crane trucks into place with 6 element 5 band antennas attached is for them the work of an hour. Cooking on gas-fired grills big enough to roast half a pig, part-time ham chefs (no pun intended) keep the cholesterol rolling for these hungry operators. Then, of course, there’s the walk-in refrigerator stocked with cases of foreign and domestic beers (you didn’t think the 5 kW was strictly for the radios did you?).

As usual, my own experience was considerably different. Unlike last year’s fiasco involving dead batteries and operator error, I felt completely prepared. I had contacted my FD friend Bill McCoy, KE4JSU, to participate and we spent a month mapping out our strategy via e-mail. Just days before Field Day, disaster struck. Unexpected houseguests were to spend the week-end and Bill found out he would be required at his house to help with an ailing family member.

Into the Field!

FD was to start officially at 1800 Z on Saturday June 28. By that time our guests had not arrived and by 1830 I decided to give FD a try. Scrambling around the house, I rounded up the HF transceiver, the antenna tuner, a 2 meter HT, a handheld scanner, a length of rope, a couple hundred feet of aluminum electric fence wire, code key, the trusty (and completely charged) tractor battery, the solar panel charger, an aluminum ground rod, a couple of hand tools, the log book and the FD 2003 rules which I had printed off the ARRL web site.

All these items were loaded into a large cooler (leaving no room for beer!) and tossed into a wheelbarrow along with a folding director’s chair. I headed out to the back of the property to the cleared, secluded and (most important) shady spot with just enough sun to fire the solar panel. Luck was with me. The wheelbarrow tire did not go flat. Braving the swarming mayflies, trying to avoid the ploycious poison ivy, wild roses and blackberry canes, hoping not to be the target of the deer ticks and chiggers which own this part of the property, I staggered to my destination intact.

Lacking a better weight, I tied a crescent wrench on one end of the rope and sent it, old-school slings style, up into a big oak. It took 10 tosses before I managed to send the wrench end of the rope across a branch about 45 feet up. I attached an insulator to the rope end and one end of the aluminum wire to the other end of the insulator. Pulling on the rope sent the end of my “sloper” antenna to 45 feet.

I spooled out the rest of the wire, a hundred feet or so, and attached that end directly to the random wire post on the MFJ Tuner. I placed the ground rod by the radio and had no trouble driving it several feet into the ground which had been saturated by 15” of rain over the previous 6 weeks. Next I attached a length of ground wire from the tuner and the transceiver to the ground post, fastening them with a hose clamp. I attached the solar panel leads to the battery terminals, the transceiver’s power cable to the battery, plugged in the code key and hoped it all worked.

It took me two hours from the time I decided to give FD a try to my first contact on 20 meters with an FD station from Texas halfway across the country. The bands were not in the best shape. With 10 and 15 meters almost totally dead, it sounded as if all the hams in the country were on 20 meters. It was so crowded that at one point I actually worked two stations simultaneously. Neither of the two contacts could hear the other.

Now, it’s your turn. If you’re a ham and you haven’t done FD, start planning! If you’re not a ham, you’re still welcome to join in. Many stations use FD as a recruiting tool. It’s a time to introduce new hams or those interested in being hams to the local amateur radio community. FD rules allow non-licensed people to participate under the direct supervision of a licensed ham. It’s a great way to get some real hands-on operating experience, listen to a lot of tall tales from old FD vets, and maybe get in on a free hot dog! Remember, it’s always the last full weekend in June.

♦ Beginner’s Mailbag

Tom Deal has been an MT reader since the Satellite Times days when he had a big dish satellite TV system. Now he lives in South Carolina and has a DirecTV system. He wants to know if he’ll need a different receiver to be able to get the HDTV channels offered on DirecTV, how many coaxes he’ll need and if there’s “...any other hardware necessary after one has the proper dish, receiver and TV set to get HDTV...”

One reason that HDTV has been so slow to catch on is that we’re currently in one of those awkward periods of technology where new receivers have HDTV compatibility built-in and old ones don’t. What you’ll need is an HDTV DirecTV receiver such as the Sony HD100 ($850) or equivalent. There are many other
HDTV satellite receivers which will receive DirecTV transmissions which are considerably cheaper but which may not have as many features as the HD100.

You will need the 18" x 24" dish (see photo) which allows the receive to pick up the HDTV signals from the adjacent DirecTV satellite. You won't need any more coax or a new feed horn. If you want to feed up to four separate receivers you can add a second feed horn and run a total of four coax cables to the dish. However, you will need an HDTV TV set and that could be the biggest expense, depending on the size and type screen you want. Better HDTV screens still sell for $3,000; the best sell for twice that.

With price tags that high it really pays to do some investigating. Some of the best HDTV screens are also satellite and terrestrial HDTV tuners as well. But, do you want all three integrated together? And, don't forget the audio. You'll want a separate audio system with at least five speakers and Dolby AC-3 digital decoding.

David Harden, from Atlanta, GA, writes: "...What about the 'big ugly dishes' that used to prevail before DirecTV and the DISH Network?

Just another "ARISS" Day in Paradise!

Hawaii Radio Hams are fortunate to have an ARISS (Amateur Radio on the International Space Station) Earth station in Honolulu. The station is located at Sacred Hearts Academy, an all-girls school, and is an integral part of the Academy's Science and Math related programs.

Exposure to electronics and Ham Radio communications has motivated over three dozen students to obtain Technician Class Licenses. Many have gone on to study science and engineering at college. During the past decade the radio station at Sacred Hearts has participated in over fifty contacts linking astronauts in space to family, friends, and school children here on Earth.

Radio Hams throughout the state are also afforded (via Hawaii ARISS ISS pass predictions) monitoring opportunities of high passes with just a basic 2 meter HT tuned to the 145.800 MHz downlink frequency. I have demonstrated this to interested non-hams on my Kenwood TH-22AT HT to show that one does not need the Socorro, New Mexico, Deep Space Network Antenna farm to hear the (3 watts!) Space Station transceiver!

Dick Flagg AH6NM and Nancy Rocheleau WH6PN operate the station and mentor students interested in obtaining their amateur licenses. Dick keeps a watchful eye on the proceedings as members of the student team go through an elaborate "pre-contact" checklist beginning an hour before the scheduled contact. Nancy handles the Kenwood TS-790 VHF/UHF rig for the ten minute horizon to horizon contact. The students have practiced manually controlling the azimuth and elevation of the 2 meter M2 circularly polarized antenna, in case of a computer failure.

I live in an area blocked by trees to the south, so satellite reception is nearly impossible, but I am still interested in somehow being able to watch satellite TV. Is there much left to watch on the C and Ku-bands? David is also interested in UHF 225-400 MHz satellite reception. He said, "...When I was in Germany in the Air Force, some of our guys would hook a UHF air transceiver to a satellite antenna and picked up communications. I have a UHF air band scanner and would like to find out what kind of antenna I would need for good reception and how to position it."

Yes, there are lots of things to watch on the big dish. It's ironic that with the success of the small dish and the collapse of the big dish industry, viewing options on the big dish have never been greater. With a Motorola 4DTV analog/digital C/Ku-band receiver there are literally hundreds of channels to watch. Most of them are subscription channels, but quite a few are in the clear. With the addition of an MPEG11 FTA receiver as described in the June issue, there are hundreds more channels. Keep in mind that it's not only video, but radio channels as well.

Kudos are due to Dick Flagg AH6NM (a NASA SAREX/ARISS vet and radio astronomer who runs the Windward Community College Solar and Jupiter Radio Observatory) and Nancy Rocheleau WH6PN (Sacred Hearts Academy science chairperson) for their long dedication to Hawaii's ARISS program operations.

KEEP YOUR C-BAND SYSTEM
RUNNING STRONG!
Free Buyer's Guide

BEST VALUES ON...
- Receivers, including 4DTV
- Dish Movers & LNBS, all kinds
- Tune-up Kits, Tools & Parts
- Skypac Programming
- Toll Free Technical Help

Skyvision
1010 Frontier Dr. Fergus Falls, MN 56537

800-543-3025 www.skyvision.com

Toll Free Technical Help

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Going Batty

In our July column we discussed possibilities for listening to the ultrasonic navigational calls from bats. Perry Crabill, W3HQX, of Winchester, VA, remembers attending a demonstration a few years ago in which an officer of the American Bat Conservation Society (http://www.batcon.org/catalog/batdetectors.html) demonstrated simple electronics that could allow guests to hear those sounds as the pet bats flew around the room. Perry suggests several web sites for more sources for bat detectors:

http://www.econvergence.net/batdet.htm
(Do It Yourself Kit)
http://www.batbox.com/Page3.htm
(Stag Electronics-UK)
http://www.magenta2000.co.uk/kits/86l.htm
(Magenta-UK)
http://www.batcon.org/catalog/batdetectors.html
(BatDetector.html)
(Building Your Own)

Perry suggests that readers interested in building their own should simply do a Google search under the topic, “bat detectors” for loads of references on the subject, including modifying an inexpensive AM radio by replacing the ferrite loop with a microphone along with some other changes. Let us know what you hear!

Thanks, Perry.

Q. What is the simplest way to build an effective shortwave receiving antenna? (Jason Sullit, email)

A. The simplest, most effective, general purpose, popular, all-band shortwave antenna is the 40 meter half-wave dipole. It consists of roughly 66 feet of wire, cut at the center for an insulator, and fed with RG-58/U coaxial cable (shield soldered to one side of the wire at the insulator, the center conductor soldered to the other wire).

The ends are supported by insulators or simply ropes and stretched loosely between trees as high and distant from the dwelling as practical, and away from power lines. If power lines are near, the dipole should not run parallel to them, but as close to a right angle as possible to avoid electrical noise pickup.

The antenna can be configured to match your requirements, such as a sloper (one end high, the other close to the ground), inverted L (one end horizontal, the other vertical), or inverted V (center insulator high, both ends sloped toward the ground at an angle not less than 45 degrees).

This is the principle behind the popular Grove Skywire antenna, although it is fed about 14% off-center for slightly smoother impedance match over its wide frequency coverage.

Q. I bought an AM/FM radio and the salesman said I could increase the distance on my AM reception by hooking the antenna connection to my telephone cable; is this true? (Mike Barton, Youngstown, OH)

A. This is an old trick to improve radio reception, and sometimes it actually works! You are far better off running a length (50 feet or so) outdoors for this, but if you can’t put anything outside, and can’t put a long wire in the attic crawl space, or between one outdoor window sill and another, then the telephone wire might work.

Since you have to attach the antenna wire directly to one of the telephone wires, you MUST use a DC blocking capacitor to prevent voltages from being transferred to and from the phone line. You can use most any capacity from .001-.01 microfarads, and any voltage above 100 volts for this.

Simply put the capacitor in series between the antenna wire and the telephone wire. If you have a choice among four wires in the phone cable, don’t use red or green; these are the signal lines to the phone. The other two are spares and should work for the antenna.

Q. If the Grove Skywire antenna (ANT02) doesn’t contain an impedance-matching transformer, how is the coax matched to the antenna’s feedpoint impedance over the range of 500 kHz to 30 MHz? (Ed Dubinsky, email)

A. Even an impedance-matching transformer like a balun won’t work over the entire frequency range. As with any dipole, the Skywire has high and low impedance feedpoint characteristics periodically throughout its effective range. A transformer would offer a close match only periodically when its design impedance matches the feedpoint impedance at those specific frequencies.

For receiving purposes at these low frequency ranges, tight impedance matching is unnecessary. For transmitting, a transmatch at the rig takes care of the mismatch to avoid damage to the transmitter.

Grove has selected an off-center feedpoint which is a useful compromise between high and low impedance excursions. The length of the Skywire provides enough signal capture to more than make up for any perceived mismatch loss, which is minimal at these low frequencies.

Q. I need to hear an AM broadcast station about 100 miles from here, but can’t put up a long wire antenna. What are your recommendations? (David Leonard, U.S. Navy)

A. For most requirements, one of the following should improve medium-wave broadcast listening:

1. A longer antenna
2. A directional outdoor antenna like a Beverage
3. An active antenna like our H800 Skymatch
4. An indoor loop antenna with or without an amplifier like the Select-A-Tenna

If it’s a clear-channel station, you won’t need directivity on the antenna, so I’d recommend either solution 3 or 4. An active antenna is omnidirectional, so it will amplify everything (signals and noise) from all directions. It is best mounted outdoors.

The indoor loop can be adjusted either for maximum signal from a specific direction, or to minimize interference from co-channel broadcasters or electrical appliances from specific directions. But an indoor antenna of any type is vulnerable to both signal reduction because of indoor shielding (especially metallized Mylar insulation as well as aluminum siding) and wiring.

If your receiver (you didn’t mention the model) is equipped with an internal loop antenna for AM listening, you can acquire the Select-A-Tenna and simply bring it near the radio, using its signal-concentrating capability to couple stronger signals to the radio’s internal loop without an actual electrical connection. If you do have an AM antenna connector, then I’d use the direct coupling technique.

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 bobgrove@monitoringtimes.com. (Please include your name and address.) The current Ask Bob is now online at our website:

http://www.monitoringtimes.com
If you enjoy this column, then you would probably enjoy the new 16th edition of the ARRL's book *Hints & Kinks*, well worth the $16 at dealers and the ARRL online store. They also have a new book for those just entering the ham hobby, entitled *On The Air With Ham Radio*. Don't have your license? Keep putting it off? Well the new question pool for the technician class license is available at http://www.arrl.org/arrlvec/pools. And the new study book is ARRL's *Tech Q&A* for $13 at http://www.arrl.org/hamradio.html. Go for it!

Another new ARRL publication is the 2003-2004 Repeater Directory. What Police Call is to the scanning world, this book is to the amateur radio community. This edition also lists the newest IRLP stations. The Internet Radio Linking Project are ham radio stations set up to allow users to connect to similar stations around the globe. Is it the mother of all repeaters? I won't comment except to say this new mode will undoubtedly change ham radio for better or worse. Check it out at http://www.irlp.net.

Radio manufacturers Alinco, and Kenwood have free computer cloning programs for many, but not all, of their radios. Try http://www.alinco.com/usa.html (at the bottom of the webpage.) I had the bright idea of checking to discover if Kenwood had some new versions of their software. I decided to download all the new versions. I keep these in a new separate folder, and did not remove the old version until I was sure they worked better.

The same strategy applies to scanner software. With my GRE Scanner Data Manager software, the newest version did not work on my computer/radio setup. I went back to an earlier version. I refuse to waste time tweaking new beta type versions. If you bought software from RT systems, they sometimes have new updates, but you need to ask them to email you the latest version. Before you buy a new radio, you should check to see if someone makes the software. With hundreds of memory channels, it is the only feasible option.

I recently taught a ham radio class and mentored some of our local Red Cross volunteers through the process. All of them passed and now have their ham ticket. I also held a half day workshop on the importance of the correct power source (voltage and polarity), the best antenna setups, and programming ham radios (VFO, then writing to memory, etc.) I've even made them create them and solder, new mobile radio power cords, complete with Anderson connectors, fuses and "T" terminators.

I taught them all the usual tricks with their HT, including the use of tone alert, or bell paging. Works great when you need to contact someone, but they don't want to hear all the usual chatter. We picked a simplex channel (147.420), and an unusual PL tone. We then enabled the CTCSS Bell feature, and wrote this setting to a memory channel. Works great for keeping everyone in the local chapter "in the loop." My congratulations to Director of Emergency Services John, KD7VRQ, and all the others that are now licensed.

In a recent column, I extolled the wonders and low prices of FRS radios. A reader sent me a note reminding us that these FRS/GMRS radios are legal only in Canada, US, and Mexico. The rest of the world, specifically Europe, has different frequency allocations. Want an interesting web surfing project? Research "Common European Union radio frequency allocations."

In the April issue of *MT*, fellow columnist Jock Elliott announced a new experiment from radio manufacturer Midland. Called "Midland I Listens" it proposes some new voluntary rules for monitoring CB, FRS, and GRMS radio frequencies. The new proposal uses channel one CB (26.965) and channel one on all FRS and GMRS radios (462.5625) for use as an emergency monitoring channel. I suggest you plug these frequencies into the scanner's guard/watch bank. You might just catch a plea for assistance. See Jock's closing comments on page 92 of the April issue. The price for these radios has dropped through the floor at about $30. Everyone should have a pair. We pay more than that for just a new battery for the HT.

If you enjoy surfing the net, try this one out. Go to http://www.rigpix.com/index.shtml. This site features pictures of 98% of all the scanners, radios, and transceivers made by the major manufacturing companies. It is easy to select a brand, then click through their entire line of products. I got interested in this, and built a little scrapbook of pictures of the various manufactures. I also got the urge to start a collection of the radios themselves. I can't afford to buy one of everything, so I concentrated on the last 15 years. I still have few gaps, but I have quietly built up quite a collection. How did I do it on the cheap? I searched on eBay, eham, as well as the classifieds at StrongSignals.net, and other sites. Several major ham dealers carry an extensive inventory of used radios. Usually, I find the dealers want top dollar, because they gave top dollar to the person trading, or selling their used rig.

I did not collect any HF, nor large desktop models, nor mobiles. Just the handheld radios. Mind you, some don't even work; they are just for display. It is hard to find any pre 1990 radios. They either long since bit the dust, or they are being held by the original owners as a collectible or momento.

At the SEAPAC hamfest, I found the BX2 Speaker Level mixer, aka SCAN-A-MIX. Check it out at http://www.bdenterprises.com/. The makers from B&D Enterprises were there in person. I bought one and already have it hooked up I added some rubber feet to give it some gripping traction. When the phone rings or there is important traffic on another radio, I can quickly silence my bank of scanners. Perhaps they could offer a optional finger toggle flip switch. It think it would make for a better table top application. I think I smell a bench mod project. The BX2 is a solid product, but at $139, the price is way too high. SEE PHOTO.

I found a good bargain at SEAPAC in the form of a Kenwood mobile. Only $60 bucks. I tried it out, and it works and sounds fine. No mounting bracket nor manual, but I have brackets at home. Hint: check out http://www.kenwood.net/indexKenwood.cfm?do=SupportFiles. (Check out the items labeled "Other Helpful Documents.") Long ago I ordered a mobile mounting bracket from Kenwood. When I heard how cheap they were (I think it was about $5) I ordered several. Of course these fit most other brands as well.
Palm Beach County Transitions to Trunked

Covering 2,578 square miles from the Atlantic Ocean to Lake Okeechobee, Palm Beach County encompasses everything from luxury beachfront high rises and mansions to tiny fishing camps and farm-worker homesteads.

The county hosts over 540,000 acres of agricultural land, the 221 square mile Loxahatchee National Wildlife Refuge, 47 miles of beachfront coastline, and unique attractions and industries such as exclusive shopping areas, polo grounds, equestrian centers, sod farms and sugar cane fields. Historic and famous municipalities are also located here, including the City of West Palm Beach and the City of Boca Raton.

Palm Beach County local government authorities must be able to handle any circumstance, and such a diverse area certainly has its share. Consider these typical public safety responses:

- A 2:00 AM vehicular crash and fatality on a very lonely, very dark, very remote railroad crossing in the heart of "sugar cane country," many miles away from suburban developments and civilization
- An oceanfront rescue as rip-currents catch some swimmers off-guard, carrying them dangerously far from the shoreline
- A criminal investigation at a Lake Okeechobee marina, 50 miles and a world apart from the contemporary urban environment of downtown West Palm Beach
- A high-rise fire in a "Lifestyles of the Rich and Famous" neighborhood where the life that's saved may be a well-known personality and their property may be worth millions
- Low Enforcement and Fire-Rescue staffing at dozens of fairs, festivals, concerts, sports and cultural events
- Annual hurricane emergency planning and evacuation contingencies that require resources from the Sheriff's Office, Fire-Rescue Department, Emergency Management, Transit and other local agencies

Palm Beach County also has seen its share of sensationalized events and incidents, including recent criminal trials, the 2000 election debacle and the American Media, Inc. building Anthrax incident in 2001.

Mr. Mark Filla is the radio equipment engineer in Palm Beach County. Officially recognized as the 800 MHz System Administrator within the Electronic Systems and Security Division, Department of Facilities Development and Operations, Mark oversees a complex network of radio towers, microwave links, repeaters and radios.

Mark has been a Palm Beach County employee for 15 years, spending the first ten as a radio technician in the Sheriff's Office and the last five as engineer and administrator of the 800 MHz system. He's been a licensed Amateur Radio operator for ten years, and is well-suited to also serve as the County's RACES Officer. His "spare time" is often consumed as the owner and operator of the 147.99 2-meter repeater.

Palm Beach County System

According to Mark, "Palm Beach County's system is composed of a 28 channel, 10 tower site simulcast Motorola Radio System that is designed to provide seamless portable and mobile radio coverage throughout Palm Beach County. The system provides better than 97% County-wide, in-building portable coverage throughout the 2,500 square mile county."

The system replaces a mix of bands and channel assignments that had been in service for over twenty years. Palm Beach County Sheriff's Office (PBSO) formerly operated on VHF High and more recently a mix of VHF High and 800 MHz channels. Over at Palm Beach Fire Rescue (PBFR), VHF High and UHF channels were utilized. Rounding out the County's allocation of licensed channels were local government agencies that used VHF Low and UHF.

County officials first realized their radio system was deficient over ten years ago, as housing developments and population growth pushed the county's suburban zone farther and farther into former agricultural lands and new communities were built at the edge of the Everglades.

Although recent news stories in MT and elsewhere discuss the wide variety of technologies and bandplans now available to public safety agencies, Palm Beach officials did not have the luxury of such choices. In the late 1980s and early 1990s, long before 700 MHz, narrowbanding, and spectrum-efficient digital systems were being marketed, the 800 MHz public safety band was the only expansion location available… and only two [main] vendors were providing equipment for this new frequency band.

After a thorough evaluation, the diverse needs of PBFR, PBFR, and local government agencies were combined into a system specification that Motorola easily satisfied. Furthermore, use of Motorola's product also allowed County units to communicate across jurisdiction lines with other municipalities and adjoining counties that had previously or concurrently selected Motorola as their radio vendor.

"The old radio systems were not balanced," Mark advised during our meeting and interview. "Mostly on the west side of the county, along the development line, in-building coverage was lacking."

The current system includes ten, full-time, local subscriber agencies and 15 other jurisdictions that utilize the system. Sixteen common talk groups have been established for interoperability among all users, plus interoperability with adjacent, independent systems, such as one shared by the cities of Boca Raton, Boynton Beach and Delray Beach in the southern half of the county. NPSPAC [National Public Safety Planning Advisory Committee] Mutual Aid Tactical Channels #2, #3 and #4 are also available.

Mark reports that while the entire planning, budgeting, design and implementation process required a decade to complete, the system was delivered as advertised and operates as expected. "It was a pretty straightforward installation," Mark recalled. Except for the construction of one new tower, all of the County's previously-installed sites were simply upgraded with the new equipment, "Structural reinforcement was needed at four of the ten towers to bring them up to the 120 MPH wind loading standard for hurricane conditions," Mark continued. "Tower sites also have backup generators and three days of fuel if an emergency requires self-sufficient operation."

PBFR was the first agency to switch over, with units beginning the transition about two years ago. The Fire Rescue Department followed with their switch last year, and local government agencies completed their move during June of this year. Although Mark's policy is not to "sell" the merits of the system to other
agencies and jurisdictions, it nevertheless is off to a good start...and he certainly has the capacity to host more users. During the summer of 2003, the county’s public transportation agency, Palm Tran, also agreed to sign-on, and their radio migration is currently being implemented.

“The Sheriff’s Office was the first to go on the system. Their VHF High band channels were hard-patched to the 800 MHz system until all users were on board. Operator training consisted of classroom instruction on mobile and portable radios, plus the significance of tower site locations, simulcasting, trunking, channel selection and the specific features of each radio.”

No significant issues have developed since the system went on-line, although some Nextel-related interference was found. “Nextel fixed those,” Mark advised with a wide grin, “and my system puts out enough ERP [Effective Radiated Power] that their towers are not a problem.”

Regarding Nextel’s nationwide proposal to reallocate the 800 MHz band in an effort to eliminate wide-spread complaints of interference by agencies across the country, Mark expects a rocky road ahead. “If the FCC makes us move, it will be a lot of work. Each radio will have to be handled twice for reprogramming...the first time to establish the new control channels and frequencies, plus a second time to deprogram the old channels once migration is completed.”

Nextel’s proposal, though, hasn’t stopped Mark’s planning process for system upgrades on existing and new frequencies. Mobile data technologies are being explored as a possible follow-on to voice communication circuits.

Mark’s radio inventory includes approximately 3,000 mobile and portable units. Models include Motorola MCS2000, MTS2000, XDS3000, SPECTRA, and Johnson 7780s. A three-loop digital microwave system connects tower sites north and south along the coast and west into the Belle Glade area near Lake Okeechobee.

MT sincerely thanks Mr. Mark Filla for his time and hospitality during our interview. Obviously proud of his system, and rightly so, Mark’s smiling face may be seen on his departmental website. A link follows at the end of this column.

**Monitoring Palm Beach County**

Although Mark Filla is bound by his agency’s confidentiality policies against disclosing specific radio frequency and talk group information, he readily acknowledges that much of the data is available in public records and Internet databases for individuals willing to research the subject.

Lucky for MT readers and hobbyists in South Florida, frequent MT contributor Brian Cathcart has assembled an enormous collection of system-related notes. Brian publishes this and other extensive frequency data in his South Florida Frequency and Trunking Guide, now in its 7th Edition. Palm Beach County radio information, as compiled and published by Brian J. Cathcart and used with permission, appears in Table One.

**Table One: Palm Beach County**

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<thead>
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<th>Palm Beach County</th>
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**Websites of Interest to this Column**

Mark Filla’s 800 MHz Radio System Information Page, including system coverage maps: [http://www.pbegov.com/fdo/ESS/800MHz.htm](http://www.pbegov.com/fdo/ESS/800MHz.htm)

Mark Filla’s e-mail: Mfilla@co.palm-beach.fl.us

Palm Beach County, Florida: [http://www.co.palm-beach.fl.us/](http://www.co.palm-beach.fl.us/)

Palm Beach County Convention and Visitor’s Bureau: [http://www.palmbeachfl.com/](http://www.palmbeachfl.com/)


Brian Cathcart’s South Florida Frequency and Trunking Guide: E-mail Brian at scannerchude@juno.com for ordering and pricing information
Scanning Canada

This month Scanning Canada returns to the national capital region with a contribution from MT reader Randy Leclaire of Renfrew, Ontario. Randy is a very active scanner operator and also serves as the list moderator of the Yahoo Groups LiveScannerAudio, ScanRenfrewCounty and OttawaScan. Randy wrote to MT to offer a good selection of frequency hunting data from the Ottawa area.

Randy told MT that eastern Ontario is not yet affected by the new digital Government Radio System that is currently being implemented throughout the Province of Ontario. He uses a Uniden BC760 XLT Scanner into which he has programmed the channels listed in the table below.

### MT Reader Randy Leclaire.

**Bank 1 (Police)**
- Ch. 1 413.5375 OPP BEAT Repeater
- Ch. 2 411.3125 OPP Portables
- Ch. 3 412.8875 OPP UHF Mobile Repeater (Unconfirmed)
- Ch. 4 410.8625 OPP UHF Mobile Repeater (Unconfirmed)
- Ch. 5 412.770 OPP Common
- Ch. 6 410.597 OPP Sim. 11 (Unconfirmed)
- Ch. 7 418.765 OPP Sim. 1 (Unconfirmed)
- Ch. 8 414.195 OPP 1A Base Mt. St. Patrick Tower (PL tone 107.2)
- Ch. 9 413.185 OPP 1A Mobile
- Ch. 10 414.390 OPP 1B Base Mt. St. Patrick Tower (PL tone 107.2)
- Ch. 11 413.470 OPP 1B Mobile
- Ch. 12 414.435 OPP 1A Base Barry’s Bay/Kanata Tower (PL tone 107.2)
- Ch. 13 414.690 OPP 2B Base Barry’s Bay/Kanata Tower (PL tone 107.2)
- Ch. 14 414.405 OPP 3B Base Galehouse/Balderson Tower (PL tone 107.2)
- Ch. 15 414.705 OPP 4A Base Denbigh Tower (PL tone 107.2)
- Ch. 16 414.360 OPP 5A Base Pembroke Tower (PL tone 107.2)
- Ch. 17 414.450 OPP 6A Base Bancroft Tower (PL tone 107.2)
- Ch. 18 414.555 OPP 7A Base Town Of Ampring OPP (PL tone 107.2)

**Bank 2 (EMS - Ambulance)**
- Ch. 21 410.8375 Ministry of Health Prov. Comm. (PL tone 203.5)
- Ch. 22 410.8375 Ministry of Health Prov. Comm. (PL tone 162.2)
- Ch. 25 414.490 Ministry of Health Paging and Fire Paging
- Ch. 27 410.745 Renfrew EMS (PL tone 186.2)
- Ch. 28 419.725 Renfrew EMS (Input-Mobile) (PL tone 118.8)
- Ch. 29 415.400 Renfrew Co. EMS (PL tone 118.8)
- Ch. 30 413.7625 Renfrew Co. EMS UHF (PL tone 118.8)
- Ch. 31 419.275 Air Ambulance (AM Mode)
- Ch. 32-35 Spare
- Ch. 50 415.375 Renfrew Co. EMS UHF (PL Unkn)
- Ch. 51 415.375 Renfrew Co. EMS UHF (PL Unkn)
- Ch. 52 419.875 Renfrew Co. EMS UHF (PL Unkn)
- Ch. 53 419.475 Renfrew Co. EMS UHF (PL Unkn)

**Bank 3 (Fire Service)**
- Ch. 41 410.8375 County of Renfrew Fire Dispatch Paging & EMS Paging (PL tone 186.2)
- Ch. 42 415.8375 Fire Dispatch and Ministry of Health Paging (PL tone 186.2)
- Ch. 43 154.665 Renfrew Co. Fire Dispatch is in the Ottawa Valley which stretches from the outskirts of Canada’s Capital, Ottawa, in the east along the shores of the Ottawa River to the northern tip of Algonquin Park’s wilderness in the west.
- Ch. 44 155.250 County of Renfrew Fire Dispatch O/S Ch. Strategically located on the TransCanada Highway, approximately 100 km west of Ottawa (as well as most communities in Renfrew Co.)
- Ch. 45 154.070 Renfrew County Various Fire Depts. (Fire Marshall)
- Ch. 46 153.845 Horton Township Fire Dispatch is situated between the Ottawa River and the Town of Renfrew/Village of Egcnville, strategically located on the TransCanada Highway, approximately 100 km west of Ottawa (as well as most communities in Renfrew Co.)
- Ch. 47 154.130 Admaston/Bromley Township, and Village of Douglas Fire Dispatch is in a unique municipality situated approximately 100 km west of Ottawa.
- Ch. 48 154.235 Admaston/Bromley Township Fire Dispatch is in a unique municipality situated approximately 100 km west of Ottawa.
- Ch. 49 154.310 McNab-Braeside/City of Pembroke Fire Dispatch is in the Ottawa Valley, has access to White Lake and is crossed by the Madawaska River.
- Ch. 50 154.300 The Township of Whitewater Region Fire Dispatch.
- Ch. 51 155.910 Town Of Ampring Fire Dispatch Is Less than 30 minutes from Canada’s capital city, Ottawa, the Town of Ampring is located where the Madawaska River meets the Ottawa River.

**Ch. 52 - Spare**
**Ch. 53 154.695 North Algonia Township. Fire Dispatch**
**Ch. 54 154.175 Village of Bristol, Que. Fire Dispatch**
**Ch. 55 150.860 Municipality of Shawville-Clarendon, Que. Fire Dispatch**
**Ch. 56 47.070 Ministry of Natural Resources Fire**
**Ch. 19 - Pembroke Dispatch**
**Ch. 57 - 60 Spare**
**Ch. 61 169.320 Renfrew Hydro**
**Ch. 62 49.070 Ontario Hydro**
**Ch. 63 49.330 Ontario Hydro**
**Ch. 64 143.850 Ministry of Transportation, Ontario Roads (PL tone 156.7)**
**Ch. 65 143.955 Ministry of Transportation, Ontario Roads (PL tone 162.2)**
**Ch. 66 143.970 Ministry of Transportation, Ontario Roads (PL tone 156.7)**
**Ch. 67 143.199 Township of Whitewater Region**
**Ch. 68 411.6875 Ministry of Transportation, Ontario Enforcement (Unconfirmed)**
**Ch. 69 157.650 Town of Renfrew/Works**
**Ch. 70 159.030 Horton Township. Roads/Works**
**Ch. 71 157.710 Renfrew County Roads/Works (156.357-input)**
**Ch. 72 166.200 Christie & Walters (Road Crews) (Foymount) (PL tone unknown)**
**Ch. 73 166.320 Whitewater Township Roads/Works (169.410-input)**
**Ch. 74 166.665 The Message Centre (163.305-input) (Burtstown)**
**Ch. 75 163.300 Greater Madawaska Township/ Village of Calabogie Roads/Works**
**Ch. 76 171.255 Christie & Walters (166.845-input)**
**Ch. 77 162.240 T.A. Foymount (Road Crews?) (PL unknown)**
**Ch. 78 163.605 Christie & Walters**
**Ch. 79 163.590 Vincent’s Taxi**
**Ch. 80 167.190 Brad’s Taxi**

**Other Renfrew Frequencies under investigation:**
- K-9 411.8125 MHz [107.2] (Unconfirmed)
- TRU 411.5125 MHZ [107.2] (Unconfirmed)
- CISO 139.540 MHz [DES] (Unconfirmed)
- CISO 139.530 MHz [DES] (Unconfirmed)

**Reader Contributions**

Although ScanCan gets to travel quite extensively throughout Canada, it would be impossible to keep this column going for long without contributions from readers. I am very grateful that MT’s readers continue to send in their frequency logs and comments on the column. Thank you to all the readers who have helped make this column a success. If you would like to see your region featured in Scanning Canada please send me an e-mail at johncorby@monitoringtimes.com.
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Utility World

HF Communications
Hugh Stegman
hughstegman@monitoringtimes.com
www.ominous-valve.com/uteworld.html

WRC-03 Wraps Up

A

fter a month’s work, 2003’s huge World Radiocommunication Conference (WRC-03) ended on July 4th with a treaty-signing ceremony in Geneva, Switzerland. The major change to high frequency (HF) is a partial resolution of the 40-meter (7 megahertz) mess.

As electronic spectrum goes, 7 MHz is prime real estate. At night, it offers global coverage, with amazingly high signal strengths. Especially during low parts of the solar cycle, such as the one coming up soon, everybody wants to transmit there, creating interference primarily for international broadcasting. This is guaranteed to create chaos, with competing noises coming out of radios worldwide.

This type of “compromise” has long been endemic to international radio treaties. It’s a form of consensus-building that avoids favoring particular countries or regions by simply infuriating all of them equally. It certainly worked in this case.

Just as in those film noir movies, someone had to leave town. The huge cannon (broadcasting) faced off with the little pistol (amateur). For the first time ever, the little pistol won, sort of. It ran the big cannon out of the good part of town. Yes, 7100-7200 kHz, or half of the original request, will become exclusively amateur in nearly all of the world on March 29, 2009. Sounds like a long time, but by international diplomacy standards, it's sudden.

But how does this affect utilities? A couple of ways. First is that, if the broadcasters are moved out of a band, they’ll have to go somewhere else – often into utility allocations. In Regions 1 and 3, broadcasting will shift up to 7450 kHz, and to 7400 in Region 2. Presumably, the tendency for broadcasters to ooze into everything below about 7500 will accelerate.

The second way to affect utilities is via footnote. These conferences always allow exceptions to particular countries that they can’t satisfy any other way. Eventually, the non-paying public will get to see the footnotes allowing fixed and mobile utility operation in this band, and we’ll know which countries can authorize it. They appear to be mostly in the Middle East.

World radio conferences are gigantic undertakings, and they’ve already begun planning of WRC-07, the 2007 affair which will include a full review of everything from 4 to 10 MHz. That one should be even more interesting than WRC-03.

✦ Other WRC-03 Changes

Also of interest to the radio hobby is elimination of the international requirement that amateur examinations require proof of Morse Code proficiency for operation below 30 MHz. This does not automatically get rid of “code,” but it enables the world’s various governments to consider moving in such a direction. Many will.

The other big news was allocation of new frequencies for wireless computer networks. It’s a huge boost to this emerging and potentially very useful technology, but at 5 gigahertz it’s a bit out of HF.

✦ SHARES Adds Two Frequencies

SHARES stands for SHAred RESources. It’s a rather large and loose frequency pooling arrangement that enables over 20 federal agencies to talk with one another. Various gateway stations serve as net controls which pass rosters of available stations and emergency traffic to the appropriate agencies. Messages have a standard format with “This is a SHARES message” at beginning and end. The net gets busy when activated for natural disasters, special occasions, and the exercises that are usually held every four months.

SHARES has long had two primary voice frequencies, where net check-ins can be taken. These are 5236.0 (channel 1) and 14396.5 kHz (channel 2). These are usually upper sideband, but lower has been used as well, often at the same time. These frequencies can get extremely crowded when everyone’s checking in at once.

Like many federal networks, SHARES holds an informational net every Wednesday morning, usually at 1600 Coordinated Universal Time (UTC). Recently, it was announced on this net that two alternate voice channels are now in use. These are 4573.5, alternate to 5236, and 14498.5, alternate to 14396.5. Both were given as upper sideband.

This net’s other channels still exist. One group is for digital traffic using automatic link establishment (ALE). Frequencies are 4490, 5711, 9106, 11217, 15094, and 17487 kHz, also known as channels 3-8. There is also a bulletin board system. It uses such digital modes as PACTOR (Packet Teleprinting Over Radio) for message storage and retrieval. Connection frequencies are 6800 and 13242 kHz (channels 9 and 10).

✦ A. Geoffrey Halligey
1913-2003

We regret to announce the passing of Geoff Halligey, one of the founders of the utility radio hobby. Geoff had professionally “pounded brass” (worked Morse telegraphy) for many, many years, and seemingly knew just about everything. He remained a steady contributor to this column right up until the very end.

Halligey is best known for editing the first of the big frequency books we’ve all come to depend on, namely the Confidential Frequency List. This book, which is still published, was at that time a labor of love for all concerned. But the original publisher died, and co-editor Tom Kneitel moved on to other things. At one point Geoff got it out pretty much by himself, and it was a monumental job. He kept the standards up, and the content timely.

Not as well known is Geoff’s brief stint editing the “Below 30 Megahertz” column in the old, long-gone journal of the Radio Communications Monitoring Association, a real hardcore group. He followed Bob Horvitz, a technically inclined visionary who was very active in the citizen’s movement to keep backscatter radar from overwhelming HF. He preceded yours truly, who was therefore coming after a pretty tough act at the RCMA. Scary!

Geoff was the real thing, and he will be missed.
<table>
<thead>
<tr>
<th>Abbreviations Used in this Column</th>
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All transmissions are USB (upper sideband) unless otherwise indicated. All frequencies are in kHz (Kilohertz) and all times are UTC (Coordinated Universal Time). “Numbers” stations (encrypted, usually unidentified, broadcasts thought to be intelligence-related) are identified in () with their ENIGMA station designators, as issued by the European Numbers Intelligence Gathering and Monitoring Association.

- 2785.4 Unid-Unknown station with plain old RTTY at 850/100, still didn’t print, at 2340. (Bob Hall-RSA)
- 3451.5 0a-Irish Navy, Haublwowie, selcal XSF, with traffic in offline encrypted SITOR-A for unknown ship “22,” at 1448. (Day Watson-UK)
- 3485.0 New York-Aviation weather VOLMET, at 0505. (Barry Williams-AL)
- 4271.0 CFH-Canadian Forces, Halifax, NS, with RTTY gate warning, then FAX, at 2354. (Hall-RSA)
- 4274.0 XSU-Yanti Radio, China, with ARQ marker at 0007. (Halle-RSA)
- 4280.0 PBCf4-Dutch Navy, Goeree, with RTTY channel availability marker at 1254. (Halle-RSA)
- 4295.0 FUE-French Navy Brest, with usual RTTY test marker at 2045. (Watson-UK)
- 4451.5 19-Irish Navy vessel, sending offline encrypted SITOR-B traffic to “76,” petrol ship Aisling, no reply, at 1438. (Watson-UK)
- 4583.0 DDK2-Hamburg Meteo, with marker “cag de DDK2 DDH7 DDK9 freq 4583 kHz 7646 kHz 10010 8 kHz,” then weather at 0957. (Watson-UK)
- 4601.5 19-Irish Navy vessel working “0a,” Haublwowie base, sent to 5254 to pass traffic in SITOR-A, at 1040. 23-Irish Navy patrol ship Ciara, selcal CVVD, with offline encrypted SITOR-A traffic for vessel Aisling, at 1046. Aisling, rogering traffic and then sending offline encrypted SITOR-A to Haublwowie, at 1054. (Watson-UK)
- 5465.8 “R”-Russian Navy, CW single letter beacon (MX) at 2018. (Watson-UK)
- 5505.0 Unid-Unknown VOLMET, sounds like Shannon, at 0442. (Williams-AL)
- 5598.0 Air Comet 940-Airliner in selcal check and position report at 0450. (Privat-France)
- 5616.0 Shanwick-North Atlantic MWARA, Ireland, at 0440. (Williams-AL)
- 5622.0 Gander-Gander Radio, North Atlantic MWARA, oceanic air traffic control at 0541. (Williams-AL)
- 5628.0 New York-North Atlantic MWARA, oceanic air traffic control with an Air France flight (during the strike), at 0440. (Williams-AL)
- 5697.0 Peach Pie (sounds like; maybe Peak Time)-US military, with EAM simulcast on 8992, 11244, and 13155, at 1725. (Jeff Haverlah-TX)
- 5671.0 ADW-US Air Force control point, Andrews AFB, MD, calling J42, a US Coast Guard helicopter, in ALE at 1651. (Perron-MD)
- 5675.0 Trenchton-Military Canadian Forces, Ontario, VOLMET at 0530. (Williams-AL)
- 5671.0 Turbo 74-US Air Force tanker, working Shado 81 regarding air refueling tracks, at 0226. (Baker-OH)
- 5685.0 CFE-Venezuelan Air Force headquarters, calling CRM4 (Commander, Region 4), in ALE at 0021. (Perron-MD)
- 5690.0 Und-Unknown Intelligence (E10), AM 5-letter groups in progress at 0152, then “End of message, message group 216,” followed by another brief message and sign off at 0157. (Edward G. Walsh-AL) SYN2-Israeli Intelligence, AM callup only (E10a), simulcast on 6912, at 0250. (Williams-AL)
- 5693.0 MW2V-Israeli Intelligence, AM callup only (E10a), at 0315. (Williams-AL)
- 5698.0 C3L43-Venezuelan Army Communications Logistics Center, calling SCL43 in ALE at 2159. (Perron-MD)
- 5727.0 Panther-US DEA, Bahamas, working aircraft 25C, at 2244. (Mark Cleary-SC)
- 5637.0 Sitko 14-E-Colombian Army, calling Faco2E, Facatativae, in ALE 0005. (Perron-MD)
- 7701.5 0a-Irish Navy, Haublwowie, sending unknown ship “22,” selcal CVSB, in SITOR-A at 1335. (Watson-UK)
- 7810.0 CIO2-Israeli Intelligence, callup only (E10a), at 0245. (Perron- MD)
- 7992.0 Spotless-US military, working Pathology, who sometimes allowed EAM audio from 8992/11244 to leak through, at 0056. (Haverlah-TX)
- 8056.0 CLS-US Army, Ft. Campbell, KY, calling BGAD (Blue Grass Army Depot), in ALE at 1319. (Perron-MD)
- 8156.0 C6WWH-Probable Royal Bahamas Police Force, working C6R2066 in heavily accented English, at 2122. (Cleary-SC)
- 8302.5 Wave-SeaWave, transmitter in NJ, data bursts with a CW identifier every 3 minutes, at 1324. (Halle-RSA)
- 8337.6 Shark 10-US Coast Guard, telling Delta 02 that his “parrot is sweet,” at 2106. (Cleary-SC)
- 8414.5 Various ships, plus coastal stations Lyngby, Madrid, Tenerife, Olympia, and Iqualuit, sending DSC packets over a 26-hour
period ending at 1952. (Watson-UK)

8500.0 VTH17-Indian Navy, Mumbai, running an RTTY test loop at 1950. (Hall-RSA)

8764.0 CAMSLANT-US Coast Guard, VA, with the "Perfect Paul" synthesized weather voice at 0350. (Williams-AL)

8790.0 WLO-Mobile Radio, AL, with Atlantic/Caribbean weather, then calling an unknown vessel, at 0305. (Jeff Seale-KY)

8846.0 New York-New York Radio, M3ARA Caribbean-8 net, oceanic air traffic control at 2110. (Williams-AL)

9031.0 Gono -VDU -info, Bel Air, Maryland, with a "Provident" voice message in LSB ALE, at 0025. (Perron-MD)

9289.0 USMCG-Naval Oceanic Weather Service, with weather in ALE, at 2117. (Hall-RSA)

9507.0 UIW-Kaliningrad Radio, Russia, with SITOR-A traffic at 0725. (Perron-MD)

9620.0 Mochuelo-Colombian telephone net, using ALE in LSB to set up a phone circuit at 2047. (Perron-MD)

9848.0 Undia-The Singing Man, possibly the Chinese one, at 2115. (Williams-AL)

9982.0 KV70-US Department of Defense, Honolulu, HI, sending FAX messages at 0025. (Perron-MD)

10047.0 SLC222-Venezuelan Army Communications Logistics Service Center, with SLC222 in ALE, at 2229, also 0156 at 0035 and 0041. (Perron-MD)

10285.0 RU -info from "Tropical Prediction Center, Miami," at 1246. (Hall-RSA)

10328.0 "C"-Russian Navy CW single-letter beacon (MXC), Archangelsk, at 1613. (Watson-UK)

10444.0 M1S-Mexican Army, calling Tierra in ALE, at 0301. (Perron-MD)

10493.0 3V6-Unknown station calling 14U in ALE, at 1905. Not the same net as US military on 11244.0. (Larry Van Horn-NC)

11243.0 10U-Unknown station calling 12U in ALE, at 1903, and another ALE station calling 14U at 1905. Not the same net as US military on 11244.0. (Larry Van Horn-NC)

11340.0 1501-Colombian telephone net, using in ALE in SSB to set up a phone circuit at 2047. (Perron-MD)

11475.0 MAE-Algerian MFA, Algiers, calling TRP, Tripoli, Libya, in ALE at 1611. (Privat-France)

11494.0 Panther-US DEA, Bahamas, working aircraft 15C, possibly ALE-initiated, at 2017. (Clear-SC)

11610.0 SLC222-Venezuelan Army Communications Logistics Service Center, with SLC222 in ALE, at 2229, also 0156 at 0035 and 0041. (Perron-MD)

11655.0 Trenton Military-Canadian Forces, working King 21, a US Air Force/ Air National Guard rescue HC-130, at 0006. (Perron-MD)

11855.0 Sitiol 4E -Colombian Army, calling Sitiol 7E (possibly Colombian), at 0041. (Perron-MD)

11927.0 Unknown -Military -sounding net, not on long enough to identify at 1905. (Larry Van Horn-NC)

12035.0 Korean MFA, Seoul, with offline encrypted traffic for selcal messages at 1906. (Perron-MD)

12190.0 PHPA -info from "Tropical Prediction Center, Miami," at 1246. (Hall-RSA)

12285.0 "D"-Russian Navy CW single-letter beacon (MXC), Archangelsk, at 1613. (Watson-UK)

12567.0 RU -info from "Tropical Prediction Center, Miami," at 1246. (Hall-RSA)

12785.0 RU -info from "Tropical Prediction Center, Miami," at 1246. (Hall-RSA)

12830.0 Russian RTTY loop to "novoship.ru" at 1905. (Perron-MD)

13031.2 FUF-French Navy, Ft. de France, Martinique, RTTY test loop to AAAA (Group call: all French warships -Hugh), at 2032. (Jason Burns-M)
Decoding Software Update

This month we take a tour of the latest offerings from the world’s major HF digital decoder manufacturers and profile the AX.25 Packet Radio system.

Wavecom

The Swiss experts have been active of late with a number of releases that bring their excellent range of decoders in line with some of the modes and features already available on the high-end Hoka line decoders.

In particular, their W40PC card has now added the ARINC 635 HF DataLink (aka HF-ACARS) system, which will be a welcome addition for aviation listeners. HF DataLink connects aircraft from a growing number of the world’s airlines with more than 15 groundstations across the globe in areas where VHF communications are often difficult or impossible. See MT’s June and July 2002 issues for a detailed run-down on the HFDL system.

The W51PC card software has also been updated to add the ever-popular MIL-188-110A high-speed modem, adds error correction to the CROWD-36 decoder and allows error correction to be switched off in the NEC-A decoder (probably akin to the Hoka Code30’s NEC-A “raw” mode).

The company has also launched the W51LAN. Based on the popular W51PC system, the W51LAN puts the hardware into a standalone form for connection to a PC either directly, over a LAN or the internet. PC’s with Windows XP can connect to the decoder box using the remote desktop service. The box looks like it could make for some interesting possibilities when used mobile with a laptop, for example.

At about $8000, this is not the system for the average digital listener, however! Check in with Wavecom (see Resources) for the details.

SkySweeper

This lesser-known software package recently added a couple of useful features.

- SHIP and SYNOP weather forecast decoding has been added to the RTTY module.
- SELCAL (ICAO Annex 10) HF aircraft selcal decoder
- HFDL

Figure 2: SkySweeper decoding SYNOP traffic

Also added is the capability for the program to send decoded test over the internet using a standard Telnet (keyboard to keyboard) connection.

The decoder remains popular with many listeners looking for a reasonable package of modes without any of the complex (and often obsolete) systems carried by the Wavecom and Hoka lines. Price is EU99 for the standard edition.

In addition to those above, SkySweeper includes ARINC, CW, Hellschrieber, MFSK16, MIL-188-141 ALE, PacTOR-1, RTTY, SITOR-A and B, Slow Scan TV, Fax and the proprietary SkyBoost mode.

Hoka

Hoka has also been active on the update front with the release of the second edition of the Code300-32 software, which marked the beginning of Hoka’s move to a true Windows-native product, allowing, among other features, the ability to open multiple decoder windows on the same audio signal. For example, this would allow one to see, separately, the ALE triggering a MIL-188-110A high-speed modem.

The 300-32 is arguably the king of all decoders in terms of capabilities and modes supported and has by far the greatest coverage of modern systems. In particular, PacTOR-II, both the serial and 39-tone MIL-188-110A modems, Racal’s SkyFax system, NATO STANAGs 4285 and 4529 plus the usual ALE and HFDL.

The standard version retails for EU4,500 direct from Hoka.

In a related development, US signal specialists Monteria are also offering specialized versions of this decoder for professional applications, including a very interesting burstmode decoder addition which can reveal the underlying messaging embedded in high-speed modem traffic. The current offering recognizes file compression like PKZip and Unix tar, X.25 and TCP/IP data networking traffic and various picture, sound and document formats. Cool!

Prices for these special versions of the Hoka Code300-32 software are available on request from Monteria.

RadioRaft

Although it has received only minor attention since our last look, this package from French radio amateur Francois Guillet remains a good balance between price, performance and modes supported. Although many of the modes are now seldom heard, the program does differentiate itself by offering both DGPS (Differential GPS) decoding (which will satisfy the lower digital listener) and GMDSS (for those interested in monitoring maritime emergency traffic).

Figure 4: RadioRaft decoding DGPS signal

In total, RadioRaft now supports 30 modes that are still in daily usage on the HF bands, including ARQ-E and E3, ARQ-M2 and M4, Baudot RTTY, CW, DGPS, FEC-A, GMDSS, AX.25 Packet, PacTOR-1, and SITOR-A and B.

RadioRaft is available direct from Guillet or via a number of resellers who usually also offer the required PC-port interface.

AX.25 Packet Radio

This system’s name is really the combination of a method of digital communications (packet over radio) and a simple computer net-
AFRICA From July 1, despite the demise of Radio Austria International, English broadcasts continued, but reduced to a 15-minute Report from Austria M-F: 1110 to 1125 (© Radio Netherlands Media Network) See also MADAGASCAR

AFRICA Africa on the tropical bands: (by country): http://africa.coolfreepage.com/africalist/ (Thorsten Hallmann, Muenster, Germany - BDXC/Africa.rtf (by frequency): http://www.users.waitrose.com/-bdxc/africafreq.rif (British DX Club)

AFRICA As zipped .doc (60 KB, editable or standard pdf) (120 KB): http://africa.coolfreepage.com/africaiocs/ (Thorsten Hallmann, Muenster, Germany - BDXC/DX Listening Digest)

ALASKA KNLS, noisy in English religion, some audio distortion on 11675 at 0805

ANTARCTICA 15476, LRA36, R. Nacional Arcongel San Gabriel, M-F 1800-2100 is in as the frequencies are separated by a least a factor of 2.

BRAZIL Two Brazilians are active on 4885: R. Clube do Para, Belem, at 2302-2315, ID and news program "A Voz Municipalista." And a week earlier, R. Difusora Acreana, Rio Branco AC, at 0013-0023, football report and ads mixed with Belem (Carlos Goncalves, Portugal, DSWCI DX Window)

BOLIVIA R. Panamericana, La Paz, 6105, has a new website with RealAudio at 1130-0330: http://www.panamericanolibolivia.com (Henrik Klemetz, Sweden, DX Listening Digest)

BOUGAINVILLE R. Independent Mekamui, 3850, 1002-1101*, June 9, Tok Pisin, international and string band music, 1055 interval signal, closing and a short piece of music. Announcer was the same heard some months before. During announcements modulation was low. S 6.7 (Roland Schulze, Philips DSWI DX Window)

CHILE 49 MHz background music stations: link from Felipe CE3SAD's website http://www.qsl.net/ce3sad/6m.html explains: I believe that they are all 1 or 5 kW, very high antennas, similar to regular FM stations, on top of the same mountain in Santiago that all the broadcast stations are on. Some are wide band and some are medium wide band. They're used in factories, buses, and other places of business.
RHC seems to be incredibly fragile – anything can knock them off the air on unpredictable occasions, such as, I theorise: power block- or brownouts; hurricanes; transmitters redeployed for temporary jamming increases; something blowing in the wind from the building next door; DX listeners complaining; studio-link failure; reel-to-reel tape recorder playback at studio breaks (gh)

CZECH REPUBLIC [non] Due to a sudden and severe budget cut at R. Prague, transmissions via the Czech Republic have been reduced and all relays via WMRE have been discontinued.
SAUDI ARABIA BSKSA refuses to put English on SW except by accident. But now...

RUSSIA Krishnaite radio station in Russian on 7436. Indian songs, talk about coffee

U K According to BBC's Annual Report published July 15, audience in North America...

TOGO [non] Though its schedule remained on the TDP website thru mid-July, R. Togo...

TAIWAN RTI English service is considering producing one improved daily hour in English, (Anker Petersen, Denmark, DX Listening Digest)

from Puerto Rico per http://myafn.dodmedia.osd.mil/radio/shortwave - and...

7507 replaces 6458.5, 24 hours a day interference on 7505 (Moises Corilloclla, Peru, hard-core-dx) Also on new 12133.5 replacement is found (BBG) What happened to the previous director of R. Farda?

continue to serve as director for the Prague-based Radio Free Afghanistan until a...

Farda the Persian-language service aimed at young listeners in Iran. Ilves will...

dropped in July 2001. That's an increase of 70%.

have partnered with Bishop Grivas Muisisi (Jackie Yockey, High Adventure Minis-

Liberia, but redirected to Uganda. Now, from Uganda we will be able to provide...

weaker 9580. English also heard repeated at 1 100-1 130 daily on 9490, 4905, Saturdays. Reception reports will be verified, if two IRCs are enclosed. Heard //

Window)

Chakroborty, Kolkata, India, DXLD)

7302.5 in Sinhala at 1545-1850 probably beamed to Middle East \ 11775 (Jose Jacob, DX Listening Digest)

Indian languages \ 11905. Also 7302.5...

spoilt by low audio level. Meanwhile, audio on Radio Hargeysa 7530 has become...

Listening Digest)

to Middle East \ 11775 (Jose Jacob, DX Listening Digest)

URUGUAY Looking for Zanzibar, I heard a station in Spanish on 11735 at 1955-2025+,...

WESTERN SAHARA [non] National Radio of the Saharan Arab Democratic Republic heard from 2000 to peak at 2150 in Arabic, on 7459.7 with typical Saharan music. Noel Green also reports hearing 7460 from *0600, but very weak* then (Dave Kenny, Caversham, BDX-UK) NW 1550 seems to have been replaced by 7460, the Moroccan jamming still audible on 1550 (Carlos Gongoloves, Portugal, BC-DX)...

AFRTS heard on new 7506.9 USB at 0737 June 28, clearly coming thru the...

7415.5 (Alexander Yegorov, Kyiv, Ukraine, open_dx) Station provided this info...

7438 is heard on secondary basis, for tests, daily 0100-0300, 150 W transmitter in Orel, Russia, to central part of Russia. Ud-ya-Tyagi animatedly began his program of 6 to 6:30 am on (Konstantin Gusev, Moscow, Russia,iband) 7438.5 (Alexander Yegorov, Kyiv, Ukraine, open, dx) Station provided this info about itself: 7438 is heard on secondary basis, for tests, daily 0100-0300, 150 W transmitter in Orel, Russia, to central part of Russia. Ud-ya-Tyagi animatedly began his program of 6 to 6:30 am on (Konstantin Gusev, Moscow, Russia,iband) Speeding at 7436.35, Radio Krishnaloka, at 0136, announces 7438 (Dmitry Mezin, Kazan, Russia, Signal) Considering renaming it Radio Veda (Konstantin Gusev, Moscow, Russia,iband) At 0105-0230 drifting around 7438.5 - 7437.0 with strong signal plus fading in radius of 0200. Privately in listening notes and cultural talks of the Krishna worship which originates from India. Around 0110-0140 a sermon in English with translation to Russian (Anker Petersen, Denmark, Signal) 7436.5. R. Veda, Oryol, 0225-0300?, Russian religious, closing with ID, ex R. Krasnodar.

Felda Five Eblom, Finland, hand-made CE-6245, "loop band" (Dilworth, Will, MD, DX Listening Digest) Programs by title with times and frequencies, monitoring remarks, hotlinks (gh)

Beginning July 19, the IBC (International Broadcasting Corp.) Radio Network expanded to 28 hours each weekend on WRMI. Programming is an eclectic format of excerpts of newscasts and other programs from various international broadcasters, old-time radio theatre (such as The Twilight Zone), music, ads. See http://www.ibradio.com Schedule is Set-1200-2200, Sun 1400-2000 on 15725; UT Sun Sun noon 0300-0900 on 7385 (WRMI) INCLUDING WORLD OF RADIO Sat and Sun 1800.

From June 15, WSHB reduced its Mon-Thru schedule; see also http://www.fics.com/GW/shortwave/whsb.html (Jim Moats, MT messageboard).i.e.

ZAMBIA ZNBC Radio 1 is active again on 4910. Noted on 25 June at 1803 tune in with news in English (Jan Savolainen, Finland, DX Listening Digest) also heard around 1820. ZNBC's frequency is in the same hour as the 1820-1800 English news on second try, then into Swahili (Dirk Verbeek, Brussels, DXLD) 4910 only used evening and early morning. 9513 still Radio 1 daytime frequency. Radio 2 sticking to 6145 (Chris Greenway, Kenya, DX Listening Digest) 6145 in use from 0250 to 2200 (Washek Korinek, RSA, DSWCI DX Window)

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MONITORING TIMES September 2003

WWRB update: 4th studio and transmitter are operational; may be fully leased under different calls. Simultaneous is being eliminated; we need transmitter expansion. We are looking at different frequency possibilities. Existing political/commercial networks are welcome to stay as long as they pay. WWRB will backfill with solid Christian programming. Our goal is 100 percent middle of the road with "HCJB" Quality Christian broadcasters (Dave Frantz, WWRB, DX Listening Digest)

have been hearing WYFR on 2630 kHz on and off for years, such as 2330 in Spanish, and it finally dawned on me that this is a transmitter mixing product, 17845 minus 15215 (David E. Crawford, Titusville, FL, DX Listening Digest)

I guess the intermittent R. Liberia International on 5100 was
Global Forum

September 2003

Broadcast Logs

Gayle Van Horn
gaylevanhorn@monitoringtimes.com

0010 UTC on 2201.2

0035 UTC on 11690
LITHUANIA: Radio Vilnius. Fair signal quality for news and feature on dairy farming in Lithuania. (David W. Weronka, Benson, NC)

0050 UTC on 9705
MEXICO: Radio Mexico Intl. Spanish public service announcements and several station IDs. // 11770.4. Mexico’s Radio Educacion 6185, 0130-0235 with IDs and phone-in calls from listeners. (Frank Hillton, Charleston, SC)

0104 UTC on 69500US

0135 UTC on 11965

0145 UTC on 18000
GUATEMALA: Radio Buenas Neuvas. Spanish service with Latin vocals and comments. Interval signal to ID at 0200 as “Radio Buenas Neuvas.” bark easy-to-read signal. (Wood, TN)

0153 UTC on 6045
SRI LANKA: Deutsche Welle relay for German service with fair signal. (Weronka, NC) DW Sackville relay 9640, 0300. (McGuire, MD) DW Portugal relay 11925, 0500. (Howard Moser, Lincolnshire, IL)

0207 UTC on 5010
HONDURAS: HRML. Several IDs and talk rapid Spanish text of religious nature. SINPO 34232. (Wood, TN)

0248 UTC 3320
SOUTH AFRICA: Radio Sondergestente. English/Afrikaans. Dance music to ID “This is The Unit” at 0300. Five minute news bulletin on US and African nations, followed by polka music. (Scott R. Barbour, NH/Cumbre DX) Channel Africa 15265, 1655-1712 on US and African nations, followed by polka music. (Scott R. Barbour, NH/Cumbre DX)

0455 UTC on 7235

0810 UTC on 6010

0940 UTC on 3220
ECUADOR: HCJB. Text and talk in Quecha. SINPO noted at 1517. Signal fair. Station's fair signal quality to 1359’.编程 noted at *1300 with signal interval, ID and national anthem. (Wood, TN)

1010 UTC on 6585
BOLIVIA: Radio Nueva Esperanza. Spanish and Aymara. Religious programming to “Esperanza con los niños.” SINPO 25442. Batch of IDs audible on rechecks; Radio Pathi 6681.8, 1053+; Radio Juan XXIII 6053.9, 1055+; Radio Fides 9625, 2236+; Radio Centenario 4865, 2240+; Radio Yura 4716.8, 2227+; Radio San Jose 5580.32, 2242+; (Slaven, ARG) Radio Mosoj Chaski 3310, 0911+; (Jill Dybak KF4ZEO, Kingston Springs, TN)

1115 UTC on 6155
URUGUAY: Sinfonia FM. Complete Spanish station identification including transmitter site location. Info on cyclist race to local ad for veterinarian and weather report. SINPO 44444. Uruguayan Emisora Ciudad de Montevideo 6010, 1650+; Radio Sport 6045, reactivated on shortwave, audible 1922-1930. (Slaven, ARG)

1200 UTC on 11820
POLAND: Radio Polonia. Interval signal to ID at 1200 sign-on. Improved signal by 1210 with national news on Poland’s relations with UK/US after Iraqi conflict. (Barbour, NH)

1236 UTC on 9595
JAPAN: Radio Tampa. Easy listening instrumental tunes to Japanese service. Station address and email given followed by announcer’s talk. Parallel frequencies 9325, 9615+ with fair signal deteriorating. (John Wilkins, Wheat Ridge CO/Cumbre DX)

1245 UTC on 11710
NORTH KOREA: Radio Pyolgyang. Instrumentals at tune-in to station identification. National anthem at 1250*. Programming noted at *1300 with interval signal, ID and national anthem. Usual rhetoric on Korean People’s Army and Kim II Sung. (Thomas M. Gibson, Spokane, WA) Station audible 1525 with 243 SIO. (Gerald Brookman, Kenai, AK)

1315 UTC on 9600
SINGAPORE: Radio Singapore Intl. Pop music format to male announcer’s newscast. Station’s fair signal quality to 1359*. (Wilkins, CO) Audible 1535, SIO 344 for FM service rebroadcast. (Brookman, AK)

1450 UTC on 7125
ANGUILLA: Caribbean Bec con Coverage of Dr. Gene Scott’s religious teachings to rock music. Station ID and address included during promos. (Wood, TN)

1504 UTC on 15205

1515 UTC on 15325

1935 UTC on 11900
KUWAIT: Radio Kuwait. Review of Kuwait’s former domination by Iraq to musical bridge. (Fraser, MA)

1945 UTC on 11675
RUSSIA: Voice of Russia. kaleidoscope program on the useful birch tree. (Bob Fraser, Cohasset, MA; Moser, IL)

2220 UTC on 4915
GHANA: Radio Ghana. Choral religious music at tune-in to female announcer’s talk and greetings to listeners. Station ID to African highlife music. (Van Horn, NC)

2230 UTC on 12000
TURKEY: Voice of. Report on an ancient ship located // 9830. (Fraser, MA)

2320 UTC on 5047
Togo: Radio Lome. French DJ with Euro/US pop music format. Station identification to talk. Fair signal quality battling with WWRB splatter. (Van Horn, NC)

2345 UTC on 11990
BULGARIA: Radio Bulgaria. Report on the Old Varna history project, // 9400. (Fraser, MA)

Thanks to our contributors – Have you sent in YOUR logs?
Send to Gayle Van Horn, c/o Monitoring Times (or e-mail gaylevanhorn@monitoringtimes.com) Please note: paper strips and cassette recordings will no longer be accepted. English broadcast unless otherwise noted.
The SASE Method

You can thank your friend and colleague Bill Plum for a QSL system that works! Imagine if you will, a system that is simple and easy, and cuts down on overseas mail theft, as well as gets you that treasured QSL. By following a few simple and easy steps, the excitement of finding QSLs in your mailbox will be yours on a regular basis.

The two steps of the SASE Method are: 1. Acquire foreign stamps of the country to which you will send your report. 2. Prepare a return envelope addressed to yourself to which you affix the foreign stamps. Your address should be printed clearly, or for a more professional look, use a printed address label. Don’t seal the envelope flap or you may later wonder why you never received a reply!

The self-addressed-envelope, known as the Return envelope, will fit into a larger envelope without folding, called the Mailer envelope. Affix your airmail postage to the Mailer envelope, enclose your report, and wait for your results. This method is especially successful for verifying tropical band, utility, medium wave, amateur radio and stations that may have a limited budget for replying to their listeners.

Consider too, the time you have saved the station or QSL Manger. Not only did they not have to provide an envelope, buy stamps, or, most importantly, figure out what to do with an IRC or currency. You may receive your verification sooner than others because of your efficiency. One QSL Manager responded, “Thanks for using the SASE, you don’t know how much easier it is for me.”

So is it worth a try? You bet it is. Bill’s SASE Method has proven successful repeatedly in our household of DXers. For overseas postage stamps, supplies, or Return and Mailer envelopes, write to: William J. Plum, Airmail Postage & DX Supplies, 12 Flemington, NJ 08822-3322. Tel. 908-788-1020. Fax: 908-782-2612. Email: plumdt@msn.com. Tell Bill, MTT sent you...and please report your success!

AMATEUR RADIO

Chatham Island-ZL7C, 10, 12, 15 meters. Full data scenery folder card. Received in one month for self-addressed-envelope and three US dollars. QSL address: Ken A. Holdom ZL4HU, P.O. Box 7, Clyde, Central Otago 9100, New Zealand. (Larry Van Horn N5FPW, NC) DXCC #162.

South Cook Islands-ZK1CG, 15, 20 meters. Full data color card. Received in 40 days for a SASE and two US dollars. QSL address: Victor Rivera, Box 618, Rorangi, Raratonga, South Cook Islands. (Van Horn, NC)

CUBA

Radio Havana, 9820 kHz. Full data unsigned QSL card plus pocket calendar. Received in 145 days for an English report and follow up email. Station address: English Service, Ap. 6240, Havana, Cuba. (Joe Squashic, Wake Forest, NC)

HUNGARY


ITALY

RAI Intl, 11800 kHz. No data unsigned card, stamped “reception verified,” plus station stickers and program schedule. Received in 129 days for an English report and two US dollars. Station address: P.O. Box 320, 00100 Rome, Italy. (Squashic, NC)

MEDIUM WAVE

Canada-CHTN 720 kHz AM. Full data letter. Received in ten days for an English AM report. Station address: 5 Prince Street, Chorlton, Prince Edward Island, Canada CTA 394. (Ross Comeau, Andover, MA) Website: http://www.chtn.pe.ca/. Email: requests@chtnt.pe.ca

KYNR, 1490 kHz AM. Friendly letter on Native American letterhead signed by Tonya Spencer-Office Asst, plus station “goodie packet” of souvenirs and bumper sticker. Received in 70 days for an AM report. Station address: P.O. Box 151, Toppenish, WA 98948 (Patrick Martin, Seaside, OR)

KTGH, 1680 kHz AM. Full data letter signed by Monte Passmore-Chief Engineer, plus business card. Received in seven days for an AM report. Station address: 2815 Second Ave., Suite 550, Seattle, WA 98121. (Patrick Griffith NONNK, Westminster, CO)

WTAF, 1620 kHz AM. Full data station card signed by Ben Downs. Received in nine days for an AM report. Station address: 2700 Rudder Freeway, Suite 5000, College Station, TX 77845 [or] Box 3248, Bryan, TX 77805. (Comeau, MA) Website: http://wtaw.com/. Email: radio@wtaw.com

PIRATE

Iron Man Radio, 6925 kHz AM. Full data artwork QSL # 25 signed by “Scuffy Swab,” with note on the back from the veri signer. Received in eight days for a pirate report and three US mint stamps. QSL maildrop: PO. Box 1, Belfast, NY 14711. (Joe Wood, Gray, TN)

TRAVEL INFORMATION STATIONS (TIS)

WPD1548, 540 kHz AM. Denver International Airport TIS. Confirmed prepared QSL card, signed by Charles Cannon-Director Media Relations. Received in six days for a utility report. QSL address: DIA Dept. Of Public Affairs, 8500 Peña Blvd., Denver, CO 80249. (Griffith, CO)

WPTZ516, 1700 kHz AM. Oakland International Airport Email from Jack Lyness-Senior Vice President, E-Agency, Inc. jlyness@e-agency.com. Received in three hours for verbal report given over the phone. (Martin, OR)

WPUU289, 1650 kHz AM. Kent, WA. Full data verification letter, signed by John Rostad-Signal Operation Engineer. Received for a utility report. QSL address: City of Kent Public Works, 220 Fourth Avenue South, Kent, WA 98032-5885. (Martin, OR)

WPKW667, 530 kHz AM. Full data verification letter signed by Frederick W. Baker Sr.-Telecommunications Specialist, Olympia Region. Received in 90 days for a utility report. QSL address: Washington State Dept. of Transportation Hqts. PO. Box 47440, Olympia, WA 98504-7440. (Martin, OR)

UNITED KINGDOM

BFBS, 6135 kHz. Partial data BFBS Worldwide Radio Network card with illegible signature. No transmitter site listed. Received in 45 days for an English report and two IRCs. Station address: PO. Box 903, Gerrards Cross SL9 8TN, United Kingdom. (Bill Wilkins, Springfield, MO) No data card 12040 kHz, received in 48 days. (Tom Banks, Dallas, TX) Partial data map card 15795, 13860 kHz in six days. (Alokesh Gupta, New Delhi, India/Hard Core DX) 13720 kHz, received 46 days for one U.S. dollar. (Comeau, MA) 13860, full data card and letter in 55 days. (Martin, OR)
The 30 Minute Radio Magazine

Much is made about the many changes that international broadcasting (especially on shortwave) has been undergoing, but there is one prominent aspect of the genre which has persisted through it all—the half-hour radio magazine, which has been a dominant format for almost forty years.

It’s popular with listeners, programmers and broadcasters. With listeners—because, in a relatively short timeframe, it can provide them with a rather wide daily snapshot of life in a country of interest. The various reports or features tend to be on the brief side; so, if one topic doesn’t please, the next one is coming up in short order. With programmers—because it uses a generalized production approach that doesn’t lock them too tightly into a particular topic or style. And with broadcasters—because it’s cost effective, maximizing use of available airtime and always tight resources.

Today, the thirty minute magazine format has evolved mostly into a weekday umbrella for all sorts of topics related to the station’s country (or region) of origin. (More specifically focused feature programs—when available—are often reserved for the weekends, sometimes without news bulletins which are suspended then as a cost savings measure.) This magazine format also has served as the platform for other program production strategies, such as the weekly form survey series on science or the arts one hears on larger or better financed stations.

Our topic here, though, is the magazine format in its more seminal form as presented today. For newer shortwave listeners, perhaps this also will serve as an introduction to some excellent, though perhaps somewhat lesser known, broadcasters.

R. Sweden
M-F 1130, 1230, 1330; T-A 0230, 0330

Sixty Degrees North is the name of R. Sweden’s longstanding daily (M-F) magazine that focuses on general news, events and issues in Sweden and the Nordic region of Europe. A portion of each half hour is earmarked for regular feature reports—some appearing weekly, others monthly—on more specific topics such as sport, health, environment and lifestyles.

R. Budapest
T-A 0100, 0230

RVI Belgium
M-F 2230; T-A 0300

R. Slovakia Int.
T-A 0100

These three broadcasters all use the word Today in their daily magazine offerings—hence, Hungary Today, Flanders Today and Slovakia Today.

Hungary Today is the more “formal” of the three, in that there are no other titles on offer during the workweek (except for the DX news during the last ten minutes of the program on Saturdays UTC) but this one. Fortunately, Hungary has a unique history and culture which is reflected in its social and political relationships—both internally and with its European neighbors. If you can develop an interest in Hungary and eastern Europe, almost any report presented will be of interest.

Flanders Today is the newest form of a program that has carried other names over the years including Belgium Speaking and Belgium Today. Since R. Vlaanderen Internationaal (or RVI) is the international arm of the Flemish (or Dutch) language domestic service, its new name perhaps better reflects the program’s principal brief—Flanders; though all of Belgium still receives some attention. During the workweek, Flanders Today is more freewheeling than its predecessor. The one constant that remains is the CD of the Week, a new track played daily from a weekly spotlight compilation (which you can win for the asking). While the Flanders Today title is used on the weekend, too, the latter is actually given over almost exclusively to other regular features.

Slovakia Today also is an umbrella title for a mix of features, both regular and not, broadcast daily by RSI. What’s notable here is that RSI is a relatively new broadcaster who opted for this tried and true format.

Swiss R. Int.
0730, 0830, 1730, 1930, 2000, 2330

SRI has been moving away from shortwave for several years. Its daily magazine appears under the general title Swissinfo. Perhaps because of its full embrace of the internet as distribution means, this half hour compilation of reports appears to have almost no structure—a choice (if it is one) that may be arguably less essential for a service that is principally intended to be available on demand as individual items.

Though this approach serves radio listeners less well, there are still a sizeable number of listeners that seek out SRI on shortwave despite the fact that it no longer targets North America, Europe or Australasia with frequencies and plans to “sunset” its shortwave service by the end of 2004. Nonetheless, its broadcasts are still received quite comfortably in the officially excluded regions.

R. Prague
2230, 0000, 0100, 0300

Voice of Vietnam
0100, 0230, 0300

Both of these broadcasters use the thirty minute magazine format with regularly recurring features, but don’t use an overall title as a means of grouping them together.

R. Vilnius
2330, 0030

R. France Internationale
M-F 0400, 0500, 0600

R. Vilnius is also a new North American service that has a daily and rather freewheeling magazine focusing on events and issues of importance to Lithuanians. R. France Internationale adopted the magazine format for its newly created weekday morning broadcasts to Africa. These are primarily in the nature of news magazines, which are clearly a more focused subcategory of this genre; but it is interesting to note that RFI chose this approach for these broadcasts within the last two years.

Wales R. Int.
A 0200

Banns R. Int.
S 0530 on WRN or on demand

Both of these are newly inaugurated weekly broadcasts that have embraced the thirty minute magazine format. WRN broadcasts Celtic Notes; BRI produces Copenhagen Calling. Both include a collection of home news (from Wales and Denmark, respectively), interviews with leading domestic figures and local music. Copenhagen Calling is not broadcast on shortwave, but via World Radio Network (http://www.wrn.org), a service on which this column will concentrate in December.

(Program and frequency listings for these broadcasts are in MT’s Shortwave Guide section.)

Until October, good listening!
How to Use the Shortwave Guide

Convert your time to UTC.
Broadcasting time on 0 and time off 0 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 Daylight Time) 4, 5, 6 or 7 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, 8:30 pm Eastern, 7:30 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 UTC time on 0, then alphabetically by country 0, followed by the station name 0. (If the station name is the same as the country, we don’t repeat it, e.g., “Vanuatu, Radio” [Vanuatu].)

If a broadcast is not daily, the days of broadcast 0 will appear in the column following the time of broadcast, using the following code:

Day Codes
s/S Sunday
m/M Monday
t/T Tuesday
w/W Wednesday
h/H Thursday
f/F Friday
a/A Saturday
d/D Daily
mon/MON monthly
coc: occasional
DRM: Digital Radio Mondiale

In the same column 0, irregular broadcasts are indicated “t” and programming which includes languages besides English are coded “at” (various languages).

Choose the most promising frequencies for the time, location and conditions.
The frequencies 0 follow to the right of the station listing; all frequencies are listed in kiloherz (kHz). Not all listed stations will be heard from your location and virtually none of them will be heard all the time on all frequencies.

Shortwave broadcast stations change some of their frequencies at least twice a year, in April and October, to adapt to seasonal conditions.

But they can also change in response to short-term conditions, interference, equipment problems, etc. Our frequency manager coordinates published station schedules with confirmations and reports from her monitoring team and MT readers to make the Shortwave Guide up-to-date as of one week before print deadline.

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
af: Africa
al: alternate frequency
om: The Americas
as: Asia
au: Australia
cn: Central America
do: domestic broadcast
eu: Europe
irr: irregular (Costa Rica RPPI)
m: Middle East
na: North America
om: omnidirectional
pa: Pacific
sa: South America
va: various

Choose a program or station you want to hear.
Selected programs for prime listing hours appear following the frequencies. This space does not permit 24-hour listings nor can every station be listed. However, listings for the most popular stations and selected lesser-known stations illustrate the variety available on shortwave. The format of the listings alternates among three different styles - by station, by genre and 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.

Finalist - Culture and the Arts - Aural Tapestry: Berlin Cabaret
Finalist - Health/Medical - Research File Special on Obesity.

These programs can be heard on-demand from http://www.rnw.nl.
330000 UTC - 8PM / 7PM C / 5PM P

<table>
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<th>Call Sign</th>
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<th>Language</th>
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0100 UTC - 9PM / 8PM C / 6PM P

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Frequencies

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SELECTED PROGRAMMING BEGINS ON PAGE 55
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<th>7PM P</th>
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0600 UTC - 2AM E / 1AM C / 11PM P

| 0600 | 0630 | France, Radio France Intl | 11665af | 17800af |
| 0600 | 0630 | South Africa, Channel Africa | 15215af | 9500af |
| 0600 | 0630 | Swaziland, TWR | 4775af | 5000af |
| 0600 | 0630 | USA, Voice of America 6300af | 7290af | 9500af |
| 0600 | 0630 | USA, Voice of America 6030af | 6080af | 9330af |
| 0600 | 0630 | Romania, Radio Romania Intl | 9330af | 11800af |
| 0600 | 0630 | Anguilla, Caribbean Beacon | 6000af | 4835do |
| 0600 | 0630 | Australia, AB NT Alice Springs | 6000af | 4835do |
| 0600 | 0630 | Australia, AB NT Katherine | 5025af | 12300af |
| 0600 | 0630 | Australia, ABC T shrink Creek | 4910do | 13465af |
| 0600 | 0630 | Australia, Radio for Peace Intl | 15415af | 15240af |
| 0600 | 0630 | Costa Rica, Radio for Peace Intl | 12000af | 17217af |
| 0600 | 0630 | Costa Rica, University Network | 5030af | 15038af |
| 0600 | 0630 | Cuba, Havana Radio 9665af | 9820af | 11760af |
| 0600 | 0630 | Germany, Deutsche Welle | 6140af | 9700af |
| 0600 | 0630 | Ghana, Ghana BC Corp | 3636af | 4915do |
| 0600 | 0630 | Guyana, Voice of TWP | 5950af | 9500af |
| 0600 | 0630 | Jordan, Radio | 7325af | 13465af |
| 0600 | 0630 | Kuwait, Radio | 15110af | 15240af |
| 0600 | 0630 | Kuwait, Radio | 15110af | 15240af |
| 0600 | 0630 | Liberia, ELWA | 4760af | 15038af |
| 0600 | 0630 | Malaysia, Radio | 7295af | 15038af |
| 0600 | 0630 | Mongolia, Voice of Mongol | 6175af | 9750af |
| 0600 | 0630 | Namibia, Namibian BC Corp | 6060af | 6175af |
| 0600 | 0630 | New Zealand, Radio New Zealand | 11820af |
| 0600 | 0630 | Nigeria, Radio/Abuja | 7275af | 11820af |
| 0600 | 0630 | Nigeria, Radio/Enugu | 6050af |
| 0600 | 0630 | Nigeria, Radio/Kaduna | 6050af |
| 0600 | 0630 | Nigeria, Radio/Lagos | 4770af | 6090af |
| 0600 | 0630 | Nigeria, Radio/Lagos | 4990af |
| 0600 | 0630 | Nigeria, Voice of Africa | 9690af |
| 0600 | 0630 | Russia, Voice of Radio | 15490af | 17670af |
| 0600 | 0700 | Sierra Leone, Radio UNAMSIL | 6139af |
| 0600 | 0700 | Singapore, Mediacorp Radio | 6150af |
| 0600 | 0700 | Solomon Islands, SBC 5020af | 9545af |
| 0600 | 0700 | UK, BBC World Service | 6055af | 6190af |
| 0600 | 0700 | UK, BBC World Service | 11765af | 11940af |
| 0600 | 0700 | UK, BBC World Service | 15360af | 15485af |
| 0600 | 0700 | UK, BBC World Service | 15570af | 17790af |
| 0600 | 0700 | USA, AFRTS/ Armed Forces Radio | 3903usb | 4278usb |
| 0600 | 0700 | USA, AFRTS/ Armed Forces Radio | 4319ub | 4993ub | 6305ub | 10320ub |
| 0600 | 0700 | USA, AJHJ Salt Lake City UT | 7520af |
| 0600 | 0700 | USA, KTIJ Baton Rouge LA | 7520af |
| 0600 | 0700 | USA, WEWN Birmingham AL | 5825af | 9385af |
| 0600 | 0700 | USA, WHRL New Brunswick IN | 5745af | 7315af |
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1700 UTC - 1PM E / 12PM C / 10AM P

1700 1715 vi Samaloi, Radio Galkayo 6985va
1700 1727 Czech Rep, Radio Prague Intl 5930eu 17485
1700 1730 Vietnam, Voice of 9750eu
1700 1733 Azerbaijan, Voice of 6100va 9555
1700 1737 France, Radio France Intl 15060af 17060af
1700 1738 h German Bible Voice BC Network 15260af
1700 1740 South Africa, Channel Africa 15265af
1700 1745 UK, BBC World Service 6005af 9630af
1700 1745 mtwh New Zealand, Radio NZ Intl 6095va
1700 1745 Russia, Radio Slavonka Slavonka 5920va 9455va
1700 1745 Romania, Radio Romania Intl 9510va 11820eu
1700 1745 Poland, Radio Polonia 9955va 12865va
1700 1745 Australia, Caribbean Beacon 11775am
1700 1745 Australia, Radio 5995va 6080va 9475va
1700 1745 Australia, Voice Intl 11680af
1700 1745 India, Radio 5950va 9815va 13815va
1700 1745 India, Voice 11680af
1700 1745 Radio Martinique 12550af
1700 1745 China, China Radio Intl 9570va 9695va
1700 1745 Italy, Radio 11910va 11920va
1700 1745 Romana, Radio Romania Intl 9510va 11820eu
1700 1745 Switzerland, Swiss Radio Intl 9510va 12865va
1700 1745 USA, WSRM Miami FL 15250af
1700 1745 USA, WRMI Miami FL 15725no 15105af
1700 1745 USA, WRIR Nashville TN 1700
1700 1745 UK, BBC World Service 9445va 9595va
1700 1745 US, KAIJ Dallas TX 11990va
1700 1745 USA, KTBN Salt Lake City UT 1599na
1700 1745 USA, WBCQ Kennebunk ME 1745va

1800 1810 USA, WXIP Armed Forces Radio 4391ub 4993ub 3655ub 10320ub
1800 1810 USA, ABRTS Armed Forces Radio 12579ub 12689ub 13362ub 13855ub
1800 1810 USA, WAIK Miami FL 15250af
1800 1810 USA, WRIR Nashville TN 1700
1800 1810 USA, WRIR Nashville TN 1700
1800 1810 USA, WROR Armed Forces Radio 3930ub 4278ub
1800 1810 USA, WAIK Miami FL 15725no 15105af
1800 1810 USA, KAIJ Dallas TX 11990va
1800 1810 USA, KTBN Salt Lake City UT 1599na
1800 1810 USA, WBCQ Kennebunk ME 1745va
1800 1810 USA, WBOH Newport NC 9590am
1800 1810 USA, WHIN Red Lion PA 13570am
1800 1810 USA, WJL Wirelous KY 7490am 1359am
1800 1810 USA, WMLK Bethel PA 9456pu
1800 1810 USA, WBOH Newport NC 9590am
1800 1810 USA, WRIR Nashville TN 1700
1800 1810 USA, WRIR Nashville TN 1700
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1800 1810 USA, WRIR Nashville TN 1700
1800 1810 USA, WRIR Nashville TN 1700
1800 1810 USA, WRIR Nashville TN 1700
SUNDAY
0000 R. for Peace Int. | World of Radio (Glenn Houser's review of SW & int'lbroadcasting)
0130 R. Netherlands | Music 52/15 (musical styles from around the globe)
0200 WBCQ(7415kHz) | A Different Kind of Oldies Show (unique mix with "Big Steve" Cole)
2300 WNBC | Div. Pointywhistle (JC's longrunning program for DXers & SWIs)
0055 R. Prague | Media Watch (Insight Central Europe (regional magazine produced))
0050 R. New Zealand Int. | The Week in Parliament (a weekly roundup of NZ political news)
0200 R. Netherlands | Amsterdam Forum (an interactive discussion of topical issues)
0215 R. New Zealand Int. | Spectrum (the people, places & events around NZ)
0230 WNBC | World of Radio (Glenn Houser's review of SW & int'lbroadcasting)
0335 R. Est. de Espana | Radio Waves (a weekly program for radio enthusiasts)
0400 MONDAY-FRIDAY
0000 R. New Zealand Int. | Midday Report (news updates & in-depth reports)
0100 R. Netherlands | Dutch Horizons (Bernt Krol of the chronicles of life in Holland)
0130 WBCQ(7415kHz) | Radio New York International (Johnny Lightning presents classic rock)
0135 R. Prague | Mailbox (see 0105 M)
0140 R. BBCWS(am) | Everyman (a weekly magazine about the world's women)
0230 R. Australia | Awelyel (Aboriginal arts & culture program)
0300 R. Japan | Weekend Square (conversations with guests & letters)
0315 R. Prague | Czech Books (or Encore & Magic Carpet (see 0115 M)
0400 MONDAY
0000 R. Netherlands | World of Radio (Glenn Houser's review of SW & int'lbroadcasting)
0130 R. Netherlands | Aural Tapestry (David Swallow's weaving stories through cultures & history)
0135 BBCWS(am) | Weeaway Omnibus (the previous two episodes of this radio light drama)
0200 R. Est. de Espana | The Mailbag Show (listener letters)
0215 R. Japan | Sights & Sounds of Japan
0235 TUESDAY-SATURDAY
0000 VOA | News Now (continuous rolling news service)
0025 R. Prague | Current Affairs (see 0105 A) | VOA | News Now (continuous rolling news service)
0030 R. Japan | Songs for Everyone
0115 R. Est. de Espana | Day by Day (daily magazine of reports, music & features)
0230 BBCWS(am) | Focus (top news in perspective)
0315 VOA | Coast to Coast (a magazine about American life)
0320 TUESDAY
0000 R. for Peace Int. | Middle East Radio Project
0130 R. Netherlands | The Research File (the relevance of science to our lives)
0200 WBCQ(7415kHz) | Morion's Alcove (rare & vintage recordings presented by Morion Webster)
0215 WNBC | Wavanese (Adventhl World Radio's program for DXers and SWIs)
0230 BBCWS(am) | Play of the Week (classic & contemporary drama for radio)
0300 R. Australia | Correspondents' Report (the week's events around the world)
0305 R. Australia | Insight Central Europe (a regional magazine joining points of view)
0310 R. Canada Int. | Business Sense (Canadian companies in the global system)
0320 R. Netherlands | Europe Unpacked (the events of the last week in Europe, some unusual)
0325 R. Australia | At the Movies (a weekly report on cinema with Simon Masters)
0330 R. Prague | Magazine (Czech news stories you might have missed)
0335 R. Slovakia Int. | Insight Central Europe (see 0105 S)
0400 R. Prague | Letter from Prague (a personal view of life & in around the Czech capital)
0415 R. Russia | Voices of Russia | Moscow Mailbag (Joe Adamow with answers, ruminations & jokes)
0415 R. Prague | One on One (an interview with an interesting Czech figure)
0500 SUNDAY
0005 BBCWS(am) | Corruption (its causes, costs & remedies documented)
0100 R. Australia | The Science Show (To science program about ideas, not facts)
0115 R. Prague | Talking Point (see 0115 T)
0300 R. Netherlands | EuroQuest (a magazine placing developments in Europe into perspective)
0305 BBCWS(am) | The Music Feature (features & documents on current musical genres)
WEDNESDAY
0000 R. for Peace Int. | Counterpane (media analyses from the Research File)
0050 BBCWS(am) | Masterpiece (exploring major cultural ideas & great creative endeavors)
0110 R. Prague | Witness (see 0110 W)
0110 R. Australia | The National Interest (Terry Lane's roundup of the week's issues)
0115 R. Netherlands | One on One (see 0115 W)
0230 R. Netherlands | A Good Life (how development affects societies)
0235 BBCWS(am) | Top of the Pops (the British rock & pop charts)
THURSDAY
0000 R. Netherlands | The Weekly Documentary (sound essays & in-depth investigations)
0055 BBCWS(am) | The Sampler (Nick Bollinger reviews the latest CD offerings)
0110 R. Australia | Background Briefing (award-winning current affairs radio documentary)
0115 R. Prague | The Arts (see 0115 A)
0300 R. Netherlands | The Research File (see 0000 T)
0320 BBCWS(am) | The Music Biz (the global music charts)
SATURDAY
0000 R. Netherlands | A Good Life (see 0030 W)
0030 WBCQ(7415kHz) | Allon Wayne Worldwide (the station manager's show)
0050 BBCWS(am) | Sports International (the issues & personalities behind the headlines)
0100 R. Australia | Australian Express (an Australian magazine of Australian culture, lifestyles & music)
0110 R. New Zealand Int. | Focus on Politics (a report on developments at home & abroad / Rodney Rice)
0115 R. New Zealand Int. | The Research File (see 0000 T)
0300 R. Netherlands | The Weekly Documentary (see 0000 W)
0320 BBCWS(am) | John Peal (with his own unique & eclectic mix of new music)
0330 R. Exterior of Espana | Radio Club (listeners' letters)
0400 0100 UTC/ 8pm E/5pm P - Page 43 Freqs
0000 VOA | News Now (continuous rolling news service)
0030 R. Prague | Current Affairs (see 0105 A)
0035 R. Japan | Songs for Everyone
0115 R. Est. de Espana | Day by Day (daily magazine of reports, music & features)
0230 VOA | Focus (top news in perspective)
0315 VOA | Coast to Coast (a magazine about American life)
0320 TUESDAY
0000 R. for Peace Int. | Middle East Radio Project
0130 R. Netherlands | The Research File (the relevance of science to our lives)
0205  R. Australia:  Radio National (continues from 0000)
0215  R. Canada Int.:  Radio Canada International (continues from 0000)
0230  R. New Zealand Int.:  Radio New Zealand International (continues from 0000)
0245  R. Australia:  ABC Radiolocation (continues from 0045)
0300  R. Spain:  Radiocentro (continues from 0030)
0315  R. Taiwan Int.:  Voice of Radio China (continues from 0030)
0330  R. Australia:  ABC Radiolocation (continues from 0045)
0345  R. Spain:  Radiocentro (continues from 0030)
0405  R. Taiwan Int.:  Voice of Radio China (continues from 0030)
0430  R. Australia:  ABC Radiolocation (continues from 0045)
0455  R. Taiwan Int.:  Voice of Radio China (continues from 0030)
0500  R. Australia:  ABC Radiolocation (continues from 0045)
0515  R. Taiwan Int.:  Voice of Radio China (continues from 0030)
0530  R. Australia:  ABC Radiolocation (continues from 0045)
0600  R. Australia:  ABC Radiolocation (continues from 0045)
0615  R. Taiwan Int.:  Voice of Radio China (continues from 0030)
0630  R. Australia:  ABC Radiolocation (continues from 0045)
0645  R. Taiwan Int.:  Voice of Radio China (continues from 0030)
0700  R. Australia:  ABC Radiolocation (continues from 0045)
0715  R. Taiwan Int.:  Voice of Radio China (continues from 0030)
0730  R. Australia:  ABC Radiolocation (continues from 0045)
0745  R. Taiwan Int.:  Voice of Radio China (continues from 0030)
0800  R. Australia:  ABC Radiolocation (continues from 0045)
0815  R. Taiwan Int.:  Voice of Radio China (continues from 0030)
0830  R. Australia:  ABC Radiolocation (continues from 0045)
0845  R. Taiwan Int.:  Voice of Radio China (continues from 0030)
0900  R. Australia:  ABC Radiolocation (continues from 0045)
0915  R. Taiwan Int.:  Voice of Radio China (continues from 0030)
0930  R. Australia:  ABC Radiolocation (continues from 0045)
0945  R. Taiwan Int.:  Voice of Radio China (continues from 0030)
1000  R. Australia:  ABC Radiolocation (continues from 0045)
1015  R. Taiwan Int.:  Voice of Radio China (continues from 0030)
1030  R. Australia:  ABC Radiolocation (continues from 0045)
1045  R. Taiwan Int.:  Voice of Radio China (continues from 0030)
1100  R. Australia:  ABC Radiolocation (continues from 0045)
1115  R. Taiwan Int.:  Voice of Radio China (continues from 0030)
1130  R. Australia:  ABC Radiolocation (continues from 0045)
1145  R. Taiwan Int.:  Voice of Radio China (continues from 0030)
1200  R. Australia:  ABC Radiolocation (continues from 0045)
1215  R. Taiwan Int.:  Voice of Radio China (continues from 0030)
1230  R. Australia:  ABC Radiolocation (continues from 0045)
1245  R. Taiwan Int.:  Voice of Radio China (continues from 0030)
1300  R. Australia:  ABC Radiolocation (continues from 0045)
1315  R. Taiwan Int.:  Voice of Radio China (continues from 0030)
1330  R. Australia:  ABC Radiolocation (continues from 0045)
1345  R. Taiwan Int.:  Voice of Radio China (continues from 0030)
1400  R. Australia:  ABC Radiolocation (continues from 0045)
1415  R. Taiwan Int.:  Voice of Radio China (continues from 0030)
1430  R. Australia:  ABC Radiolocation (continues from 0045)
1445  R. Taiwan Int.:  Voice of Radio China (continues from 0030)
1500  R. Australia:  ABC Radiolocation (continues from 0045)
1515  R. Taiwan Int.:  Voice of Radio China (continues from 0030)
1530  R. Australia:  ABC Radiolocation (continues from 0045)
1545  R. Taiwan Int.:  Voice of Radio China (continues from 0030)
1600  R. Australia:  ABC Radiolocation (continues from 0045)
1615  R. Taiwan Int.:  Voice of Radio China (continues from 0030)
1630  R. Australia:  ABC Radiolocation (continues from 0045)
1645  R. Taiwan Int.:  Voice of Radio China (continues from 0030)
1700  R. Australia:  ABC Radiolocation (continues from 0045)
1715  R. Taiwan Int.:  Voice of Radio China (continues from 0030)
1730  R. Australia:  ABC Radiolocation (continues from 0045)
1745  R. Taiwan Int.:  Voice of Radio China (continues from 0030)
1800  R. Australia:  ABC Radiolocation (continues from 0045)
1815  R. Taiwan Int.:  Voice of Radio China (continues from 0030)
1830  R. Australia:  ABC Radiolocation (continues from 0045)
1845  R. Taiwan Int.:  Voice of Radio China (continues from 0030)
1900  R. Australia:  ABC Radiolocation (continues from 0045)
1915  R. Taiwan Int.:  Voice of Radio China (continues from 0030)
1930  R. Australia:  ABC Radiolocation (continues from 0045)
1945  R. Taiwan Int.:  Voice of Radio China (continues from 0030)
2000  R. Australia:  ABC Radiolocation (continues from 0045)
2015  R. Taiwan Int.:  Voice of Radio China (continues from 0030)
2030  R. Australia:  ABC Radiolocation (continues from 0045)
2045  R. Taiwan Int.:  Voice of Radio China (continues from 0030)
2100  R. Australia:  ABC Radiolocation (continues from 0045)
2115  R. Taiwan Int.:  Voice of Radio China (continues from 0030)
2130  R. Australia:  ABC Radiolocation (continues from 0045)
2145  R. Taiwan Int.:  Voice of Radio China (continues from 0030)
2200  R. Australia:  ABC Radiolocation (continues from 0045)
2215  R. Taiwan Int.:  Voice of Radio China (continues from 0030)
2230  R. Australia:  ABC Radiolocation (continues from 0045)
2245  R. Taiwan Int.:  Voice of Radio China (continues from 0030)
2300  R. Australia:  ABC Radiolocation (continues from 0045)
2315  R. Taiwan Int.:  Voice of Radio China (continues from 0030)
2330  R. Australia:  ABC Radiolocation (continues from 0045)
2345  R. Taiwan Int.:  Voice of Radio China (continues from 0030)
0000  R. Australia:  ABC Radiolocation (continues from 0045)
0015  R. Taiwan Int.:  Voice of Radio China (continues from 0030)
0030  R. Australia:  ABC Radiolocation (continues from 0045)
0045  R. Taiwan Int.:  Voice of Radio China (continues from 0030)
0100  R. Australia:  ABC Radiolocation (continues from 0045)
0115  R. Taiwan Int.:  Voice of Radio China (continues from 0030)
0130  R. Australia:  ABC Radiolocation (continues from 0045)
0145  R. Taiwan Int.:  Voice of Radio China (continues from 0030)
0200  R. Australia:  ABC Radiolocation (continues from 0045)
0215  R. Taiwan Int.:  Voice of Radio China (continues from 0030)
0230  R. Australia:  ABC Radiolocation (continues from 0045)
0245  R. Taiwan Int.:  Voice of Radio China (continues from 0030)
0300  R. Australia:  ABC Radiolocation (continues from 0045)
0315  R. Taiwan Int.:  Voice of Radio China (continues from 0030)
0330  R. Australia:  ABC Radiolocation (continues from 0045)
0345  R. Taiwan Int.:  Voice of Radio China (continues from 0030)
0400  R. Australia:  ABC Radiolocation (continues from 0045)
0415  R. Taiwan Int.:  Voice of Radio China (continues from 0030)}
SATURDAY
0305 R. Australia Rural Reporter (ABC's rural reporters present stories from Australia)
R. New Zealand Int. The Mix (interviews & live recordings with Kiwi pop musicians)
0310 BBCW 5.9 kHz Pick of the World (a review of the BBC's best)
0315 R. Prague The Arts (see 0115 A)
R. Taiwan Int. Koleidoscope (a magazine about life in Taiwan)
R. Australia Australian Country Style (Australian country music with Joni Nutting)
R. Towan Int. Mailbag Time (letters to R. Tokyo)
R. VOA Africa Our World (a broad range of current issues in science, technology, agriculture & the natural environment with Rob (Rok))
0345 R. Australia 20th Century: Footprints in History
0345 BBCW 5.9 kHz Write On (Dilly Bowlot & Penny Vine read your letters about the World Service)

**0400 UTC/12am 6pm/9pm - Page 45 Freqs**

**DAILY**
0400 BBCW 5.9 kHz World Briefing (extended news report)

**SUNDAY**
0400 R. for Peace Int. Counterpoint (media analysis from Fairness & Accuracy in Reporting)
WBCQ (7415 kHz) Tom & Darry (discussing satellite TV, shortwave, low power FM & the Internet)
WRMI (7385 kHz) Weekend Twilight Zone (the classic TV show remixed for radio)
WHRE (7030 kHz) Cyberline
R. Deutsche Welle Inside Europe (four-hour newsmagazine exploring issues shaping the continent)
R. Australia All in the Mind (a weekly foray into the mental universe, the mind, brain & behavior)
R. New Zealand Int. Playhouse (classic & contemporary radio drama)
R. China Int. In the Spotlight (see S 0120)
R. KRWM (7760 kHz) Canada Live (with Cumbie & Marie Lamb with the hottest DX catches)
R. BBCW 5.9 kHz In Conversation (Robin Williams talks to guests who are interested in science about what's meant to their lives)
R. BBCW 5.9 kHz Letters from America (Alister Cooke's weekly essay on life in America)
R. Voice of Russia Kolesodrape (see 0220 T)
R. H. World of Stamps (see S 0235)
R. Netherlands: World Today Radio (see 0225 S)
R. Netherlands: The Instant Guide to the World Today (see M 0245)
R. Netherlands: Insight (Rob Green casts a critical & humorous eye on the past week's headlines)

**MONDAY-FRIDAY**

WBCQ (7415 kHz) Americas 'n Andy (see 0400 M-F)
R. Australia The Business Report (a comprehensive roundup of the latest business news)
R. New Zealand Int. Home Grown (B.B. Borrows plays contemporary Kiwi music)
R. Australia Science & Engineering (see 0311 M)
R. Deutsche Welle Spectrum (a weekly look at developments in the fields of science & technology)
R. Australia The Australian Music Show (the latest Australian music with Lou Gentile)
R. New Zealand Int. Musical Chans (the music & background of a featured NZ musician)
WRMI (7385 kHz) Weekend Twilight Zone (see 0115 A)

**WELCOME**

0500 UTC/1am 6/10pm - Page 45 Freqs
0500 Deutsche Welle .......... Hard to Beat (the latest in sports from Germany & the world)
0515 Deutsche Welle .......... Inspired Minds (profiles of creative & industrious people)
0530 Deutsche Welle .......... People In The Know (see M 0130)
0530 Deutsche Welle .......... Hits In Germany (with Deborah Friedman/foreground)
0540 R. Habana Cuba .......... The Mailbag Show (listener letters)
0550 R. Habana Cuba .......... Breakthrough (Arne Cario with a report on science)

TUESDAY-SATURDAY
0605 Deutsche Welle .......... Newslink Africa (see T-A 0405)
0640 R. for Peace Int. .......... East Africa (see T 0130)
0640 R. Japan .......... Interview (see S 0430)
0645 Deutsche Welle .......... World Business German (see T 0445)

THURSDAY
0500 R. Netherlands .......... The Research File (the relevance of science to all our lives)
0530 China R. Int. .......... Biu China (see 0130)
0540 Deutsche Welle .......... World Music Live

WEDNESDAY
0500 R. Netherlands .......... Music 52/15 (musical styles from around the globe)
0530 Deutsche Welle .......... Arts on the Air (an award-winning weekly series)
0540 R. Habana Cuba .......... Diners Unlimited (see S 0140)

THURSDAY
0500 R. Netherlands .......... The Weekly Documentary (sound essays & in-depth investigations)
0530 Deutsche Welle .......... Living in Germany (aspects of life in Germany)
0545 Deutsche Welle .......... Europe on Stage

FRIDAY
0500 R. Netherlands .......... Aural Tapestry (see M 0030)
0530 China R. Int. .......... Life In China (a weekly magazine focusing on the lives of ordinary people in China)
0545 Deutsche Welle .......... Cool! (the latest in youth culture in Germany & abroad)
R. New Zealand Int. .......... The Pacific Report (a report on trends & events in the Pacific region)

SATURDAY
0500 R. Netherlands .......... A Good Life (how development affects societies)
WHR .......... Diing with Cumbre (Morrie Lamb with the hottest DX catches)
0505 R. Australia .......... Ockham's Razor (a "sharp" commentary on science-related issues)
R. New Zealand Int. .......... Home Grown (continues from 0405)
0510 R. Japan .......... Helfo from Tokyo (Letter writers, music & short features)
0520 R. Australia .......... Lingua Franca (a program about language & its social, cultural & historical ramifications)
0530 Deutsche Welle .......... Focus on Folk (real German folk music, the places it comes from & the people who make it)
R. Australia .......... Fine Music Australia (Australian classical artists with Charles Southwood)

0600 UTC/ 2am E/11pm P - Page 46 Freqs

SUNDAY
0605 Deutsche Welle .......... Inside Europe (see S 0405)
R. Australia .......... The Arts on RA (an arts-related interview & film review)
R. New Zealand Int. .......... Whanau people, issues & music in New Zealand, with Helen & Libby Hakaraia)
0610 R. Japan .......... Weekend Japanology (conversation with guests & letters from listeners)
0630 R. Australia .......... Blackmarket (Aboriginal contemporary music with Mal Hones)
WHR/HR/SA/Uzizizi .......... Diing with Cumbre (Morrie Lamb with the hottest DX catches)
0633 VOA Africa .......... Main Street (lively half hour of ideas, information, people & places across America)
0635 R. Habana Cuba .......... The World of Stamps (see S 0155)
0645 R. Japan .......... Sights & Sounds of Japan

MONDAY-FRIDAY
0600 Channel Africa .......... Dateline Africa (a daily activity magazine focusing on African events & issues)
0605 R. New Zealand Int. .......... What's Going On? (daily NZ entertainment & arts calendar)
0610 R. Japan .......... Skytime (энн японцем)
0615 R. Japan .......... Asian Top News (the day's major news as reported by the region's radio stations)
0630 R. New Zealand Int. .......... TV Worldwatch (the stories behind international headlines)
0645 R. New Zealand Int. .......... Storytime (children's stories)

MONDAY
0605 Deutsche Welle .......... Mailbag Africa (see M 0405)
0610 R. Habana Cuba .......... From Havana (see M 0210)

0620 R. Australia .......... Ockham's Razor (a "sharp" commentary on science-related issues)
0625 R. Japan .......... Japan Music Treasure Box (classic Japanese popular music)
0630 R. for Peace Int. .......... World of Radio (Glenn Hauser's review of SW & int'l broadcasting)
R. Habana Cuba .......... The Jazz Place or Top Tens (see M 0230)
0640 R. Australia .......... The Australian Music Show (the latest Australian music with Kat Pedrino)

TUESDAY-SATURDAY
0605 Deutsche Welle .......... Newslink Africa (see T-A 0405)

THURSDAY
0600 R. for Peace Int. .......... East Africa (see T 0130)
0620 R. Australia .......... In Conversation (see S 0430)
0630 Deutsche Welle .......... Insight (see T 0430)
0640 R. Australia .......... Music Deli (see A 0130)

WEDNESDAY
0600 R. for Peace Int. .......... Counterpoint (media analysis from Fairness & Accuracy in Reporting)
0620 R. Australia .......... The Ark (see M 0520)
0625 R. Japan .......... Japan Musiopace (life in Japan presented through music & writings on a selected theme)
0630 Deutsche Welle .......... Blackblocker (see S 0630)
0640 R. Australia .......... Money Talks (see H 0430)
0640 R. Australia .......... Australian Country Style (see A 0330)

FRIDAY
0620 R. Australia .......... The Makers (an interview with an Australian artist)
0625 R. Japan .......... Music Beyond (contemporary, Japanese popular music)
0630 Diles Wiker .......... Man & Environment (see F 0430)
0640 R. Australia .......... Jazz Notes (with Ivan Lloyd)

SUNDAY
0600 KWWR/HR/SA/Uzizizi .......... Diing with Cumbre (see S 0630 A)
0605 R. Australia .......... Feedback (Roger Broadbent answers questions about RA)
R. New Zealand Int. .......... Toanga o te Moana (magazine with Pacific issues, information & music)
0610 R. Japan .......... Japan World Music (Asia's countries through their popular music)
0630 Deutsche Welle .......... Jazz Daze (see A 0430)
R. Australia .......... Oz Sounds (Australian new music releases)
0645 R. Japan .......... Diing with Cumbre (Morrie Lamb with the hottest DX catches)

1100 UTC/ 7am E/Aam P - Page 48 Freqs

DAILY
1100 BBCW(Sm) .......... World Briefing (a comprehensive report on the latest news)

SUNDAY
1100 R. Netherlands .......... Aural Tapestry (see M 0030)
1105 R. Australia .......... Correspondents’ Report (the week's events analyzed)
R. New Zealand Int. .......... New Zealand Forces Program (2-hour package for NZ personnel)
1110 R. Japan .......... Hello from Tokyo (Letter writers, music & short features)
1120 BBCW(Sm) .......... British News
1130 R. Australia .......... The Arts on RA (an arts-related interview & film review)
R. for Peace Int. .......... Of Peace & Progress (see W 0430)
R. Netherlands .......... Dutch Horizons (Bertein Kral chronicles life in Holland)
R. Sweden .......... In Touch with Stockholm (interactive essays & in-depth investigations)

1145 BBCWS(am) .......... Analysis (background histories to the news)
1145 R. Sweden .......... Close Up (profiles of people in Sweden from all walks of life)

WEDNESDAY
1100 R. Netherlands .......... Dutch Horizons (Bertein Kral chronicles life in Holland)
1105 R. New Zealand Int. .......... Nine to Noon (domestic program featuring news & topics of interest)
1125 R. Japan .......... Basic Japanese for You (see T 0625)
1130 R. Netherlands .......... Music 52-51 (Montha Hawley or Max Oellerschlag makes musical styles from around the globe)
1132 BBCW(Sm) .......... Analysis (background to stories in the news)

THURSDAY
1100 R. Netherlands .......... The Research File (the relevance of science to all our lives)
1105 R. New Zealand Int. .......... Nine to Noon (see 1105 M)
1125 R. Japan .......... Brush Up Your Japanese (see H 0625)
1130 R. Netherlands .......... Aural Tapestry (see M 0030)
1132 BBCW(Sm) .......... From Our Own Correspondent (background to stories in the news)
1145 BBCW(Sm) .......... Sports Round-up (all the daily sports news worldwide)
R. Sweden .......... Nordic Lifts (magazine on Scandinavia, 1st week)
R. Australia (Newspaper) .......... An environmental awareness & challenges, 2nd week
Heart Beat (Gabi Kats hosts a monthly health & medical magazine, 3rd week)
The S-Files (Kris Boswell on the Sweden behind the headlines, 4th week)

FRIDAY
1100 R. Netherlands .......... The Weekly Documentary (sound essays & in-depth investigations)
1105 R. New Zealand Int. .......... Nine to Noon (see 1105 M)
1125 R. Japan .......... Brush Up Your Japanese (see H 0625)
1130 R. Netherlands .......... Aural Tapestry (see M 0030)
1132 BBCW(Sm) .......... From Our Own Correspondent (background to stories in the news)
1145 BBCW(Sm) .......... A Report on the Nordic Newsweek (the week's main news stories)

SATURDAY
1100 R. Netherlands .......... Amsterdam Forum (an interactive discussion of topical issues)
1105 R. Australia .......... Asia Pacific Week-end Edition (weekly current events & business report for & about Asia & the Pacific region)
R. New Zealand Int. .......... New Zealand Forces Program (2-hour package of programs for NZ personnel)
1110 R. Sweden .......... RZ5 Top Five (the best-selling music in NZ)
1122 BBCW(Sm) .......... Analysis (background to stories in the news)
1145 R. Sweden .......... A Report on the Nordic Newsweek (the week’s main news stories)
**Shortwave Guide**

**1200 UTC/ 8am E/5am P - Page 48 Freqs**

**DAILY**

1200 | BBCWS(am) | ... | Newshour (an hour of news & analysis from around the globe)

**SUNDAY**

1205 | R. Australia | The Spiritual Things (contemporary beliefs the spiritual, musical, & sacred)
1205 | R. Netherlands | Sincerely Yours (RN's listener response program)
1205 | R. New Zealand Int | Sportsworld (a round-up of the weekend's regional sporting events)
1205 | R. Sweden | In Touch with Stockholm (interactive listener contact program)

**MONDAY**

1200 | R. Netherlands | Newsline (news analysis & background reports)
1205 | BBCWS(am) | Caribbean Business (a report on regional commerce & economics)
1205 | R. New Zealand Int | Late Edition (repeat of 1000 programs)
1210 | BBCWS(am) | Caribbean Morning Report (the latest news from the Caribbean)
1210 | R. Canada Int | The Current (Anna Maria Tremonti on issues affecting Canadians today)
1230 | R. Sweden | Sounds Nordic (youth music & trends, all exc 1st)

**TUESDAY**

1205 | R. Australia | Late Night Live (interviews with major newsmakers, philosophers, artists & trendsetters)
1215 | R. Korea Int | Korea Today & Tomorrow (latest developments on the Korean peninsula)
1230 | R. for Peace Int | Radio Stockholm (Glenn Hauser's review of SW & AM broadcasting)
1245 | R. Sweden | Sports Scan (a weekly report on sports in the Nordic region)

**WEDNESDAY**

1205 | R. for Peace Int | Middle East Radio Project
1205 | R. Australia | Late Night Live (see M 1205)
1215 | R. Korea Int | Korean Kalescope (a magazine of Korean social & economic life)
1245 | R. Sweden | Close Up (profiles of people in Sweden from all walks of life [1st & 3rd])

**THURSDAY**

1205 | R. for Peace Int | Counterspin (media analysis from Fairness & Accuracy in Reporting)
1205 | R. Australia | Late Night Live (see M 1205)
1215 | R. Korea Int | Wonderful Korea (Koeyeo Korea)

**FRIDAY**

1205 | R. Australia | Sound Quality (the interesting, the evolutionary, the accessible & the wonderful in music)
1245 | R. Sweden | A Report on the Nordic Newsweek (the main news stories)

**SATURDAY**

1200 | WRMI(15725kHz) | Shortwave Radio Network (programs from worldwide SW)

**1300 UTC/ 5am E/6am P - Page 49 Freqs**

**SUNDAY**

1300 | Channel Africa | Channel Africa Extra (a weekend magazine with news, sports, music, & features)
1300 | WRMI(15725kHz) | Wovpasen (Adventist World Radio's program in DDM & DX)
1300 | WWCR(12160kHz) | Golden Age of Radio (classic programs from radio's early years)
1306 | BBCWS(am) | The Ticket (the arts & entertainment around the globe)
1310 | R. Canada Int | The Sunday Edition (magazine on politics, social & cultural matters, Michael Enright)
1310 | China R. Int | In the Spotlight (Chinese arts & cultural magazine)
1310 | R. Sweden | In Touch with Stockholm (an interactive listener contact program, 1st week)

**MONDAY**

1305 | R. Australia | The Planet (inspirational materials from around the world, jazz, blues, folk styles, artfully arranged)
1310 | BBCWS(am) | Outlook (topical magazine of people, places & events)
1310 | R. Canada Int | Sounds Like Canada (a lively mix of voices & sound)
1330 | R. Sweden | Sixty Degrees North (reports, interviews & analysis on the Nordic region)
1345 | BBCWS(am) | Off the Shelf (abridged serialized readings of novels, stories, etc)

**TUESDAY**

1330 | China R. Int | People in the Know (interviews with prominent Chinese who are shaping the nation's future)
1345 | R. Sweden | Sports Scan (a weekly report on sports in the Nordic region)

**WEDNESDAY**

1300 | R. for Peace Int | World of Radio (see S - 200)

**THURSDAY**

1345 | R. Sweden | Nordic Lights (magazine on Scandinavia, 1st week)
1345 | China R. Int | People in the Know (interviews with prominent Chinese)
1345 | R. Sweden | Sports Scan (a weekly report on sports in the Nordic region)

**FRIDAY**

1345 | China R. Int | Life in China (magazine on the lives of ordinary people in China)
1345 | R. Sweden | A Report on the Nordic Newsweek (the week's main news stories)

**SATURDAY**

1300 | Channel Africa | Channel Africa Extra (magazine with news, sports, music, regular reports & features)
1300 | R. for Peace Int | Middle East Radio Project
1300 | WRMI(15725kHz) | Shortwave Radio Network (can't from 1200)
1300 | BBCWS(am) | Pick of the World (a revue from the world's best programming)
1310 | R. Canada Int | Close Up (profiles of people in Sweden from all walks of life [1st & 3rd])

**1400 UTC/ 10am E/7am P - Page 49 Freqs**

**SUNDAY**

1400 | Channel Africa | Channel Africa Extra (continued from 1200)
1405 | R. Australia | Books & Writing (Ramoona Koval conducts in-depth discussions)
1410 | R. Japan | Pop Joins the World (Asian countries & their popular music)
1430 | R. New Zealand Int | In the Spotlight (Chinese arts & cultural magazine)
1445 | R. Sweden | Daily Reading (a recap of the week's readings)
1455 | R. Netherlands | Wide Angle (one topic examined in-depth)

**MONDAY**

1405 | R. Australia | Margaret Throsby (a guest is interviewed & presents favorite musical pieces)
1410 | R. Canada Int | Sounds Like Canada (continues from M 1310)
1415 | R. Japan | 44 Minutes (current affairs magazine about Japan & Asia)
1430 | R. Netherlands | Newsline (news, analysis & background reports)

**TUESDAY**

1406 | BBCWS(am) | Corruption (a series of feature documentaries)
1430 | China R. Int | People in the Know (interviews with prominent Chinese who are shaping the nation's future)
1432 | BBCWS(am) | The Music Feature (features & documentaries on current musical genres)

**WEDNESDAY**

1406 | BBCWS(am) | Various documentary series
1432 | BBCWS(am) | Charlie Gillett (world music selection)

**THURSDAY**

1406 | BBCWS(am) | Omnibus (a series of lecture documentaries)
1432 | BBCWS(am) | The Music Biz (a series of music industry profiles)

**FRIDAY**

1405 | R. for Peace Int | Continent of Media (Glenn Hauser's survey of US/Canadian radio spectrum)
1406 | BBCWS(am) | Sports International (the issues & personalities behind the headlines)
1430 | China R. Int | Life in China (magazine focusing on the lives of ordinary people in China)
1432 | BBCWS(am) | John Peel (with his own unique & eclectic mix of new music)

**SATURDAY**

1400 | Channel Africa | Channel Africa Extra (continued from 1200)
1405 | R. Australia | New Dimensions (intimate conversations with many of this century's leading thinkers & trendsetters)
1430 | R. Canada Int | The Vinyl Cafe (Canadian humorist & storyteller Stuart McLean plays music he's found on a mythical record store & weaves tales centered around the store's neighborhood)
1406 | BBCWS(am) | Sportsworld (live commentary on major sports events, results from Britain & Europe, sports news worldwide)

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*September 2003*
<table>
<thead>
<tr>
<th>Time</th>
<th>Country</th>
<th>Program Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1000</td>
<td>R. Netherlands</td>
<td>Aural Topiary</td>
<td>conversation with guests &amp; letters from listeners</td>
</tr>
<tr>
<td>1055</td>
<td>R. Australia</td>
<td>Out Front</td>
<td>Insight into the world of shortwave broadcasting</td>
</tr>
<tr>
<td>1100</td>
<td>R. Netherlands</td>
<td>The Sunday Edition</td>
<td>continues from 1055</td>
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<tr>
<td>1105</td>
<td>BBCWS(am)</td>
<td>Omnibus</td>
<td>(see 1406 H)</td>
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<tr>
<td>1130</td>
<td>R. Japan</td>
<td>Hella from Tokyo (see S 1110)</td>
<td></td>
</tr>
<tr>
<td>1150</td>
<td>R. Netherlands</td>
<td>Continuous Media (Eveline Houser's survey of US/Canadian radio spectrum)</td>
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<tr>
<td>1200</td>
<td>R. for Peace Int.</td>
<td>Aural Topiary (Bertie Krol's chronicles in Holland)</td>
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<tr>
<td>1215</td>
<td>BBCWS(am)</td>
<td>Various documentary series</td>
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<tr>
<td>1230</td>
<td>R. Australia</td>
<td>Out Front (see 1505 S)</td>
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<tr>
<td>1300</td>
<td>R. Netherlands</td>
<td>Aural Topiary</td>
<td>continues from 1055</td>
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<tr>
<td>1310</td>
<td>R. Australia</td>
<td>Out Front (see S 1110)</td>
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<tr>
<td>1315</td>
<td>R. Japan</td>
<td>Songs for Everyone</td>
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<tr>
<td>1330</td>
<td>R. Netherlands</td>
<td>Various Hayrockers (major stories reported by the region's radio stations)</td>
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<tr>
<td>1345</td>
<td>R. Australia</td>
<td>Report from Australia (15 min. magazine focusing on Australia &amp; Europe)</td>
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<tr>
<td>1400</td>
<td>R. Australia</td>
<td>EuroQuest (a magazine placed in Europe in contest)</td>
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<tr>
<td>1405</td>
<td>BBCWS(am)</td>
<td>Health Matters (reports on medical research)</td>
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<td>1410</td>
<td>R. Japan</td>
<td>JPop (Music magazine)</td>
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<tr>
<td>1415</td>
<td>R. Netherlands</td>
<td>The Health Report (Dr. Norman Swan on health &amp; medical issues)</td>
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<tr>
<td>1420</td>
<td>R. Australia</td>
<td>The Research File (the relevance of science to all our lives)</td>
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<tr>
<td>1425</td>
<td>BBCWS(am)</td>
<td>Inspiration (a quiz centered on scientific inventions &amp; discoveries)</td>
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<tr>
<td>1430</td>
<td>R. Canada Int.</td>
<td>Out Front</td>
<td>(a place for new ideas, new ways of making radio &amp; new voices from across Canada)</td>
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<tr>
<td>1435</td>
<td>R. Australia</td>
<td>A Good Life (how development affects societies)</td>
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<tr>
<td>1440</td>
<td>BBCWS(am)</td>
<td>Go Digital (technology journalist Tracey Logan explains the latest IT)</td>
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<tr>
<td>1445</td>
<td>R. Japan</td>
<td>Basic Japanese for You (a language course for beginners)</td>
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<tr>
<td>1450</td>
<td>R. Australia</td>
<td>The Law Report (Damien Carrick presents breaking legal stories)</td>
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<tr>
<td>1455</td>
<td>R. Netherlands</td>
<td>Music 52-15 (Hawley or Ooms/Hogger present music from around the globe)</td>
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<tr>
<td>1500</td>
<td>BBCWS(am)</td>
<td>Music Review (personalities, views &amp; issues from the world of music)</td>
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<tr>
<td>1505</td>
<td>R. Canada Int.</td>
<td>Out Front</td>
<td>(see 1545)</td>
</tr>
<tr>
<td>1510</td>
<td>TUESDAY-SATURDAY</td>
<td>Daily Reading (serialized readings of selected novels)</td>
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</tr>
<tr>
<td>1515</td>
<td>WEDNESDAY</td>
<td>Daily Reading (serialized readings of selected novels)</td>
<td></td>
</tr>
<tr>
<td>1520</td>
<td>R. Netherlands</td>
<td>Dutch Horizons (Bertie Krol's chronicles in Holland)</td>
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<tr>
<td>1525</td>
<td>BBCWS(am)</td>
<td>Discovery (in-depth exploration of ideas &amp; discoveries in science/technology)</td>
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<tr>
<td>1530</td>
<td>R. Japan</td>
<td>JPop Music Treasure Box (classic &amp; popular music)</td>
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<tr>
<td>1535</td>
<td>R. Australia</td>
<td>The Health Report (Dr. Norman Swan on health &amp; medical issues)</td>
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<tr>
<td>1540</td>
<td>R. Netherlands</td>
<td>The Research File (the relevance of science to all our lives)</td>
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<tr>
<td>1545</td>
<td>R. Canada Int.</td>
<td>Out Front</td>
<td>(see 1545)</td>
</tr>
<tr>
<td>1550</td>
<td>BBCWS(am)</td>
<td>One Planet (stories about the environment, development, agriculture &amp; human impact on the natural world)</td>
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<tr>
<td>1555</td>
<td>R. Japan</td>
<td>Brush Up Your Japanese (an intermediate language course)</td>
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<tr>
<td>1600</td>
<td>R. Netherlands</td>
<td>Aural Topiary</td>
<td>(see M 0030)</td>
</tr>
<tr>
<td>1605</td>
<td>BBCWS(am)</td>
<td>Science in Action (reports on science &amp; technology)</td>
<td></td>
</tr>
<tr>
<td>1610</td>
<td>R. Japan</td>
<td>Music Beat (contemporary Japanese hits)</td>
<td></td>
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<tr>
<td>1615</td>
<td>R. Australia</td>
<td>The Sports Factor (see Friday at 1300)</td>
<td></td>
</tr>
<tr>
<td>1620</td>
<td>R. Canada Int.</td>
<td>The Women's Sport (see Friday at 1300)</td>
<td></td>
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<tr>
<td>1625</td>
<td>R. Australia</td>
<td>C'est La Vie (a program about life in Quebec &amp; French-speaking Canada)</td>
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</tr>
<tr>
<td>1630</td>
<td>R. Netherlands</td>
<td>A Good Life (how development affects societies)</td>
<td></td>
</tr>
<tr>
<td>1635</td>
<td>BBCWS(am)</td>
<td>Wednesday (the week's second episode airs at this time around the globe)</td>
<td></td>
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<tr>
<td>1640</td>
<td>BBCWS(am)</td>
<td>What's the Problem? (advice about common problems)</td>
<td></td>
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<tr>
<td>1645</td>
<td>R. Australia</td>
<td>Insight Central Europe</td>
<td>(see 1505 S)</td>
</tr>
<tr>
<td>1650</td>
<td>R. Canada Int.</td>
<td>Quarks &amp; Quarks (what's new &amp; next in science)</td>
<td></td>
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<tr>
<td>1655</td>
<td>R. Japan</td>
<td>Hella from Tokyo (see S 1110)</td>
<td></td>
</tr>
<tr>
<td>1700</td>
<td>R. Netherlands</td>
<td>Amsterdam Forum</td>
<td>(an interactive discussion of topical issues)</td>
</tr>
<tr>
<td>1705</td>
<td>WMR1(17525kHz)</td>
<td>Doing with Cumbre (Marcel Lamb with the hottest DX catches)</td>
<td></td>
</tr>
<tr>
<td>1710</td>
<td>R. Japan</td>
<td>Music Time in Africa (Rita Rochelle highlights traditional &amp; modern African music)</td>
<td></td>
</tr>
<tr>
<td>1715</td>
<td>R. Australia</td>
<td>Songs for Everyone</td>
<td></td>
</tr>
<tr>
<td>1720</td>
<td>R. Japan</td>
<td>44 Minutes (current affairs magazine about Japan &amp; Asia)</td>
<td></td>
</tr>
<tr>
<td>1725</td>
<td>SATURDAY</td>
<td>World Music Live</td>
<td>(part two airs at 1930)</td>
</tr>
<tr>
<td>1730</td>
<td>WBCQ(17495kHz)</td>
<td>Zombo's Monkey Record Party</td>
<td>(see M 0125)</td>
</tr>
<tr>
<td>1735</td>
<td>R. Australia</td>
<td>The Spirit of Things (contemporary beaths through music, art, music, &amp; sacred texts)</td>
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</tr>
<tr>
<td>1740</td>
<td>R. Japan</td>
<td>Hella from Tokyo (see S 1110)</td>
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<tr>
<td>1745</td>
<td>R. Australia</td>
<td>Visit the Urban Fringe</td>
<td>(see M 0125)</td>
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<tr>
<td>1750</td>
<td>Saturday</td>
<td>The Shortwave Report News</td>
<td>(as reported by global shortwave broadcasters)</td>
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</tbody>
</table>

**1600 UTC/12pm E/9am P - Page 55 Freqs**

<table>
<thead>
<tr>
<th>Time</th>
<th>Country</th>
<th>Program Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1700</td>
<td>R.WMR1(17525kHz)</td>
<td>Changing Images Radio (see 1700 A)</td>
<td></td>
</tr>
<tr>
<td>1705</td>
<td>R. Australia</td>
<td>New Dimensions (syndicated program of interviews with leading thinkers &amp; social innovators)</td>
<td></td>
</tr>
<tr>
<td>1710</td>
<td>R. Japan</td>
<td>Reporters Roundtable (VOA journalists in roundtable on developments in Africa)</td>
<td></td>
</tr>
<tr>
<td>1715</td>
<td>R. Japan</td>
<td>Pop Jams the World (see S 1410)</td>
<td></td>
</tr>
<tr>
<td>1720</td>
<td>VOA Africa</td>
<td>Music Time in Africa (Ria Roselle highlights traditional &amp; modern African music)</td>
<td>(part two airs at 1930)</td>
</tr>
<tr>
<td>1725</td>
<td>WMR1(17525kHz)</td>
<td>The Shortwave Report (see 1730 A)</td>
<td></td>
</tr>
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**2100 UTC/5pm E/2pm P - Page 55 Freqs**

<table>
<thead>
<tr>
<th>Time</th>
<th>Country</th>
<th>Program Name</th>
<th>Description</th>
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</thead>
<tbody>
<tr>
<td>2100</td>
<td>WBCQ(17415kHz)</td>
<td>Radio Free Electra (Captop Gordon's unique form of &quot;variety&quot; show)</td>
<td></td>
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<tr>
<td>2105</td>
<td>Deutsche Welle</td>
<td>Talk the latest in sports from Germany &amp; the world</td>
<td></td>
</tr>
<tr>
<td>2110</td>
<td>BBCWS(am)</td>
<td>Various documentary series</td>
<td></td>
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<tr>
<td>2115</td>
<td>R. Australia</td>
<td>AM (ABC Radio's flagship morning news magazine)</td>
<td></td>
</tr>
<tr>
<td>2120</td>
<td>Deutsche Welle</td>
<td>Inspired Minds (creative &amp; industrious people, profiles &amp; interviews)</td>
<td></td>
</tr>
<tr>
<td>2125</td>
<td>Deutsche Welle</td>
<td>Hits in Germany (with Deborah Friedman)(fortnightly)</td>
<td></td>
</tr>
<tr>
<td>2130</td>
<td>Deutsche Welle</td>
<td>Melody Time (light classical favorites with Diane Erickson)</td>
<td></td>
</tr>
<tr>
<td>2135</td>
<td>R. Australia</td>
<td>Country Breakfast (Australia beyond the urban fringe)</td>
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<tr>
<td>2140</td>
<td>BBCWS(am)</td>
<td>In Praise of God (services of worship from around the UK)</td>
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**MONDAY-FRIDAY**

<table>
<thead>
<tr>
<th>Time</th>
<th>Country</th>
<th>Program Name</th>
<th>Description</th>
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</thead>
<tbody>
<tr>
<td>2100</td>
<td>R. for Peace Int.</td>
<td>Daily Reading (serialized readings of selected novels)</td>
<td></td>
</tr>
<tr>
<td>2110</td>
<td>Deutsche Welle</td>
<td>Newsklink Africa (world events with special emphasis on the way they affect Africa)</td>
<td></td>
</tr>
<tr>
<td>2120</td>
<td>WBCQ(17415kHz)</td>
<td>John Shepherd (the noted humorist's classic radio programs)</td>
<td></td>
</tr>
<tr>
<td>2125</td>
<td>Deutsche Welle</td>
<td>Health Matters (see 1505 M)</td>
<td></td>
</tr>
<tr>
<td>2130</td>
<td>R. Australia</td>
<td>AM (ABC Radio's flagship morning news magazine)</td>
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<tr>
<td>2135</td>
<td>Deutsche Welle</td>
<td>World Music Live</td>
<td></td>
</tr>
<tr>
<td>2140</td>
<td>R. Australia</td>
<td>Rural Reporter (news &amp; stories from rural &amp; regional Australia)</td>
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<tr>
<td>2145</td>
<td>BBCWS(am)</td>
<td>Inspiration</td>
<td>(see 1532 M)</td>
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**TUESDAY**

<table>
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<th>Country</th>
<th>Program Name</th>
<th>Description</th>
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<tr>
<td>2105</td>
<td>Deutsche Welle</td>
<td>Go Digital</td>
<td>(see 1506 T)</td>
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<tr>
<td>2110</td>
<td>R. Australia</td>
<td>AM (ABC Radio's flagship morning news magazine)</td>
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<tr>
<td>2115</td>
<td>Deutsche Welle</td>
<td>Arts on the Air</td>
<td>(an award-winning weekly cultural magazine)</td>
</tr>
<tr>
<td>2120</td>
<td>R. Australia</td>
<td>Innovations (Australian invention, enterprise &amp; genius)</td>
<td></td>
</tr>
<tr>
<td>2125</td>
<td>BBCWS(am)</td>
<td>Music Review</td>
<td>(see 1532 T)</td>
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**WEDNESDAY**

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<th>Program Name</th>
<th>Description</th>
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<tr>
<td>2105</td>
<td>BBCWS(am)</td>
<td>Discovery (see 1506 W)</td>
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<tr>
<td>2110</td>
<td>R. Australia</td>
<td>AM (ABC Radio's flagship morning news magazine)</td>
<td></td>
</tr>
<tr>
<td>2115</td>
<td>Deutsche Welle</td>
<td>Living in Germany (aspects of life in Germany)</td>
<td></td>
</tr>
<tr>
<td>2120</td>
<td>R. Australia</td>
<td>Educational series</td>
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<tr>
<td>2125</td>
<td>BBCWS(am)</td>
<td>Westway (see 1532 W)</td>
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</table>
MONDAY

2100 BBCWS(om) Australia All Over (Ian McNicol) 2200 Australia Wide (see 2240 F)

2200 Australia All Over (Ian McNicol) 2210 Australia Wide (see 2240 F)

2240 Australia All Over (Ian McNicol) 2245 Australia Wide (see S 2240)

FRIDAY

2100 World Radio Australia Asia-Pacific Update (see 1545 F)

2200 Australia All Over (Ian McNicol) 2210 Australia Wide (see S 2240)

2245 Australia Wide (see S 2240)

2300 Australia All Over (Ian McNicol) 2310 Australia Wide (see 2345 F)

SUNDAY

2100 Australia Wide (see S 2330) 2110 Australia Wide (see S 2345 F)

2200 Australia Wide (see S 2330) 2210 Australia Wide (see S 2345 F)

2300 Australia Wide (see S 2330) 2310 Australia Wide (see 2345 F)

THURSDAY

2100 Australia Wide (see S 2330) 2110 Australia Wide (see S 2345 F)

2200 Australia Wide (see S 2330) 2210 Australia Wide (see S 2345 F)

2300 Australia Wide (see S 2330) 2310 Australia Wide (see 2345 F)

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2100 Australia Wide (see S 2330) 2110 Australia Wide (see S 2345 F)

2200 Australia Wide (see S 2330) 2210 Australia Wide (see S 2345 F)

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2200 Australia Wide (see S 2330) 2210 Australia Wide (see S 2345 F)

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2200 Australia Wide (see S 2330) 2210 Australia Wide (see S 2345 F)

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2200 Australia Wide (see S 2330) 2210 Australia Wide (see S 2345 F)

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2200 Australia Wide (see S 2330) 2210 Australia Wide (see S 2345 F)

2300 Australia Wide (see S 2330) 2310 Australia Wide (see 2345 F)

MONDAY

2100 Australia Wide (see S 2330) 2110 Australia Wide (see S 2345 F)

2200 Australia Wide (see S 2330) 2210 Australia Wide (see S 2345 F)

2300 Australia Wide (see S 2330) 2310 Australia Wide (see 2345 F)

Thank You ...

Additional Contributors to This Month’s Shortwave Guide:
John Babbs, Silver Spring, MD; Joseph Brashier, WHRI; Rich D’Angelo, NASWA Flash Sheet; Glenn Hauser, Enid, OK, DX Listening Digest, World of Radio; Jose Jacquez VUZIOS, India; Michael Ketter, WBCQ; Anker Petersen, DX Window; Daniel Sampson, Arcadia, WI, Primetime Shortwave; Harold Sellers, Canada, ODXA/DX Ontario; Robert Thomas, Bridgewater, CT; Larry Van Horn, MT Asst. Editor; BBC On Air; BCL News; BCDXC; CDX; Cumbe DX; DX News; Fineware; Hard Core DX; NASWA Journal; Observer; Worldwide DX Club.
Milcom Mailbag

Time to dig into ye olé Milcom mailbag this month and see what some of our readers are reporting from the field. Our first report comes from a regular reporter, Jack "Grunt" NeSmith down in Deltona, Florida.

143.825 Supervisor of Flying Moody AFB Georgia
227.075 125 kW Air-to-Air, Jacksonville International Airport, Florida
227.675 Dutch AF Training (Believe this Dutch unit was working out of Melbourne-LVH)
228.900 125 kW Air-to-Air (This is a NORAD Southeast, Jack, no doubt the 125™ was working a Combat Air Patrol for them-LVH)
245.300 Army (Nothing in my records other than a US Army assignment-LVH)
252.800 Patrick AFB, Florida (Search and Rescue-LVH)
254.200 USN (This is another Southeast NORAD frequency that has had both Jstars and AWACS activity on it-LVH)
267.500 FACES FAC Jacksonville, Florida
269.375 FAA Unknown (Patrick AFB, Florida, Consolidated Command. Post)
277.600 Tyndall AFB, Florida (Callsign SEALORD)
281.425 FAA Daytona, Florida Approach/Departure Control
282.300 FAA RCAG Alma, Georgia (Jacksonville ARTCC-LVH)
283.200 FAA Unknown (Miami ARTCC, OAKGROVE (NORAD Southeast-LVH)
291.700 FAA Daytona, Florida Approach/Departure Control
307.000 Orlando, Florida Approach/Departure Control
319.000 FAA RCAG Vero Beach (Miami ARTCC-LVH)
320.600 USAF (Nationwide AWACS Tadial A and C voice coordination frequency-LVH)
C320.050 FAA RCAG Crestview, Florida (Jacksonville ARTCC-LVH)
323.100 FAA RCAG Key West, Florida (Miami ARTCC-LVH)
339.700 FACES FAC Jacksonville, Florida
357.000 Pinecastle Range, Florida Range Operations (Lake George Target-LVH)
357.000 FAA RCAG Gainesville, Florida (Jacksonville ARTCC-LVH)
387.000 Daytona, Florida Approach/Departure Control

Thanks a million for the frequencies, Jack, be sure to check in often.

Airshow Reports

Another regular reporter to this column is Mark Zurovski in California. Mark managed to collect some information off a KC-135 tanker frequency card from the 128ARW (Aerial refueling Wing) based at General Mitchell International Airport in Wisconsin displayed at the Vandenberg AFB Airshow.

VHF Radio

<table>
<thead>
<tr>
<th>Channel</th>
<th>Frequency</th>
<th>Usage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>126.400</td>
<td>General Mitchell International Airport (KMKE) ATIS</td>
</tr>
<tr>
<td>2</td>
<td>120.800</td>
<td>General Mitchell International Airport (KMKE) Clearance</td>
</tr>
<tr>
<td>3</td>
<td>121.800</td>
<td>General Mitchell International Airport (KMKE) Ground Control</td>
</tr>
<tr>
<td>4</td>
<td>119.100</td>
<td>General Mitchell International Airport (KMKE) Tower</td>
</tr>
<tr>
<td>5</td>
<td>127.850</td>
<td>General Mitchell International Airport (KMKE) Final Radar</td>
</tr>
<tr>
<td>6</td>
<td>126.500</td>
<td>General Mitchell International Airport (KMKE) Approach Control West</td>
</tr>
<tr>
<td>7</td>
<td>118.000</td>
<td>General Mitchell International Airport (KMKE) Approach Control East</td>
</tr>
<tr>
<td>8</td>
<td>119.650</td>
<td>General Mitchell International Airport (KMKE) Departure Control</td>
</tr>
<tr>
<td>9</td>
<td>125.350</td>
<td>General Mitchell International Airport (KMKE) Departure Control</td>
</tr>
<tr>
<td>10</td>
<td>122.200</td>
<td>Flight Service Station Green Bay</td>
</tr>
<tr>
<td>11</td>
<td>139.500</td>
<td>128ARW/126ARS Command Post Call sign - U/SET Control</td>
</tr>
<tr>
<td>12</td>
<td>125.100</td>
<td>Chicago ARTCC</td>
</tr>
<tr>
<td>13</td>
<td>132.300</td>
<td>Chicago ARTCC</td>
</tr>
<tr>
<td>14</td>
<td>134.750</td>
<td>Chicago ARTCC</td>
</tr>
<tr>
<td>15</td>
<td>130.750</td>
<td>Grand Rapids/Kent County International Airport (KGRR) Tower</td>
</tr>
<tr>
<td>16</td>
<td>135.650</td>
<td>Grand Rapids/Kent County International Airport (KGRR) Tower</td>
</tr>
<tr>
<td>17</td>
<td>138.300</td>
<td>Group Long Island Sound/SW Harbor (FM)</td>
</tr>
<tr>
<td>18</td>
<td>137.700</td>
<td>Group Long Island Sound/SW Harbor (FM)</td>
</tr>
<tr>
<td>19</td>
<td>138.000</td>
<td>Group Long Island Sound/SW Harbor (FM)</td>
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<tr>
<td>20</td>
<td>138.100</td>
<td>Group Long Island Sound/SW Harbor (FM)</td>
</tr>
<tr>
<td>21</td>
<td>138.200</td>
<td>Group Long Island Sound/SW Harbor (FM)</td>
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<tr>
<td>22</td>
<td>138.300</td>
<td>Group Long Island Sound/SW Harbor (FM)</td>
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<tr>
<td>23</td>
<td>138.400</td>
<td>Group Long Island Sound/SW Harbor (FM)</td>
</tr>
<tr>
<td>24</td>
<td>138.500</td>
<td>Group Long Island Sound/SW Harbor (FM)</td>
</tr>
</tbody>
</table>

Another regular reporter to this column is Mark Zurovski in California. Mark managed to collect some information off a KC-135 tanker frequency card from the 128ARW (Aerial refueling Wing) based at General Mitchell International Airport in Wisconsin displayed at the Vandenberg AFB Airshow.

UHF Radio

<table>
<thead>
<tr>
<th>Channel</th>
<th>Frequency</th>
<th>Usage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>346.800</td>
<td>General Mitchell International Airport (KMKE) Ground Control</td>
</tr>
<tr>
<td>2</td>
<td>325.800</td>
<td>General Mitchell International Airport (KMKE) Tower</td>
</tr>
</tbody>
</table>
| 3       | 307.000   | General Mitchell International Airport (KMKE) De-
Jonathan Melton attended the Huntsville Airshow this year and monitored the event with his scanner. The Blue Angels also performed at that show and he notes they were using the same frequencies he monitored during the April 2002 Tupelo, Mississippi, Airshow.

164.900 Blue Angels comm call
170.900 Blue Angels comm call
238.150 Blue Angel six plane formation
263.350 Blue Angel "Fot Albert" C-130
275.350 Blue Angel four plane formation
345.900 Blue Angel Solo aircraft

Jonathan also passes along, “As always, thanks to you and the entire staff of Monitoring Times for a job very well done!”

We appreciate your comments, Jonathan, and thanks to you and all our reporters for taking the time to share your monitoring results with all of our MT readers.

♦ Spectrum Holes

Over the years I have kept close tabs on spectrum usage in the 223-400 MHz range. Through all these years of monitoring, I have found certain frequencies with absolutely no apparent activity on them. I call these frequencies “spectrum holes.”

Starting with this issue I will list some of these spectrum holes: if you have additional information or have heard anything on any of the frequencies below I would love to hear from you. I have stated in the past that these frequencies will probably be very quiet, but when active could offer some exciting listening. I would also like to have some of our military satellite enthusiasts do a sky sweep on these frequencies for activity.

This month I compiled a complete list of the 100kHz-spaced spectrum holes in my files:

225.200 230.600 235.600 237.100 240.300
240.400 240.700 242.300 242.800 242.900
243.100 243.700 246.100 246.400 246.600
246.900 247.100 247.600 252.200 252.400
252.600 256.100 270.700 273.300 278.900
279.300 293.300 295.900 298.200 309.600
312.600 316.000 316.500 316.600 336.700
345.300 345.700 354.500 358.500 364.300
364.400 364.700 366.400 368.200 369.300
369.700 370.800 371.300 371.400 371.700
372.400 373.200 374.600 374.700 375.300
377.300 377.600 377.700 378.600 378.700
382.300 382.400 386.100 387.300 387.600
387.700 388.300 389.600 390.700 391.300
391.400 391.600 392.300 392.400 392.600
392.700 393.900 396.400 396.600 398.300
398.800 399.300 399.900

Plus, 100kHz-spoaced spectrum holes in the Glide Slope navigation sub-band:

328.600 328.700 328.800 328.900 329.100
329.200 329.400 329.500 329.700 329.800
330.000 330.100 330.400 330.600 330.700
330.900 331.000 331.100 331.300 331.500
331.600 331.800 331.900 332.100 332.200
332.400 332.500 332.700 332.800 333.000
333.100 333.600 333.700 333.900 334.000
334.100 334.200 334.300 334.500 334.600
334.900

That does it for this month's column. Until next month, 73 and good hunting.

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Radio Communications on the Internet

The Internet has greatly expanded the options and resources available to the scanner listener. Search engines like Google (http://www.google.com) allow web surfers to locate many different types of radio-related material. Hobby web sites like Strong Signals (http://www.strongsignals.net) and Trunked Radio Information (http://www.trunkedradio.info) provide information, frequency lists and forums for conversation. Even the web page of the Federal Communications Commission (http://www.fcc.gov) are becoming more user-friendly. In addition to all of the help and assistance for local monitoring, the Internet is also enabling web surfers to hear scanner activity from distant cities and states.

*Streaming Audio*

Hi Dan,

Do you know of any scanner that will allow me to listen to police activity going on in LA from Milwaukee, Wisconsin? Thunks.

Rose

I don’t know of any earth-bound scanner (or antenna) capable of covering the 1,700 miles between southern California and southeast Wisconsin that would let you listen to the Los Angeles Police Department. That kind of distance is just too great for the LA radio transmissions to make it to the Midwest, regardless of how high up you mount the antenna.

Even though you won’t be able to receive the transmissions directly, it doesn’t mean you’re out of luck. You can listen to the LAPD, as well as other departments and cities, from anywhere as long as you have access to the Internet. Volunteers in dozens of cities have hooked their own scanners up to the Internet and are providing real-time “streaming audio” to listeners around the world.

These setups have three main components: a scanner, a personal computer (PC), and a modem. The scanner is typically either tuned to a main dispatch frequency or programmed to scan a trunked system. The audio output from the scanner is connected through a patch cable to a sound card installed inside the PC. Software running on the PC converts that audio into a continuous digital stream. The stream, in turn, is fed out of the PC to the modem and from there onto the Internet.

Some of these digital audio streams may require a “helper application” or a “plug-in” that gives your web browser the ability to understand the feed and play it through your computer’s speakers. There are several different types of audio conversion software commonly used by these volunteers and the specific type of software will determine the plug-in that you’ll need. Most web sites with audio feeds explain which plug-in is needed and how to get the latest version.

There are a number of places on the Internet that maintain lists of different audio feeds. Some of the more popular and comprehensive ones are listed below.

*Public Safety Internet Audio Feeds*

http://www.policescan.us/

More than 40 entries, including police and fire departments, air traffic control

http://www.freqofnature.com/live_bottom.html

Sorted by state with a graphic icon indicating the type of plug-in required to hear that feed.

http://www.livedispatch.com/live_dispatch.htm

Also has links to scanner feeds in Canada and the Netherlands.

You can also use a search engine like Google to locate other feeds. Use search terms such as “live feed” and “police” to bring up possible sites. Don’t be discouraged if you don’t locate what you want on the first try. Because these feeds are provided by volunteers, you may find that they come and go and may be “down” (unavailable) at any particular time.

*Computer-Aided Dispatch*

If you don’t want to listen to an audio feed but still want to keep up with what’s going on, many of the larger departments across the country maintain Computer-Aided Dispatch (CAD) web pages with textual descriptions of incidents and activity.

For instance, the California Highway Patrol (CHP) operates a CAD page that lists traffic accidents and related ambulance calls, including rescues and car fires. You can see the current activity at the cad.chp.ca.gov web page. Pinellas County, Florida, has a similar page set up at http://www.co.pinellas.fl.us/ces/ActCallsPub.htm.

**South Dakota**

Hi Dan,

I just read your article on the Internet. I found it very interesting. I will tell you first what I have, then my question. I have a new Uniden BC785D Scanner. I have had it since March and have been working on getting it programmed.

I live in Redfield, South Dakota, which is in Spink County. I think I have all frequencies but I get all over the state pretty good; my problem is getting good reception from our local radios in close to me — they are sort of hard to understand. I am wondering if I am missing a channel or I am too close. The ambulance will use the Miller tower (159.4650 MHz) that is good; then the deputies will use 156.2400 or 159.6900, which are not very good. Can you help me with more?

I have 8 frequencies on Crandall tower, 7 on Miller and 5 on Aberdeen. Does Redfield have a tower they are using? Can you provide me with a complete frequency chart and any other help? Oh, I have a Radio Shack antenna, the ham discone antenna that covers 25 to 1300 MHz.

Ally

For frequency and location information, the first place to check is the Federal Communications Commission (FCC). The FCC is responsible for licensing public safety radio systems and they maintain a web site where you can check up on local towers and frequencies.

**FCC Frequency Database**

Open up your favorite web browser and go to http://wireless.fcc.gov/uls/

Click on the Licenses button in the Search section.

Clicking on the Advanced License Search on the left-hand side of the page will bring you to http://wireless2.fcc.gov/UlsApp/UlsSearch/searchAdvanced.jsp, which you can also type directly, but it’s longer and more difficult to re-
Go to the State/County section and scroll down in the first window until you see “South Dakota” then click on it. A list of counties in South Dakota will then appear in the lower window. Scroll down in that one and click on “SD - Spink.” Dakota then click on it. A list of counties in South Dakota will then appear in the lower window. Those local frequencies might give you a chance to check whether attenuation might help your reception problem. If you really are too close to a repeater you should hear an improvement by using the RF attenuation feature on the BC785D. You can read the details in your Owner’s Manual on page 31.

EDACS and the PRO-92

I think that I have come across a major shortcoming in the Radio Shack PRO-92: it can only decode and track EDACS AFS codes 00-000 through 31-157.

When entering EDACS talk group IDs, they have to be entered in 4 digit decimal format, for example 0289, And the scanner only takes numbers from 0000 to 4095, which corresponds to AFS codes 00-000 thru 31-157.

Does EDACS use AFS number higher than 31-157? I suspect that it does, because some EDACS systems must have many thousands of individual users.

Ever since I bought my PRO-92 a few years ago, I have never been able to pick up the city buses on the EDACS system.

I can pick up the bus supervisors and maintenance on a range of 0289 to 0294 talk group IDs, but whenever the individual buses talk, the scanner will not decode them. If I use another radio in conventional mode, I can hear the individual buses. And during one conversation, I heard the dispatcher describe how each bus’s ID shows up on the data terminal in the office. So, I suspect that the buses are using an ID that is greater than the max 31-157 that the PRO-92 takes.

Via the Internet, I checked the user manual for the PRO 94, and talk group ID is entered in AFS format. The manual does not mention any limit to the numbers, and so I would suspect that something like 60-000 could be entered. So, the problem that I have encountered may be common only to the PRO-92.

It is time to buy a new scanner. I wonder what other agencies and fleets are on the system above 31-157.

I like the PRO-92, though, because it tracks LTR, and the electric company here uses LTR. William

I happen to like the PRO-92 as well, and the LTR (Logic Trunked Radio) tracking is a nice feature. But you asked about EDACS talkgroups.

Enhanced Digital Access Communications System (EDACS) radios have two main types of message traffic. The first is the group call, which is the case when a user wishes to communicate with other users in a group. Group call messages use talkgroup identifiers to indicate which group should participate in the conversation.

EDACS

Agency - Fleet - Subfleet

<table>
<thead>
<tr>
<th>A</th>
<th>A</th>
<th>A</th>
<th>F</th>
<th>F</th>
<th>F</th>
<th>F</th>
<th>F</th>
<th>S</th>
<th>S</th>
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<td>4</td>
<td>bits</td>
<td>4</td>
<td>bits</td>
<td>3</td>
<td>bits</td>
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<td>.15</td>
<td>0.0</td>
<td>.15</td>
<td>0</td>
<td>.7</td>
</tr>
</tbody>
</table>

EDACS talkgroup identifiers are usually represented as either a 4-digit decimal number or in Agency-Fleet-Subfleet (AFS) format. AFS identifiers are composed of 11 binary digits (bits). The first four bits are assigned as the agency number. The next four bits are the fleet number. The final three bits are the subfleet number.

Rather than display eleven 1’s and 0’s, AFS identifiers are shown as two decimal numbers separated by a dash. The number before the dash is the agency number and can range from 00 to 15 (the first four of 11 bits). The number to the right of the dash has two parts. The first two digits represent the fleet number, which again can range from 00 to 15 (the second four of 11 bits). The final digit is the subfleet number and can go from 0 to 7 (the last three of 11 bits). So, AFS identifiers go from 00-000 to 15-157.

The second type of common EDACS message traffic is the individual call, which allows two users to talk privately with each other. In this case talkgroup identifiers are not used - individual radio identifiers are used instead.

The PRO-92 tracks talkgroups. It does not track individual calls, although, as you’ve discovered, you can hear the voice traffic of individual calls if you listen in conventional mode.

What appears to be happening is that dispatch calls are sent out to the buses as group calls, so they use a talkgroup and the PRO-92 can track them. When the bus responds, it uses an individual call and the PRO-92 in trunking mode ignores those types of calls.

Seasonal Checklist

For those of you living in climates with seasonal change, autumn is just around the corner. Now is the time to check your outdoor equipment and make sure everything is ready for winter. Much better to make repairs and recheck connections now, while the weather is nice, than when it’s cold and blustery outside.

That’s all for this month. As always, more information is available on my website at http://www.signalharbor.com, including updated APCO-25 system frequencies and tower locations. I also welcome your electronic mail at dan@monitoringtimes.com. Until next month, happy monitoring!
As we move into the fall and winter months, the buzz in space publications is that the space shuttle mission STS-114 could resume launching from the Kennedy Space Center (KSC) as early as this month.

It has been quite some time since we originally published the first information on the trunk system being implemented in and around the Kennedy Space Center area. Not much could be done as far as analysis is concerned, since this was an APCO P-25 compliant digital system.

But early this year the new Uniden digital trunk trackers entered the monitoring world and all that has now changed! We are also very fortunate to have a reporter in the area (who wishes to remain anonymous), who has monitored the system directly and provides us with the following report.

“The Kennedy Space Center trunk system is a 400 MHz Motorola SmartZone, using the APCO P-25 ASTRO digital mode. This system covers an area spread over 70 miles from the north end of the Canaveral National Seashore to the Malabar Annex in Palm Bay. Within this SmartZone system are one two-simulcast site, one non-simulcast site and interfaces to three Air Force leased non-simulcast sites. In this system there are seven dispatcher consoles, three system manager terminals, networks, computers, tone remote, and audio interfaces. The radio count on this system as of March 31, 2003, was 1600 handsets, 800 vehicle mounted and 25 base station radios.

“System users include a variety of civilian, military and government entities including both NASA and Air Force units. There are various talk groups that encompass a wide variety of operations in the area such as: Administrative (Fire, Security, Medical, Public Affairs Office, PAO, Transportation, General Services Administration-GSA, etc.); Tactical (Crane, Shuttle Landing Facility, Landing and Transporter operations); Air-to-Ground (Shuttle, Commercial and Military); and other groups (ALS, outside agencies, etc.)

“The majority of the activity observed so far has been from the Kennedy Space Center, Cape Canaveral Air Force Station, and Patrick AFB areas and is generally heard on their respective sites. Many of the active talk groups heard on the system are being patched from their existing VHF/UHF nets into the trunk system (talk group ID +3). There are some talk groups that appear to be actually operating on the trunk system instead of being patched to it.

“Some previously heard VHF nets have gone quiet, mostly from Cape Canaveral AFS and Patrick AFB:

- 149.8000 Patrick MOSC
- 164.7000 Patrick Fire
- 165.0375 CCAFS Weather Bas
- 171.2625 NASA TV Ops
- 171.3875 Patrick Engineers
- 173.0250 Patrick Security

“There have been times when the VHF nets used by security, fire and others have moved, seemingly at random, to other talk group IDs. These changes generally appear to stay within the same group of talk group IDs.

“Individual sites that are part of this Smartzone system are:

- Site 1 - Kennedy Space Center (2 remote sites at 500 ft Weather Tower and Communication Tower Shop)
- Site 2 - North Kennedy Space Center (Shiloh Tower)
- Site 3 - Cape Canaveral AFS (Tuning Tower)
- Site 4 - Patrick AFB (Microwave Tower)
- Site 5 - Malabar Annex (Malabar Tower)

“The above sites all have active control channels; however, very little voice activity has been observed on the North KSC and Malabar sites.

Known Frequency assignments

- Site 1 - Kennedy Space Center
  - 406.2375c
  - 406.3750c
  - 406.4375c
  - 406.6375c
  - 406.8375c
  - 407.2375c
  - 408.0375c
  - 408.6375c
  - 409.0250c

- Site 2 - North Kennedy Space Center
  - 406.1750c
  - 409.4250c
  - 409.6375c

- Site 3 - Cape Canaveral AFS
  - 406.5625c
  - 408.5625c
  - 408.625c
  - 409.3625c
  - 410.1625c
  - 410.75625c
  - 410.8625c

- Site 4 - Patrick AFB
  - 407.9625c
  - 408.7625c
  - 408.9625c
  - 409.5625c
  - 410.3625c

Smartzone Site 5 - Malabar Annex
- 406.3625c
- 406.7625c

Other Possibilities:
- 407.1625c or 410.7625

“The base frequency and offset used throughout this system is 406.100 MHz and 12.5-kHz respectively.”

Talk Group Identifications

- 336 Kennedy Space Center Base Communications (NASA Net 107 patch from 170.150 MHz)
- 496 Kennedy Space Center Security “400 Net” (Security shift commanders and supervisors)
- 544 Unidentified
- 656 Kennedy Space Center Rail Operations (patch from 413.125 MHz)
- 672 Kennedy Space Center X-Ray Operations
- 832 Kennedy Space Center Transportation - Special Rail & Truck Net (NASA Net 206 patch from 170.175 MHz)
- 848 Unidentified (patch with unidentified)
- 1936 Kennedy Space Center Security (NASA Net 101 patch from 173.6875 MHz)
- 1952 Cape Canaveral AFS Security (ETR Net Z patch from 165.0875 MHz)
- 2576 Kennedy Space Center Telemetrics (NASA Net 102 patch from 165.1875 MHz)

Other Possibilities:
- 4496 Kennedy Space Center Base Communications (NASA Net 107 patch from 170.150 MHz)
- 5472 Unidentified (patch with unidentified)
- 10256 Kennedy Space Center Security (NASA Net 101 patch from 173.6875 MHz)/Cape Canaveral AFS Security (ETR Net Z patch from 165.0875 MHz)
- 10272 Kennedy Space Center Safety (NASA Net 105 patch from 173.6625 MHz)
- 10288 Kennedy Space Center Fire (NASA Net 116 patch from 173.5625 MHz)/Kennedy Space Center Security (NASA Net 101 patch from 173.6875 MHz)
- 10304 Kennedy Space Center Safety (NASA Net 105 patch from 173.6625 MHz)
- 10320 Kennedy Space Center Fire (NASA Net 116 patch from 173.5625 MHz)/Cape Canaveral AFS Security (ETR Net Z patch from 165.0875 MHz)
- 10384 Kennedy Space Center OPF Safety (NASA Net 205 patch from 173.4625 MHz)
- 11536 Kennedy Space Center NASA Tower (NASA Net 202 patch from 165.6125 MHz)
- 11696 Kennedy Space Center Rover Operations
- 11760 Kennedy Space Center MLP/Crawler Operations
John Glenn Research Center, Cleveland, Ohio
System: EDACS Regular
Frequencies: 406.350 (LCN01) 407.150 407.950 (LCN02) 408.750 (LCN04) 409.550 (LCN05)

Johnson Space Flight Center, Houston, Texas
Notes: Current reports indicated that this system is not on-the-air.

More Government APCO 25 Uncovered

I have begun to receive a steady stream of notes from monitors across the country monitoring various government agencies using the APCO 25 digital protocol. Here is a sampling of what has been reported.

Kenny in Massachusetts says, “Here in Boston the TSA (Transportation Safety Administration) are using their 172.900 MHz repeater with P-25 not encrypted. I have not been able to confirm the input.”

Kenny passes along the additional list below of other P-25 transmissions he has monitored in the Boston area.

163.4625 Hanscom Field Security
163.7500 Border and Transportation Security (old INS) - Encrypted
165.2875 Alcohol, Tobacco and Firearms (ATF)
170.6250 Internal Revenue Service (IRS)
417.2000 General Services Administration/ Federal Protection Service - Base in the clear and mobile units are encrypted.
418.6250 DEA mostly encrypted, but some radio checks in the clear
418.9000 DEA encrypted
418.7500 DEA clear and encrypted, although recently not much heard in the clear
418.6750 DEA clear and encrypted
418.8750 DEA encrypted

Kenny also notes that many different agencies have been heard recently on the local Customs 165.2375 repeater conducting radio checks with “Sector” including: Federal Fish and Wildlife Service, Veterans Administration and ATF units.

Thanks for the report, Kenny.

Regular Fed File reporter Chris Parris checks in again with some more info on the APCO 25 communications he has been monitoring. Chris says, “Add the DEA to the list of APCO 25 users. I started hearing them using unencrypted P-25 on 418.900 MHz in the Pittsburgh area this last week. Interestingly, as any previous coded communications I have heard on DEA frequencies has been DES or something similar sounding. Must be getting new radios out there…”

Another anonymous reporter from Florida has confirmed through monitoring that the TSA is using APCO 25 at the Orlando International Airport. He also confirms the IRS is using P-25 on their 162.950 repeater output (165.700 repeater input) in the clear and encrypted. He has also monitored P-25 encrypted communications on 166.7375 MHz in the central Florida area. My notes indicate that this is a U.S. Fish and Wildlife Service frequency and that might be what he is hearing.

Eddie Muro in New York has verified that the TSA is using 172.900 P-25 communications at the John F. Kennedy International Airport.

TIGTA

And finally, Chris Parris passes along this interesting tidbit of information.

“About a few months ago, a friend was working at one of the many tower sites along Skyline Drive on the west side of Portland. He spotted a new repeater cabinet labeled ‘TIGTA 164.5375 / 172.6375.’ He didn’t know what TIGTA was, but a quick Google search shows: http://www.ustreas.gov/tigta/. Sure enough, TIGTA stands for Treasury Inspector General for Tax Administration.

“I have had the frequencies in for a while now, but nothing until this morning. 164.5375 MHz (repeater out) came up in unencrypted P-25 digital with some guys playing with the new radios and seeing if they could hear each other.”

As you can see, monitors across the country are uncovering some great fed comms using the new Uniden digital scanners. If you own one of these new radios and have the digital board installed, how about swinging through the federal bands and let us know what you are hearing?

Until next time, 73 to all and good hunting.
few months ago I wrote about stations moving on the radio dial to new frequencies. This month, I'm writing about stations that move in the traditional sense – from one city to another. These moves are usually trivial – moving from one suburb to another, etc. But, occasionally the moves are significant. These changes can seriously affect your ability to DX certain frequencies.

An example: WHTE-1690 is the expanded-band permit for WDDD-810 Johnson City, Illinois. Johnson City is in extreme southern Illinois, roughly 80 miles southeast of St. Louis and roughly 300 miles south of Chicago. Obviously this station will not be a serious impediment to DXing 1690 in Chicago. Indeed, WHTE could actually be DX for a Chicago listener.

However, WHTE has applied to move to Berwyn, Illinois. Berwyn is in northern Illinois; it actually borders on the city of Chicago. If the move is granted, 1690 won’t stay open in Chicago for long.

AM moves are relatively simple. The station must show that it can operate with the requested power and antenna at the new location without interfering with other stations, and while providing a “city grade” signal across the new city. These are essentially the same conditions that would need to be met if a completely new station were proposed. Only one additional requirement is imposed: the move cannot deprive the original city of its only operating radio station. (WHTE has applied to move co-owned station WDDD-FM from Marion, Illinois, to Johnson City. This would ensure Johnson City would still have a radio station. Marion would still have WGGH-AM and WAWJ-FM.)

For FM and television, another step is necessary. FM and TV stations can only be established on channels that are “allotted” to the community from which the station proposes to operate. For example, the owners of station WJOI-FM Springfield, Tennessee, have applied to move the station to Oak Grove, Kentucky. Before they can move the station itself, they must move the station’s 94.3 FM allotment. Only after the new allotment is granted can the station apply to modify its license to specify the new city. It should be noted that translators and low-power TV stations are not required to use allotted channels. They may change city at will (provided interference-protection limits are met).

As I noted above with regard to WHTE-1690, sometimes one change in one community triggers more changes. (Some recent moves in Alabama have triggered nearly a dozen changes in two states.) Often these “cascading” changes are purely administrative. In WHTE’s case, WDDD-FM already provides a “city-grade” signal to both its existing city (Marion) and the proposed new city. (Johnson City). The WDDD tower won’t move, and the station will remain on 107.3 FM. Chances are the only things that will change at WDDD-FM are the hourly identification announcement and the location of the “public file.”

A number of major AM moves are “in the offing” this fall. I already mentioned the proposed move of WHTE-1690 from southern Illinois to the Chicago area. In California, KTRB-860 has been granted permission to move to San Francisco. They aren’t required to replace the 860 frequency (two other AM stations and six FMs will continue to cover Modesto), but they do plan to replace it with a new station on 840. And in Oklahoma, KGYN-1210 in Guymon (in the center of the Panhandle) is moving to Oklahoma City.

On FM, listeners in northern Alabama and within a 100-mile radius of Dallas, Texas, should expect to hear major changes on their FM dial. I suspect Dallas-area listeners are already used to the idea of stations shuffling around the dial!

**Expanded Band Countdown**

When the expanded AM band was first opened, we (and the stations) were told the second frequencies would be valid for only five years. At that time, stations would be required to choose one frequency or the other – they could either remain in the expanded band, or surrender their expanded-band frequency and move back to their original frequency. For some stations, that period has now expired. I count eight stations that have been on the expanded band for more than five years:

- **KDIA-1640 Vallejo, CA:** old 1190 still on as KDYA
- **KDDZ-1690 Arvada, CO:** old 1550 signed off in June.
- **WJCC-1700 Miami Springs, Fl:** old 1210 still on as WNMA.
- **WTR-1690 Lexington Park, MD:** old 920 cancelled several years ago.
- **WWRU-1660 Jersey City, NJ:** old 1530 still on as WJDF.
- **KDSR-1640 Lake Oswego, OR:** old 1290 still on as KKS.
- **WTDY-1670 Madison, WI:** old 1480 still on as WLMV.
- **WKSH-1640 Sussex, WI:** old 1370 license cancelled several years ago.

KDIA and WWRU have special exemptions. These stations received expanded-band allotments as the result of an act of Congress requiring the FCC to grant an expanded-band frequency to any daytime-only station that was the only station in a city of more than 100,000 population. Congress intended the law to apply only to WWRU, but failed to realize population increases allowed KDIA to qualify as well.

It is hard for me to explain why WNMA, KKSL, and WLMV are still on. I’m not aware of any plans by any of these stations to shut down. All three are programmed independently of their expanded-band counterparts.

**Wierd Science**

There is no new news about digital TV DX, but the FM dials have been hopping. On June 13th, rare double-hop skip was noted when KCBS channel 2 Los Angeles made the trip to Kentucky. Rare skip above channel 7 was reported in Europe on June 20th, and in several locations in the eastern USA on the 24th. On the 16th, a 220 MHz ham contact between Idaho and Las Vegas seems to smash some of the technical assumptions we’ve made about sporadic-E skip. And to top it off, at the end of June exotic long-haul tropospheric propagation was reported. Alabama to Ontario and Boston to Kentucky are usually sporadic-E paths. It’s not very often they’re DXed via tropospheric propagation!

Write me at 7540 Highway 64 West, Brassoown NC 28902-0098, or by email to dougs@monitoringtimes.com. Good DX!
inn the State Hospital for my brain to rest and the nurses at the State Hospital would not let me get online because they said that I got agitated too easy and that my brain would not rest if I got online so I didn’t get to look up my reception reports until now because a doctor at the state hospital gave me a piece of paper that says I am certified sane and told me that they were letting me loose and I can get online now.”

“I am sending out QSLs to my old listeners now and I want you to know that I am going to get me a new True Light Trailer and Emergency Drive-In Church after I get out of the half-way house where I live now and I will be able to return to the airwaves this fall or winter with an improved station and better coverage so listen for me around 6955 kHz on holiday weekends and other weekend nights around November and December 2003.”

Fields’ QSLs also reveal that the station uses a B&W 5100 transmitter with a crystal control and 120 watts. The signal is fed into a vertical antenna. As you see here, Fields has future plans to return to the shortwave broadcasting bands. If you hear this one, you will tune in one of the most mysterious pirate stations that has ever bounced a signal off the ionosphere. Also, you will know that the operator of this one actually has a sheet of paper providing medical certification that Rev. Fields is in fact “The only certified sane radio preacher.” If you hear him, let us know!

Pirate Frequencies Still Variable

A fairly steady stream of pirate radio broadcasting has continued even during the summer months, despite the fact that this is not normally a prime DX season. A majority of North American pirate broadcasters have abandoned the 6955 kHz standard pirate band frequency. The stations that we list here this month operated on a variety of frequencies, including 6925, 6950, and 6955 kHz. The presence of licensed broadcaster La Voz de Campesino in Huarmenco, Peru, on a frequency just above 6955 kHz, often caused pirates to move their frequencies down 5 to 10 kHz or more after dark to avoid interference.

The resulting chaos in pirate frequency selections has had two impacts. First of all, pirate DXing now requires considerable tuning up and down the pirate bands, meaning that virtually all pirate radio stations are now tougher DX catches than used to be the case. Second, the size of the audience that actually hears pirate broadcasters has certainly decreased. Many station operators have forgotten that the main purpose of radio broadcasting is to provide programming that is heard by listeners.

The tension between hard core DXers who enjoy the chase after pirate signals and a much larger number of shortwave listeners who want to hear the broadcasts but who have difficulty finding them is a quandary that has not yet been resolved in shortwave radio.

What We Are Hearing

Our readers heard all of these North American pirate broadcasters this month, indicating that pirate activity remains vigorous. All pirates operate on a sporadic schedule, but shortwave pirate broadcasting increases noticeably on weekends, and during major holiday periods. As we note above, you have to tune around the pirate radio band to find the stations. Descriptions are abbreviated for space considerations.

Big Thunder Radio- Rock music (bighunderradio@hotmail.com e-mail)
Buckwheat Radio- QSLs imply operation from the southern US (buckwheatradio@hotmail.com e-mail)
Canadian Free Radio- This new one appeared on Canada Day (None)
Grasscutter Radio- Rock music and station IDs (None)
Iron Man Radio- Rock music and pirate radio commentary (Belfast)
KIPM- Alan Maxwell’s drama programming (Elkhorn)
Lounge Lizard Radio- Insipid pop music (Providence)
Psyco Radio- Spelling? The ID is pronounced “Psycho,” Bill McClintock heard with a WSKO call letter ID (None, but recently asked for reports on the Free Radio Network web site)
Radio Cochiguaz- South American pirate that has been active during the summer, often relaying other South American pirates on 11440 kHz or on a new frequency of 11430 kHz. The operator reminds us that sufficient return post-age is necessary for QSLs, and that the station normally uses either upper or lower sideband mode. (Santiago)
Radio Free Speech- Bill O. Rights stresses constitutional rights and free speech (Belfast and Blue Ridge Summit)
Radio Pigmeat International- Pigmeat Martin says station will respond to reception reports. (Belfast)
C-Band - 133 degrees West longitude

1(V) 3720 Comedy Central - West (VC2+)
2(V) 3740 Univision East and West / Telefutura East and West (digital)
3(H) 3760 Encore Networks (digital)
Love Stories - East
Westerns - East
Mystery - East
Action - East
True Stories - East
Love Stories - West
Westerns - West
Mystery - West
Action - West
True Stories - West
Encore - East
4(V) 3780 Scripps Networks (digital)
TV Food Network - East
Do-It-Yourself Network
Fine Living Network
5(H) 3800 Classic Arts Showcase
6(V) 3820 Spike TV - West (VC2+)
7(H) 3840 Distinct Channel - West (VC2+)
8(V) 3860 Cartoon Network (VC2+)
9(H) 3880 ESPN (digital)
10(V) 3900 MSNBC (VC2+)
11(H) 3920 Eternal Word Television Network (EWTN)
5.40 WEWN - Worldwide Catholic Radio 1 (English)
7.38 WEWN - Worldwide Catholic Radio 2 (English)
5.58 WEWN - Worldwide Catholic Radio (Spanish)
5.76 EWTN Spanish-language SAP
12(V) 3940 ShopNBC
13(H) 3960 STARZI Networks (digital)
STARZI - East
STARZI Theater - East
Black STARZI - East
Encore - East
WAM - West
STARZI - West
STARZI Family - West
STARZI Cinema - East
Encore - West
STARZI Cinema - West
14(V) 3980 ESPN Deportes (VC2+) / ESPN feeds
15(H) 4000 AOL Time Warner Networks (digital)
16(V) 4020 AOL Time Warner Networks (digital)
American Express
Turner South
17(H) 4040 INSPI - The Inspirational Network
5.58 Genesis Communications Network
7.92 WNAX-FM Waxhaw, NC - Variety
INSPI - The Inspirational Network, Inspirational Life TV (iLifetv) (digital)
18(V) 4060 Home Box Office / Cinemax Networks (digital)
HBO Comedy - East
HBO Zone - East
Wmax - East
@Max - East
HBO Comedy - West
HBO Zone - West
ThrillerMax - East
5 Star Max - East
ThrillerMax - West
Wmax - West
@Max - West
2(V) 4080 5 Star Max - West
5 Star Max - West
19(H) 4080 CinemaX - East (VC2+)
20(V) 4100 Home and Garden Network - East (VC2+)
21(H) 4120 USA Network - West (VC2+)
22(V) 4140 Headend in the Sky (digital)
23(V) 4160 Home Box Office / Cinemax Networks (digital)
HBO - East
HBO 2 - East

HBO Signature - East
HBO Family - East
HBO Latino - East
HBO - West
HBO 2 - West
HBO Signature - West
HBO Family - West
HBO Latino - West
Cinemax - East
MoreMax - East
ActionMax - East
Cinemax - West
MoreMax - West
ActionMax - West

24(V) 4180 Data Transmissions

SES Americom Satcom C4

C-Band - 135 degrees West longitude
1(V) 3720 American Movie Classics - East (VC2+) / American Movie Classics - West (digital)
2(V) 3740 Headend in the Sky (HTS) (digital)
3(V) 3760 Nickelodeon - East (VC2+)
4(V) 3780 Univision / Galavision / Telefutura (digital)
5(V) 3800 STARZI Networks (digital)
STARZI Plex - East
STARZI Plex - West
STARZI Cinema - West
STARZI - West
STARZI Theater - West
Black STARZI - West
STARZI Family - West
Encore - West
WAM - West
6(H) 3820 History Channel - West (VC2+)
7(V) 3840 Bravo East (VC2+) / Bravo - West (digital)
8(V) 3860 TV Guide Channel (digital)
9(V) 3880 QVC Network
10(V) 3900 Home Shopping Network (HSN)
11(H) 3920 Speed Channel (VC2+)
12(H) 3940 techTV
13(V) 3960 Travel Channel (VC2+)
14(V) 3980 Discovery Channel HDTV, TV Games Network (digital)
15(V) 4000 Animal Planet (VC2+)
16(V) 4020 Headend in the Sky (HTS) - Canales N. Pod (digital)
17(V) 4040 MTV - East (VC2+)
18(V) 4060 In-Channel PPV (digital)
19(V) 4080 C-SPAN 2 (analog) / C-SPAN 3 (digital)
20(H) 4100 Sundance Channel (VC2+)
21(V) 4120 Discovery Channel - East (VC2+)
22(V) 4140 FLX - East (VC2+)
23(V) 4160 VH-1 - East (VC2+)
24(V) 4180 Country Music Television (VC2+)

SES Americom Satcom C7

C-Band - 137 degrees West longitude
1(V) 3720 ACMG-TV ABC - Denver (VC2+) 7.50 C-band Talk (Dana Pretzer)
3(V) 3780 AMC - Denver (VC2+)
5(V) 3800 HBO Signature - East
7(V) 3820 HBO Family - East
9(V) 3840 HBO Latino - East
11(H) 3860 HBO - West
13(V) 3880 HBO 2 - West
15(V) 3900 HBO Signature - West
17(V) 3920 HBO Family - West
19(V) 3940 HBO Latino - West
21(V) 3960 HBO - West
23(V) 3980 HBO 2 - West
24(V) 4000 Data Transmissions

SES Americom-6

C-Band - 72 degrees West longitude
1(V) 3720 Data Transmissions
2(H) 3740 Data Transmissions
3(V) 3760 Data Transmissions / Analog SCPC Audio Services / Digital SCPC Audio Services
1404.60 55.40 Northern News Network / Northern Ag Network
1396.60 63.40 Kansas Info. Network / Kansas AgNet
1396.05 63.95 Southern Sports Network
1395.90 64.10 Western Montana Radio Network / Red River Farm Network
1395.70 64.30 MissouriNet / Leafld Communications
1383.80 76.20 Genesis Communication Network
4(H) 3780 Data Transmissions
5(V) 3800 Data Transmissions
6(H) 3820 Data Transmissions
7(V) 3840 Data Transmissions
8(H) 3860 Data Transmissions
9(V) 3880 Data Transmissions
10(H) 3900 Data Transmissions
11(V) 3920 Data Transmissions
12(H) 3940 Data Transmissions
13(V) 3960 Data Transmissions
14(H) 3980 Data Transmissions
15(V) 4000 Westwood One radio / CNN radio / CBS radio (digital)
16(H) 4020 Data Transmissions
17(V) 4040 Data Transmissions
19(V) 4080 Data Transmissions
20(H) 4100 Data Transmissions
21(V) 4120 Premiere Radio Networks (digital)
22(V) 4140 Data Transmissions
23(V) 4160 ABC Radio (digital)
24(V) 4180 Alaskan Rural Communication Service (digital)

S c h e d u le f o r 2 0 0 3

Amerc-6 Ku band next month
LF Noise (Part I: Identification)

The biggest complaint I hear from LF listeners—both newcomers and veterans alike—is “noise.” Unfortunately, many types of interference can play havoc on the lower frequencies, and the noise floor seems to grow as more and more electrical and electronic devices are placed in service. I know at least four DXers who have had to give up or severely limit their operating habits because of noise.

The situation is not hopeless, though, and with a bit of persistence, it should be possible to reduce or eliminate many types of radio interference.

Natural vs. Man-Made Noise

When discussing noise, we should make a distinction between the two major types: Natural (QRN) and Man-made (QRM).

Natural noise is perhaps the easiest to identify, yet it is the hardest to remedy. Natural noise typically consists of the “static crashes” so commonly heard during the summer months. Even a lightning storm a few hundred miles away can generate enough interference to tear up the LF band, especially when you’re trying for weak signals. A local thunderstorm can completely overwhelm your receiver and is a good time to ground all antennas and pull the power plug!

Your choice of an antenna can have some effect on how severely you are affected by static crashes. The common “longwire” antenna is perhaps the most vulnerable to noise pickup. Typically, these antennas are just random lengths of wire, 50-150 feet in length, and they can act as effective “noise collectors” in static-charged environments. A better choice would be a loop antenna, or an active antenna specifically designed for LF/MF operation.

The smaller aperture of these antennas reduces their susceptibility to noise pick-up, and they will often yield much higher signal-to-noise ratios than wire antennas. Also, in the case of a loop, its directional properties can be used to null static coming from a particular direction, such as a distant lightning storm. This may help lower the noise to a more tolerable level.

Using a DC-grounded antenna can also help lower noise, regardless of the type antenna used. In these designs, the antenna is connected to ground through an RF choke (which prevents the desired radio signals from being grounded), and the desired radio signals are picked off the antenna through a coupling capacitor installed just before the choke.

Man-made Noise (QRM)

Man-made noise can come in many forms. In general, anything that makes a spark or generates RF energy during its operation is a potential source of RF interference. A partial list of offending devices is given below:

- Electric fences
- Automobile ignitions
- Television sets
- Computers
- Switching power supplies
- Power lines & transformers
- Fluorescent & neon lights
- Touch-control lamps
- Motors
- Power transformers
- Arc welders
- Power tools
- Poor electrical connections
- Light dimmers
- Thermostats

The first step in dealing with a noise problem is to locate its source. It is surprising how many times the source of a problem can be found right inside a listener’s home. Prior to doing any extensive hunting, try shutting off suspect household devices, especially those in the list above. It may be helpful to carry a portable AM radio with you as a “sniffer” during your search. For the best results, tune the radio to the low end of the AM band.

If you can’t locate a specific offender, try shutting off the main breaker at your power box. If the noise goes away on the portable receiver, it confirms that the troublesome device is located in your home. More hunting will be required. On the other hand, if the noise remains, it is time to look for noise sources outside of your home.

Your portable receiver will again come in handy during this search. Power lines and transformers are a common source of trouble, and should be observed for defective insulators that may be arcing. A nighttime search may be helpful in finding such problems. Remember that you may have to look beyond your immediate area to find defective lines. I once found a sparking insulator that was causing significant interference in a one-mile radius.

For all power line problems, call your electric utility to report the situation. They are usually very interested in solving these problems, because a sparking line could result in a pole fire and/or complete shutdown of a line. Be sure to give the complete pole number when calling. This number is usually located near the bottom of the pole, and will help the utility deal with the problem most effectively.

For less obvious power line problems, where no sparking is observed, you should still report the trouble. Most utility companies have RF interference experts on staff that can assist in finding and curing problems that occur along their lines. When calling, explain that the problem is causing “interference to radio communications” and request that an interference expert contact you to further discuss the problem.

It may take a bit of persistence to bring utility action, but it is in their best interest to resolve the problem. The RF noise could be a precursor to a more serious problem with the line, and they do not want to raise concerns with the FCC, which has been known to get involved in cases of persistent power line interference.

Next Month

In October, we’ll continue our discussion of interference, with an emphasis on other types of man-made noise. We’ll address the subject of dealing with neighbors and discuss simple ways of curing interference on your own household equipment. Until then, 73, and best LW DX.
**Fall Clean-up**

September is often the month when hams that are oriented to outdoor activities (amateur radio related or otherwise) begin to return to their shacks. I’ve found myself in this situation many times. If you were to look at my office/shack you would see one desk with a computer and piles of books where I do my various writing projects. One hundred and eighty degrees from this is a second desk that is my primary operating position. In those summer months when most of my operating is done from the car, bike, campground, beach — heck, almost anywhere but my primary operating position— that operating desk becomes a sort of catchall for all manner of effluvia. As time goes by, my regular radio place gets buried under stacks of paper, computer parts, bonsai trees, cat fur, small arms and even a few things that to this day remain unidentified. It usually takes me a long weekend to dig down to a place where I can once again put my hand to a key and get a signal out from something other than a portable location.

While most other people on the planet have some sort of spring cleaning regimen, hams tend more toward a time of Autumnal preparation. So, for most of us September is when we dust off the dials and get ready for a great winter of chasing DX.

**Antennas and Feedlines**

I have said many times in this column and other places: Nobody wants to climb up on their rooftop or tower during and ice storm to get back on the air. As the weather begins to turn cooler, now is the time to go over every inch of antenna system according to manufacturers specifications. It is always possible that one of these devices has done its job and bravely given up its life so that your other equipment wasn’t damaged. If so, replace it immediately and bury that failed unit with full honors.

Remember, too, that your ground system is also part of your antenna system. Check to make sure all of your ground connections are solid and free from corrosion. Don’t forget to check and test any surge suppressors in your antenna system according to manufacturers specifications. It is always possible that one of these devices has done its job and bravely given up its life so that your other equipment wasn’t damaged. If so, replace it immediately and bury that failed unit with full honors.

**Radios**

Most people operate on the principal of “If it lights up when I turn it on everything is fine.” But is it really? I’ve yet to run across any electrical device that hasn’t managed to gather too much dust in its innards for its own good. Even a modest transmitter will have voltages present inside that can cause way too much dust in its innards for its own good. Even a modest transmitter will have voltages present inside that can cause arc over with the subsequent expensive repairs. Even if you do not feel technically competent to lift the lid on your rig and poke around, a good vacuuming around the vents will do a bit of good.

If you do go inside, remember that receivers and transmitters can exhibit dangerous voltages even when unplugged. If you are not sure of yourself in terms of safety take your equipment to a trained professional for any servicing or cleaning.

For me, fall is when I bring all my regular use rigs down to the bench and give them a tuning and tweaking session. If you know your way around a meter and scope, the radio’s shop manual should give you all the information you need to bring things up to specs for the coming season. This is also the time when I might finally get around to adding some little modification or other that I read about during the past year. If I am really enjoying myself I might not get out of the basement until Thanksgiving!

**Accessories**

It’s been my experience that outboard accessories fail far more frequently than the radios they are attached to. This can be for any number of reasons, but part of your seasonal shack preparation should include checking all those ancillary devices over. It is also a good time to reread the manuals. You might rediscover a feature or two that will improve your operating throughout the winter.

**Power Connections**

While it may seem like a commonsense sort of thing, when was the last time you checked the power cords on your equipment for damage or fraying? Modern line cords are fairly sturdy items, but when they accidently get caught under the sharp edge of a file cabinet that gets banged open and shut twenty times a day there could be problems.

I must confess it has been a long time since I have seen a failed AC power cord on anything that was not in my antique radio collection. However, I routinely seem to find broken or frayed wires related to the power cords on low voltage devices run by “wall wart” transformers. I guess these things are just subject to a higher level of abuse during normal use. While you’re poking around your other power connections give these a good going over as well.

**Other Connections**

Most shacks have more than a few antenna, audio, computer or other patch cords hooked up in various ways. It seems that the majority of “show stopping” events around the shack can be traced to problems with these cables and connectors.

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Look Closeby ... You don’t often see Uncle Skip’s Operating Position looking so neat.
I once had a hard time tracking an odd intermittent problem with one of my transceivers. The audio would sound low and then, after I keyed the rig for the first time, the audio would come up to normal levels. I eventually traced the problem to a poor soldering job on the center conductor of a coax patch cord that ran between the rig and an antenna tuning unit. Nothing special would happen when tuning up with low power into the dummy load. But when full power was applied, it would break through the corrosion on the connector just enough to establish a good path. While you're doing your fall preparation it's a good time to examine and test any such shack cabling.

Alternative Power

Ever since we arrived at “The New Normal” after September 11, 2001, folks have talked a lot about making sure at least some of their gear was set up to operate under emergency conditions. I have said in this column in the past that I have a solar panel and battery setup that can keep me on the air at low power for several days to a week depending on demand. Fall is the time of year I recheck this alternative power system and others. I make sure my solar panel is performing to specifications and its mounting is properly aligned to take best advantage of the sun at my latitude. I run the batteries through a power cycle to check their quality and recharging rate.

While that process is going on, I check the quality and charge rate on the rechargeable power packs associated with most of my handheld gear. I also go over my emergency “jump kit” to make sure that I have alternate power connectors to run my nominal 12 volt gear off of other power sources such as car batteries. Finally I empty out my drawer of “back up” alkaline cells (I give them to number two son for his video games) and restock my supply with fresh cells.

Supplies

How many radio sessions have been spoiled for want of a pencil with a sharp point on it? Part of your preparation for hunting all that DX over the next couple of months is making sure your shack is appointed with all the paper, pens, pencils, log books, 3x5 cards, or whatever else you use to keep things recorded for future reference. This time of year I also head to the local office supply outlet and pick up a big box of “security” envelopes so I don’t run out when it comes time to fill out my QSL cards.

Space

Lots of folks haven’t changed their shack situation since the sixties. I take a more radical approach. At least once a year, usually in the fall, I disconnect everything and bring my operating position down to the bare desk top. This accomplishes a number of things. First off, it facilitates all the above-mentioned checking and testing. Secondly (and invariably) I find one or two small items I have been looking for for months. I usually lose at least one callsign badge down behind my radios every year. I’ve developed quite a collection at this point. Also, while the station is fully dismantled

I can reevaluate how I want things configured. I usually set things up with my primary general coverage receiver and amateur transmitter at the center position with their various accessories to either side. I then work out what passes for a logical pattern with the rest of my gear, usually ending with the power supplies to the far right where the main power comes in and the antenna tuners to the far left (in this case closest to where my antennas come into the shack). Sometimes even a little adjustment in how things are set up can make you feel like you have a whole new station to play with.

Also, while you have your station broken down, it is a good time to do any carpentry or furniture modifications. It’s a bit messy to add bookshelves over top of a stack of radios. That gets back to the whole idea of dust and such getting into places where it can do damage.

Goals

And while I am bringing everything at the operating position in my shack up to snuff, I am giving some thought to what I plan to do with my gear this coming winter. My main goals for this year are to finish up the last handful of countries for my QRP DXCC award. I also want to start in earnest on QRPp WAS using a 1 watt SSB. (It’s a bit more challenging that way than with CW.)

I have quite a few gaps in my 5 Band WAS log and I plan to use the state QSO parties to help me to close the gap on this award. Also each year a shoot for adding between 5 and 10 Honor Roll entities to my log.

But the main thing I want to be set up for is all those nightly ragchews on the lower end of 40 meters. That’s the most fun of all.

UNCLE SKIP’S CONTEST CORNER

<table>
<thead>
<tr>
<th>Contest Name</th>
<th>Start Time</th>
<th>End Time</th>
</tr>
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<tbody>
<tr>
<td>YLRL Howdy Days</td>
<td>1400 UTC, Sept 10 to 0200 UTC, Sept 12</td>
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<tr>
<td>ARRL September VHF QSO Party</td>
<td>1800 UTC, Sept 13 to 0300 UTC, Sept 15</td>
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<tr>
<td>North American Sprint, SSB</td>
<td>0000 UTC to 0400 UTC, Sept 14</td>
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<tr>
<td>FISTS Coast to Coast Contest</td>
<td>0000 UTC to 2400 UTC, Sept 14</td>
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<td>Tennessee QSO Party</td>
<td>1800 UTC, Sept 14 to 0100 UTC, Sept 15</td>
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<td>Panama Anniversary Contest</td>
<td>1200 UTC to 2359 UTC, Sept 21</td>
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<td>Fall QRP Homebrewer Sprint</td>
<td>0000 UTC to 0400 UTC, Sept 22</td>
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<tr>
<td>Texas QSO Party</td>
<td>1400 UTC, Sept 28 to 0200 UTC, Sept 29 and 1400 UTC 2000 UTC, Sept 29</td>
<td></td>
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<tr>
<td>Alabama QSO Party</td>
<td>1800 UTC to 2400 UTC, Sept 27</td>
<td></td>
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<tr>
<td>Louisiana QSO Party</td>
<td>1400 UTC, Sept 27 to 0200 UTC, Sept 28 and 1400 UTC 2000 UTC, Set 28</td>
<td></td>
</tr>
<tr>
<td>CQ/RJ Worldwide DX Contest (RTTY)</td>
<td>0000 UTC, Sept 27 to 2400 UTC, Sept 28</td>
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</tbody>
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QSLing Pirates

Reception reports to pirate stations require three first class stamps for USA maildrops or $2 US to foreign locations. The cash defrays postage for mail forwarding and a souvenir QSL to your mailbox. Letters go to these addresses, identified above in parentheses: PO Box 1, Belfast, NY 14711; PO Box 28413, Providence, RI 02908; and PO Box 293, Merlin, Ontario N0P 1W0.

Some pirates prefer e-mail, bulletin logs or internet web site reports instead of snail mail correspondence. The best bulletins for sending pirate loggings remain The ACE ($2 US for sample copies via the Belfast address above) and the e-mailed Free Radio Weekly newsletter, still free to contributors via niel@ican.net. The Free Radio Network web site, another outstanding source of content about pirate radio, is found at http://www.frn.net on the internet.

Thanks

Your loggings and news about unlicensed broadcasting stations are always welcome via 7540 Highway 64 W, Brassstown, NC 28902, or via the e-mail address atop the column. We thank this month’s valuable contributors: Dave Balfin, Wooster, OH; Scott R Barbour Jr., Intervale, NH; Artie Bigley, Columbus, OH; Cachito, Santiago, Chile; John Calabro; Ross Comeau, Andover, MA; Rich D’Angelo, Wyomissing, PA; Gerry Dexter, Lake Geneva, WI; Brian Duddy, Nyaack, NY; Harold Frodge, Midland, MI; William Hassig, Mount Prospect, IL; Harry Helms, Las Vegas, NV; Chris Lobdell, Stoneham, MA; Greg Majewski, Oakdale, CT; Pigmeat Martin, Belfast, NY; Bill McClintock, Wellington, OH; Mark Morgan, Cincinnati OH; Lee Reynolds, Lempster, NH; Mike Roth, Bantan, CT; Martin Schoeck, Merseburg, Germany; John Sedlacek, Omaha, NE; Ronnie Stroup, Wooster, OH; Paul Terlecki, Plainfield NJ; Niel Wofish, Toronto, Ontario; and Joe Wood, Gray, TN.
What is a “DX Antenna?”

In radio operator lingo the term “DX” means “distance,” or “distant stations.” “DXing” is the receiving of radio signals from, or transmitting them to distant places on earth. And DXing is for many of us a part of the mystique which attracts us to radio operation. Doing really well at DXing can be so demanding that DXing is sometimes referred to as an “art.” On the other hand there’s a lot of technology involved in DXing as well as art. Nevertheless, even an inexperienced beginner can often receive many distant stations with ordinary equipment. And with just a little attention to detail they can even improve that DXing success considerably.

One factor in successful DXing is using an appropriate antenna. However, so that we don’t give the wrong idea here, let’s admit that almost any antenna can give us some good DX signals at times. And when conditions are right, even with an inexpensive receiver, a short antenna can often do surprisingly well at receiving DX signals.

The flip side of this is that, when propagation conditions are not so good for DX, and when atmospheric noise and interfering signals are strong, some antennas are better than others at helping dig out those signals from far away places with strange-sounding names.

**Antenna Factors in DXing Vertical-Angle Performance:**

One favorite DX antenna below 30 MHz is the grounded vertical, a design known for its ample radiation and reception at low vertical angles (i.e., signals launched relatively close to the earth). The lower its vertical angle of radiation or reception, the better this antenna’s DX performance on HF and into the MF band. Progressively increasing the antenna’s element length from 1/4 to 1/2 to 5/8 wavelengths gives increasingly lower-angle performance, further enhancing its DX performance.

Other vertically-oriented antennas also generally give good DX performance. These include vertically-polarized full-wavelength loops and vertical dipoles. Ground plane designs are good, too, and progressively increasing DX performance is obtained from the 1/4, 1/2, 5/8 wavelength, and collinear designs.

**Horizontal Angle Directivity, and Focusing of RF Energy:**

Antennas which focus their radiation or reception over a relatively narrow path in a particular compass direction are called “beam antennas.” This focusing gives “directivity” to the signals. A beam legendary among AM broadcast DXers is the low-gain, highly-directive “Beverage,” or “wave” antenna. However, the Beverage is hundreds or even thousands of feet long, and so not too many people put one up.

More practical for the AM DXers are the small table-top loops. Sharp nulls (directions of minimal response) in their reception patterns offer a useful “negative directivity” for rejecting interference from stations on the same frequency as the desired station but arriving from a different direction.

Most other beam antennas have medium to high gain levels. Curtain beams, phased-arrays and long-wire beam designs generally take up too much space for most hobby-radio installations. But at HF and higher frequencies, designs like the Yagi-Uda, the quads, and the log periodic directional antennas (LPDAs) can be built small enough to be electrically rotated atop a mast or tower. This allows the operator to change the direction of DXing at will. Many hams are fond of DXing with such beams.

For DXing on shorter wavelengths like the FM and TV broadcast bands, fairly high-gain beams, such as a Yagi-Uda with three or more elements, are small and practical. DXing success on these bands is highly dependent on special propagation conditions which occur relatively infrequently and are hard to predict. Although it is best to do your DXing at times of optimum propagation for any band, finding propagation openings on these bands is probably more important than having an elegant antenna.

**Height Above Earth:**

Depending on their height above earth, antennas mounted horizontally over earth radiate and receive varying proportions of their RF power at low vertical angles. Horizontal antennas mounted at 1/4 wavelength above earth lead to relatively more high-angle radiation which is useful for close-in communication. However, the same antenna mounted at 1/2 wavelength above earth gives relatively more of the low-angle radiation desirable for DX at HF and MF frequencies.

Some DXers suggest that 40 feet in height is a minimum for horizontal, multiband, HF DX antennas. Antennas mounted up a hundred feet or more are sometimes reported capable of receiving DX signals which are just not present at lower heights — signals which would otherwise go overhead undetected.

**Diversity-Reception:**

One problem in listening to HF DX stations is signal fading. Various kinds of “diversity reception” have been designed to combat fading. One kind of “space-diversity” reception system uses multiple antennas with a separate receiver for each antenna. When a signal is faded from one antenna it may be stronger at another antenna. Comparator circuits (voters) constantly monitor the outputs from the different receivers, and select the strongest signal or the signal with the best signal-to-noise ratio (Fig. 1) for routing to an audio amplifier, or other output device.

HF skip signals often change polarity as the ionosphere changes, and this can cause fading. For “polarization diversity,” antennas with different polarizations replace the spatially-separated antennas of space diversity.
DX Transmitting

Some broadcasting stations also engage in DX transmitting to reach a far-away audience. On the AM broadcast band some stations remain on at night when ionospheric skip can transport their medium-wavelength signals great distances. Other stations on the same frequency, whose signals might interfere with the DX transmitter's signals at night, are licensed only for daytime operation. Thus at night the DX stations have a clear channel to facilitate their DX transmitting. A third factor that gives these DX stations an edge is the high level of RF power at which they launch. And, of course, some of them are using beam antennas to direct their programs to their intended audience.

Shortwave broadcasters typically have beams to assist their signals in reaching distant lands. Often different antennas are used at different times of day as propagation changes. Of course, since frequency of transmission is often changed to accommodate changing propagation conditions, this often means changing antennas as well. The various large curtain beams, such as the Sturba Curtain, were once the broadcast favorites; however, a variety of beam designs are now utilized. In fact, the cubical quad beam was designed in response to a particular problem in the shortwave broadcast service (corona arcing, destroying an antenna with linear elements).

DX transmitting is practiced even into the lowest frequencies utilized for radio communications. At one such station tremendous levels of RF power are launched by an antenna string between mountain tops! Real DX is involved here: broadcasting to submerged submarines anywhere in the world! The receiving antenna the sub uses is not a really elegant affair, but signal-to-noise ratio is much more important on those low frequencies than is absolute signal strength.

There are frequency diversity systems which require special circuits at the transmitter as well as at the receiver. For this kind of frequency-diversity transmission, identical multiple signals are simultaneously transmitted on different frequencies. Generally, the different frequencies each require a different antenna. At the receiver the frequency producing the best signal is automatically selected as in the diversity systems discussed above.

In Sum

Obviously there are many different antenna designs which can be of use for DXing. The particular design chosen will depend on the requirements of the specific situation.

RADIO RIDDLES

This Month:

Middle East play havoc with radios and radio communications due to the precipitation charges they put on antennas.

These various charges on your antenna can be detected by the flashes of a neon bulb or the "snapping" sounds of a closely-spaced spark gap when one of these devices is connected in series with your outdoor antenna and your ground connection. But install the bulb or gap before the storm starts, not while it is in progress!

This Month's interesting Antenna-Related Web site:


For a free program which predicts propagation conditions try:
http://www.elbert.its.bldrdoc.gov/hf.html


www.grove-ent.com/hmpgbbb.html
I'm beginning to think of this Hallicrafters S-40A restoration as a jinxed project! Readers of last month's column will recall my troubles with the accidentally erased dial markings and wiped-off panel paint. After the panel disaster, I was tempted to terminate the project, apologize to the readers, and go on to something else. But realizing that you could learn as much or more from my mistakes as from my successes, I patched the panel and went on.

**Reinstalling the Tuning Cap**

The next steps would be to clean and reinstall the tuning capacitor and restrung the main tuning and bandspread dial controls. Most of the dust and gunk on and in the tuning capacitor went away after sloshing the unit vigorously in a small container of gasoline. Obviously, this treatment had to be done in the open air to avoid the buildup of explosive fumes. A quick handwashing followed the procedure; gas can be really irritating to the skin.

The capacitor soon dried off and was ready for reinstallation. Before fastening the unit in place, I reconnected the three leads running to solder lugs (from the three stations) under the capacitor. For this work, it was handy to be able to tilt the capacitor somewhat to get better access to the lugs. After the capacitor was fastened down, I soldered the remaining several leads—which were all grounds fastened to various spots on the capacitor frame.

The mounting for this main tuning/bandspread capacitor is designed so that the unit “floats” on three rubber grommets. A small rod protruding from the rear of the capacitor slides into a grommet-lined hole in a rear mounting bracket. This grommet had dried out and become brittle, so I replaced it. A front mounting bracket, to which the front of the capacitor is fastened, is cushioned from the chassis by two more rubber grommets. These were ok and I left them alone.

Now, after replacing the bracket holding the shafts for the drive controls, I was ready to restrung the controls. And here is where the S-40 jinx kicked in again. It was caused by a couple of the many small mechanical design changes that seem to crop up on various models of S-40 series—variations that really seem to have little to do with those implemented for the actual model change.

**Dial Cord Dilemma**

One of the changes was in the rotation of the bandspread section of the tuning/bandspread capacitor. In the two other examples of the S-40 series in my possession, rotating the bandspread tuning shaft counterclockwise (as one faces the front panel) closes the plates, thereby increasing capacity in the bandspread tuned circuit. But in my S-40A, clockwise rotation increases the capacity. To code properly with the operating instructions, it is necessary for the bandspread dial scale to progress from zero to 100 as the capacity of the bandspread capacitor increases. If the dial cord stringing diagram in the manual I have is followed correctly, that’s what will happen (in the case of those other examples).

Take a look at that diagram as reproduced here. The main tuning drum (at left) of the capacitor operates from the left-hand tuning shaft—and is driven directly from the shaft. The right-hand tuning shaft operates not only the bandspread tuning drum (just to right of main tuning drum), but also makes a loop around another pulley that moves the bandspread dial drive shaft. (The main tuning dial does not require an extra pulley because it is fastened directly to a shaft extending from the main tuning drum.)

The main tuning dial drive was no problem, but I noticed in dismantling these assemblies for cleaning (see “before and after” pictures) that my bandspread dial cord was not set up like that in the diagram, but crossed and changed direction before looping around the bandspread tuning drum. I realized, of course, that this was because of the previously-noted reversed rotation direction of the bandspread capacitor.

That in itself might not have been too hard to follow—even using the diagram for the other system—but there was another differ-

![Service manual dial cord stringing guide was for the opposite bandspread capacitor rotation (see text), and so wasn’t a lot of help.](image-url)
could be separately tensioned. I also added an extra turn or two (beyond the 2-1/4 turns specified) to the loops around the control shaft. Those expedients really improved traction and made the drive more positive.

Next time, we’ll reassemble the panel to the chassis, begin to work on changing the capacitors, and look into restoring the wiring to its original state (reversing any user mods). If the work session goes really well, maybe we can even give this set a preliminary “smoke test.”

How Much is Too Much?

A reader named Steve (ham call N0CRS) just e-mailed me a query about how far one should go in carrying out a radio restoration. He had read about a case where a person had removed all of the wiring from a radio so that he could refinish the metal chassis. The short answer, of course, is “Whatever floats your boat!” Do as much restoration as your interests, capabilities, and inclinations dictate. This, after all, is a hobby for most of us and not a business. Of course I’d hate it if you did something so expedient that it ruined the character of a fine old set—such as removing the guts and substituting a Japanese transistor radio.

Oddly enough I’ve heard of an extreme case, similar to Steve’s, actually involving an S-40. A reader of my old column in Popular Electronics once wrote to tell me of the lengths he went to restore his set to mint condition. It happened to be a model that the author says will outperform the classics and revered National SW-3 of the 30s and 40s. The point of the “Impoverished” series is to show how a person can recreate and enjoy many of the classical old radio circuits using parts (often modern ones) easily found at radio swap meets. Much of this particular volume is devoted to detailed instructions for building a four-tube TRF/regenerative receiver that the author says will outperform the classic and revered National SW-3 of the 30s and 40s.

Since his receiver uses one of the famous National “PW” drives, Lindsay spends a little time describing the construction, operation and restoration of these units—things a lot of us appreciate the opportunity to learn more about. Other projects in the book include a crystal-controlled shortwave converter, an experimenter’s power supply (complete with instructions on how to recognize and scrounge likely components in flea markets), and a vernier slide-rule dial.

The 48-page, 5-1/2” X 8-1/2”, soft-cover volume is written in Lindsay’s usual entertaining, irreverent style and is profusely illustrated with very clear photographs. Cat. #22920. Price $6.95 plus $1.50 s&h. Use secure on-line order form available at http://www.lincsayhks.com or call in your order at 815-935-5353 (have your charge card ready).

Your Input Requested!

Since I have a little extra room this month, I’d like to ask interested readers to contact me with their input about this column. Those who have been following Radio Restorations for a while know that we started with simple restoration concepts and advice about acquiring and rehabbing test instruments for your repair bench. The restorations of the 30s and 40s have progressed to more complicated undertakings and we’ve been spending more time on vintage communication receiver “boat anchors.”

Do you like what we’ve been doing so far? Any suggestions for other directions we might take? The best way to contact me is by e-mail at the address listed with this column, and I do try to answer all e-mails. I can also be reached by snail mail c/o Monitoring Times, 7540 Highway 64 West, Brasstown, NC 28902-0098.

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The Tactics of Highly Successful Scannists

You can improve your skill in scanning for new signals by studying and adopting the tactics of highly successful scannists. I interviewed a few of the most skilled members of CARMA (Chicago Area Radio Monitoring Association) and combined their recommendations with my own observations. Thanks to Frank Lorenz (not his real name), Rich Carlson, Ron Smithberg, and Kevin O’Rourke for their insights.

**Hunt Actively for New Signals**

Without exception, all the top scannists proactively search for new activity. Their scanners’ keypads don’t have a chance to collect dust. They aren’t content with scanning the same old channels all the time.

As Frank says, “If you monitor only known local channels most of the time, you’re not going to find anything new unless you dedicate another radio to searching for new frequencies.”

When the experts travel away from familiar territory, they bring a scanner or two. Frank and Ron take handheld scanners with them everywhere. Frank points out, “You don’t have to turn it on, but have it available if something is happening and you are able to listen.”

A casual hobbyist confines his listening to the police and fire frequencies listed in Police Call, but the successful scannists are constantly sampling business, military air, and federal land mobile frequencies for undocumented activity regardless of their location.

**Know the Frequency Allocations**

Another common trait shared by the experts is that they study the FCC and NTIS frequency allocations, as documented in Police Call, the [http://monitoringtimes.com](http://monitoringtimes.com) reference library, and other sources. They can, for instance, recognize that when a newcomer reports activity on 165.285 MHz, the true frequency is more likely 165.2875 MHz, the closest channel allocated for federal use and it’s occupied by the BATF.

They know the frequency bands and where users are most likely to operate, based on the type of user and the relevant regulations.

**Keep Records**

As Rich Carlson points out, detailed record keeping is essential, and all the top scannists maintain accurate records on paper, index cards, or in computer files.

Frank recommends that you search government records, but be aware of their errors, omissions, and other limitations.

Kevin O’Rourke concurs that “keeping good, logically-filed records is very important” and reminds us that “the FCC database is easily available on the Internet, but not all radio users have a valid or current license for the freqs that they’re using.”

Brandt, former *RCMA Journal* Business column editor and a top CARMA scannist, passed away last year. Before personal computers became affordable, Brandt kept meticulous, typewritten loggings in a set of giant looseleaf notebooks which he constantly updated.

Along with each entry, Brandt noted how he came by the information, confirmed it by listening, observed the FCC license, examined the transmitter, etc.

**Unattended Scanning**

Successful scannists let their equipment work while they are busy doing something else.

Frank recommends you “use a radio or computer control to search while you can’t (e.g., when at work), and then plug those hits into a scanner to listen when you can. Many hits are spurious, but a percentage will turn out to be someone.”

One CARMA member hunts for hotel frequencies by parking his car at a hotel and leaving a mobile scanner running unattended in the Auto Store mode. He is away from the car, the scanner searches between programmed frequency limits, storing active frequencies into a dedicated memory bank. He returns to the car a few hours later and writes down the frequencies stored during the search.

A voice actuated (VOX) recorder is useful for sleuthing. You can use computer software or a simple VOX cassette tape recorder. I use two modified Radio Shack CTR-75 tape recorders, an old, discontinued model.

VOX recorders allow one to compress a whole day’s worth of monitoring onto a single tape. I often leave a recorder “armed” and connected to a scanner at home while I am away or doing something else. When call letters are mumbled, I can play and replay the tape until I hear and understand them.

**Limit Search, Memory Scan, Auto Store**

Frank says his scanning setup is pretty basic at home. His main base radios are couple of Radio Shack PRO-2042s and an ICOM IC-7100A, all in search mode.

Frank recommends that you search through the bands at your normal listening post at least a couple of times a year. “Use the Search button as often as [practical] ... You’ll be surprised at what you find.” Frank
says that if you search often and find little, you can take comfort in knowing that you have been thorough and that the possibility of users “hiding” in the bands you’ve been checking is unlikely.

Frank reminds us that there is very little open spectrum any more. If you are located in a larger metropolitan area and there are government designated frequencies that appear to be unused, Frank recommends storing them in a separate bank and monitoring them every so often. Sooner or later, someone is bound to transmit on those frequencies.

Rich Carlson hunts for new activity by using memory channels instead of limit searches. “For scanners with large numbers of memory channels, I like to fill them with an entire band’s worth of channels. This allows for finding new channels without searching, especially for disjointed sections of bands. For example, the VHF high band Public Safety channels take about 250 channels.”

Rich programmed his handheld PRO-95 with all 96 AAR Railroad freqs in one bank, each in the correct channel number, and all the Marine Channels in another bank.

He likes to lock out busy and known channels and scan lesser used and unknown channels. This allows him to find new assignments, discrete channels and auxiliary channels.

Many users have started to employ lower power “itinerant” channels or FRS radios, according to Frank. Frank and I keep FRS and low power business and industrial frequencies in dedicated banks so we can scan or skip over them at will.

Scanning Special Events

Frank keeps over 20 radios in boxes and suitcases, prepared for travel to various special events (e.g., air shows). All are preprogrammed with relevant frequencies.

Frank says, “I always try to arrive on the [day before] the actual air show, when a lot of channels are getting [tested] while preparing for the event.” He took over 60 scanners to motels near air shows, turns them on, waits for one of the channels to talk, then programs only the active channels into a handheld for use at the air show the following day.

Lately, Frank has been transitioning to PC programmable radios, but he hasn’t been able to find time yet to wean his way out of the radios that have “only” 400 channels each! “As long as they work, don’t create too much RF interference to other radios, and I don’t [injure] my back carrying them,” Frank will probably continue bringing several older scanners.

When using slow scanners, Frank says memory channel scanning is better than long time-elapse searches. His home station PRO-2042s and IC-T7100 aren’t very fast, and he gets too many false hits between 137 - 144 MHz. He doesn’t use them to scan the entire 225 - 400 MHz UHF aircraft band, due to the large spread.

The main drawback to scanning memories instead of performing limit searches is that one can miss signals on non-standard frequencies you haven’t programmed.

Identify by PL/CTCSS/DPL/DCS

Top scannists use equipment which can identify the CTCSS (PL) and DCS (DPL) subaudible codes transmitted along with the signals they monitor.

Ron Smithberg, a scanner enthusiast for over 20 years, says now that there are so many users on the same channel, the PLs are becoming as important as the frequency.

Rich Carlson agrees, “I use the PL feature on my BC780 and other scanners as well as a PL decoder to identify stations based on PL. Meticulous logging of PLs is essential to this method of identification. This really becomes important when [propagation] conditions are up, to help identify distant stations.”

Ask for Information

You might not have known it from Brandt’s gruff exterior, but he was a trend setter. He concentrated on monitoring business radio users at a time when most scannists were clueless about business frequencies. In his job as a taxi cab driver, Brandt came into contact with radio-equipped security guards, hotel staff, and parking attendants all over Cook County, Illinois, and surrounding suburbs.

Brandt had more nerve than most folks. If he couldn’t find a business frequency by scanning, he would ask a radio-equipped employee, often a security guard, for frequency information. If the employee didn’t know, Brandt would boldly ask to examine his transceiver. You would be amazed at how often Brandt got his way. He was able to examine the manufacturer’s label on the transceiver to learn the frequency and PL/DPL code.

Carry Spare Batteries, a Pen and Paper

Successful scannists carry spare batteries, a pen, and paper whenever they bring a portable scanner in the field. As Kevin O’Rourke warns, “nothing brings the fun to a grinding halt like dead batteries.”

Other Expert Tactics

Many of the top scannists I spoke with use Optoelectronics Scouts and other frequency counters both in their cars and on foot. They are acutely aware of a counter’s limitations. Unless you add external bandpass or notch filters, frequency counters are disturbed by high power broadcast and paging signals. They are not sensitive enough to reliably capture wireless microphone frequencies.

Frank, Ron, and I have learned to recognize the voices of regular dispatchers and system users. We know the unique sounds of their transmissions (e.g., "turkey caller" automatic number identification signals, the pitch of the Morse code identifier, etc.). Low tech “fingerprinting” enables us to identify the signals without having to look at the scanner display while driving and is especially helpful when monitoring several scanners simultaneously.

Interdependence, Responsibility

Successful scannists participate in club activities. They are prolific producers of personally verified frequency and talk group lists and share their knowledge with others. They counsel beginners.

While top scannists are enthusiastic about their activity, they realize that radio monitoring is a hobby. They pursue scanning in harmony with their family and secondary to their family and community obligations.
The ICOM PCR1000 computer-controlled “black brick” is a favorite with monitors looking for ultrawide frequency range capabilities (10 kHz to 1300 MHz) at a relatively low cost. It is also popular with software authors with over ten different third-party programs to control it.

Why third party software? When ICOM first released the PCR1000 the software that was included with the unit was basic, at best. It was as if ICOM gave birth to the first PC radio hardware but expected the world to “feed” it software in order to utilize all of its features.

The major radio software companies such as ScanStar and ScanCat happily accepted the challenge. They immediately accommodated the PCR1000 command codes into their existing multiple radio control software packages. Then other great programs such as Visual Radio, Bonita’s RadioCom, and the easy-to-use RadioMax also began supporting the PCR1000.

As the number of commercial programs supporting the PCR1000 grew, a new contender rose to the challenge, TalkPCR. Pete Mahy offered his excellent PCR1000 program for free! Finally, all PCR 1000 users could ditch their original ICOM software for a step up in performance.

Recently, ICOM announced that RadioCom 4.0 software would be shipped with the PCR 1000 as standard operating software. This is quite a jump in performance and features from the original ICOM software. RadioCom not only includes radio control functions, but also decoding of shortwave modes such as RTTY, SITOR, FAX and SSTV. (Hey ICOM! How about making it convenient to start the program from Windows.

So first we must put a Windows computer into the MS DOS mode via clicking the Start icon at the lower left and then choosing MS-DOS Prompt under the Program menu.

The program comes on a 3.5-inch floppy and includes a 58-page manual which is indispensable. If the 3.5 inch drive letter is “A” and your hard drive is “C,” then typing “A:” and then “Install C:” will quickly complete the installation into a subdirectory named Probe1K.

The program can be started while in the DOS mode by typing “C:\Probe1K” then press “Enter”. Then type “Probe1K” and press “Enter”.

You can make a short cut to the DOS file, making it convenient to start the program from Windows. Click on the “My Computer” icon on the Desktop. Find and open the Probe1K directory. Then right click on the Probe1K.exe file and choose “Create Shortcut”. This will place a shortcut icon to Probe1K on your Windows Desktop. Now all you have to do is click this icon to start Probe1K.

**Installing Probe1K**

Remember, the program works under DOS. So first we must put a Windows computer into the MS DOS mode via clicking the Start icon at the lower left and then finding MS-DOS Prompt under the Program menu.

The program comes on a 3.5-inch floppy and includes a 58-page manual which is indispensable. If the 3.5 inch drive letter is “A” and your hard drive is “C,” then typing “A:” and then “Install C:” will quickly complete the installation into a subdirectory named Probe1K.

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**Computer Requirements**

Since Probe1K runs under DOS 3.1 or higher, 640K of RAM, a free serial port, 3.5 floppy drive and about 1.5 MEG of hard drive space for the program.

Just about any CPU will do the job, but DataFile suggests a 486 or higher to get reasonable program speeds. The DataFile website has a link with information for using Probe1K on a tiny Toshiba Libretto series palmtop. Although I have not tried it, I think my HP-100 DOS palmtop would also work. We used a Pentium ll 366 MHz laptop running Windows 98 with 64 MEG of RAM.

**Learning the Lingo**

Figure 1 is the deceptively simple-looking Main Menu of Probe1K, which offers only three choices: Scan, Configure and Utilities. What could be simpler, right? Well, not quite. Scan is the obvious operational function. But the real heart of Probe1K is in the use of the Configure commands.

In the language of the program, “Probe1K’s capacity is 4000 Groups ... each Group contains 99 Banks and as many as 1000 frequencies can be stored per Bank.”

Now that we know Probe’s structure we can start using it.

**Configure is the Key**

Going back to the Main Menu’s “Configure...” command brings up another menu containing “Group” and “Bank”, among other choices. Clicking on Group allows us to create and name a new Group. Once we create a Group, selecting “Add” a new Group that we will call "Civil Air". We can now create a Bank in the Group using the “Edit” command. Since I enjoy monitoring civil aircraft I’ll call the Bank “Civil Air”. Again, these “creations” are done via the Configure menu. See Figure 2.

Remember, frequency and station data to be scanned are stored in Banks. The data can be entered in a number of ways. The simplest is manual data entry. But for our example we will download and then import an aircraft frequency file in the MCH format from the ICOM site http://www.icomreceivers.com/.

Then, using the Utilities Menu and choosing “Import MCH Data”, we can deposit it in the “Civil Air” Bank in the “John” Group that we created. The resulting bank of frequencies are displayed by choosing Frequencies in the Configure Menu. See Figure 3. All data fields can be edited, deleted or added to manually from.
the Frequency screen.

Finally, returning to the Main Menu and choosing Configure, we select the Group to scan using the space bar to put a check mark next to our choice. Then we do the same for the Banks in the chosen Groups.

To use Probe1K you must keep the data structure and the Command conventions straight in your mind. A Group holds 99 Banks. Each Bank holds 1000 frequencies and station data.

Now We Scan!

The moment that we have been waiting for is here. To start scanning we must choose a Bank and then a Group or number of Groups in the Bank. With a click on Scan from the Main Menu, we are scanning the Civil Air Bank in the John Group. Figure 4 displays a scanning screen. The upper left-hand section displays live station info and scanner settings. The upper right side of the screen displays the current or last active station information. Active scanning “Hits” are displayed at the bottom half of the screen.

The number at the top left of Figure 4 next to the scan status indicates the speed at which the scanner is running in channels per second. Four rows down, labeled Signal, is a number which is indicative of the signal level. This number can also be displayed as a bar graph.

Modifications to many of the functions can be accessed from the menu at the bottom of the screen. Hitting “S” will allow the user to set and save new scanning parameters. I found “S” and “M” (manual settings) the most useful. The remainder of the scan screen is pretty self-explanatory.

Fancy Functions

What do Hyperbank, Smartscan and Tacscan mean? Well, they represent some very useful and unique scanning features.

How would you like to arrange your frequencies tailored to the type of scanning you need to do? For example, if you are trying to monitor an airline emergency, you would want to monitor local air traffic control, aircraft emergency channels, local police, ambulance and fire frequencies. However, in the next hour you might want to monitor the effects of worsening road conditions. Now you would want to monitor public works highway crews, highway patrol, local police and state police.

We can see that different types of scanning use different scanning schemes. Of course we could use different scanners (costly), or manually select and deselect banks of frequencies on our scanner (a real pain).

Probe1K’s Hyperbank scan feature allows the user to store user defined collections of banks tailored to specific scanning. So with the press of one key we can be scanning banks of frequencies useful during an airline emergency. With the touch of another key we can instantly scan banks useful to monitoring road conditions. Hyperscan really is a very useful feature of Probe1K.

Another useful feature is Smartscan. For the computer network scanners among you, you can think of this feature as a conditional branch “If-Then” statement. For example, if a Smartscan defined frequency becomes active, the program does not go to the next frequency in the Bank list. Instead it jumps to a new Bank of frequencies to scan.

This is useful for communications that do not use simplex – for example, a communications group that uses a central dispatcher on one frequency, but has the mobile units responding on different frequencies. Smartscan is also useful when monitoring trunked communications systems. Another application might be to jump over a whole range of little-used frequencies until the “key” frequency becomes active. In this way Smartscan will save valuable scanner time.

We have just covered the basic operation of these modes. More operational options for Hyperbank scan and Smartscan are covered in the manual.

Tacscan is yet another scanning method that “assigns an active frequency to a priority position in the scanning list for a specific period of time.”

Because of space we have to stop here. But let me just say that there are many more features that we have not covered, including CTCSS tone squelch.

If Only …

I encountered no problems with controlling the PCR using Probe1K. The serial port behaved predictably and I never encountered a program crash during use. However, due to its memory utilization, some programs, such as Paint Shop Pro which I use for screen capture, acted strangely when I loaded it after Probe1K. After all, we are mixing DOS and Windows programs.

I suggest you experiment with Probe1K and running your favorite programs in the background before you launch into serious monitoring.

The 58-page manual contains all you would ever want to know about Probe1K. However, it is a bit difficult to follow. For example the “Quick Start” runs for over eight densely packed pages. Although there is a Table of Contents, an alphabetical index would be a very helpful addition.

I did have some unexpected results using the Import function. As you can see in the active list at the bottom of Figure 4, only the entry that I manually edited, State of New Hampshire, has the whole name of the licensee. The Import function only resulted in the licensee name of “State of”, as seen in the others listed in Figure 4.

I tried several “MCH” imports with the same results.

Probe1K Overall

This is a very ambitious and well-executed program. It is definitely for professional monitors using the PCR1000, who require complex scan requirements, but casual monitors will also find it very useful. Expect to initially spend a minimum of 30 minutes with the manual before you do any scanning. Keep the manual handy for the next few monitoring sessions, and your effort will be rewarded.

Probe1K version 7.0 is available from DataFile, Inc. (PO Box 21111, St. Louis, MO 63123) for $74.95 plus shipping and handling. Check their website at http://www.probe1k.com for more details and useful links.

Links to programs mentioned in this month:

http://www.probe1k.com
http://www.icomreceivers.com/ICOM_Database
http://www.datadeliverydevices.com
http://www.mahy.demon.co.uk/TalkPWR
http://www.visualradio.de
http://www.shoc.ch/RadioManager
http://www.bonito.net/info6_ham_rc40.htm
http://www.scanstar.com
http://www.scancat.com
http://www.scannestar.com
http://www.shoc.ch/RadioManager

Longwave Resources

Sounds of Longwave 60-minute Audio Cassette featuring WWVB, Omega, Whistlers, Beacons, European Broadcasters, and more! $13.95 postpaid

BeaconFinder A 65-page guide listing Frequency, ID and Location for hundreds of LF beacons and utility stations. Covers 0-530 kHz. $13.95 postpaid

Kevin Carey
P.O. Box 56, W. Bloomfield, NY 14585

September 2003 MONITORING TIMES
his is a moment of true confession for me. I have to admit that I love using wire antennas for my HF monitoring. Among the many types of wire antennas, I really like using the longwire style of antenna. These antennas are very economical, easy to install and provide a lot of bang for the buck. Those that know me best know that I value economy (i.e., I'm cheap), simplicity and performance. The random length longwire antennas meet all of these parameters.

But the simple longwire does have one major drawback. Due to the higher impedance at the feedpoint (random length longwire antennas are end fed), coax is not normally used. Most often you will see longwire antennas fed with single conductor insulated wire to the high impedance input of HF receivers. But this can be a problem in noisy RF environments.

If we can get that feed point impedance of a longwire down to 50 or 75 ohms, then we can use low loss coax in our installation. By doing so we can reduce, and in some instances even eliminate, man-made noise that is picked up by the feedline. If only someone would develop an inexpensive longwire antenna that can deliver 50 or 75 ohms impedance to the receiver so I can use low loss coax!

Well, we do not have to wait any more. Dale Parfitt, W4OP, has developed an end fed longwire that can use a 50 or 75 ohm coax feed - the PAR Z EF-SWL antenna.

The EF-SWL is optimally designed for 1-30 MHz reception. The heart of the EF-SWL is the UV resistant ABS matchbox that houses a wideband 9:1 transformer wound on a binocular core. This transformer has external stainless studs on the matchbox that allow the user to configure the primary and secondary grounds for best noise reduction at the receiving location. The antenna's output to the receiver is via a silver/Teflon SO-259 UHF connector that can accept a standard PL-259 coaxial connector. Lead-in coax cable is not provided by the manufacturer and will have to be purchased separately.

The basic configuration out of the box is a radiator that uses 45-feet of virtually-indestructible #14 black polyethylene coated Flex-Weave wire. The wire itself consists of 168 strands of #36 gauge woven copper. This material is very strong, yet it can be as easily coiled as a rope for portable work.

The radiator also attaches via a stainless stud (#3) on the matchbox that allows it to be removed or replaced. You can attach any length of wire you want to the matchbox. This allows you the opportunity to experiment with different lengths for the radiator. If you need a shorter antenna for your particular installation or a longer run if you have the space, the EF-SWL matchbox can accommodate it.

The manual that comes with this unit shows typical radiation patterns for selected frequencies throughout the HF spectrum in the two primary mounting configurations - as a horizontal or sloper end fed longwire. Please note that this is a receive-only antenna.

**Antenna Construction - Installation**

This antenna has a lot of the same characteristics as the monoband versions of the popular Cushcraft and HyGain half-wave or no-ground vertical antennas. The big difference between the no-ground and this antenna is that the EF-SWL does not need any base radial wires.

My first impression after I opened the box was the quality of the antenna and its individual components - simply superb.

Since the radiator uses polyethylene coated Flex-Weave wire, environmental corrosion problems normally associated with using uninsulated copper wire will not be an issue. Another major failure location in most longwire installations is at the point were the user attaches the antenna's lead-in wire to the uninsulated radiator wire. If care is not taken to properly seal this connection, dissimilar metal corrosion will eventually cause a break where the two wires are connected. Fortunately that will not be an issue with the EF-SWL, thanks to the polyethylene coated wire used as a radiator.

To further protect our outdoor test installation of this antenna we used rubber tape to seal the PL-259 connector to the SO-259 matchbox connection.

Bottom line - once you get this antenna up, mother nature will be hard pressed to take it back down through corrosion.

The antenna comes assembled right out of the box. The user does have two decisions to make, however. The instructions that come with the antenna fully discuss the pros and cons so that the user can make a logical decision which will best work at his location.

First, you have several options on how to hang the antenna. Choices range from horizontal, sloper, inverted-L, inverted vee, or even as a vertical.

Next, you have to decide how you are going to configure the ground. The antenna comes with harness, #36 gauge woven copper. This material is very strong, yet it can be as easily coiled as a rope for portable work. The wire consists of 168 strands of #36 gauge woven copper. This material is very strong, yet it can be as easily coiled as a rope for portable work.

The instructions that come with the antenna fully discuss the pros and cons so that the user can make a logical decision which will best work at his location.
perform. My son Loyd Van Horn assisted in the installation and it actually took us longer to get the ladder set up so we could climb on the roof than it did to put the antenna up. We ran our test EF-SWL antenna configured horizontally at 35 feet above ground level, and we oriented the axis of the radiator north-south.

**How Well Does it Perform?**

In a word — fantastic!

We put the EF-SWL head-to-head with some of the antennas on the N5FW two- acre antenna farm. We compared the PAR longwire with two 102-foot G5RV antennas, two endfed (insulated wire lead-ins) longwire antennas that were 150 and 250 feet long, a full-size Grove Skywire sealed in the roof of my radio shack, and an MFJ amateur radio ten-band vertical antenna.

While some of these antennas outperformed the EF-SWL over the entire tuning range we tested (1-30 MHz), there were some nice surprises.

In the AM broadcast band, the G5RV antennas with their 102-foot capture areas had a distinct advantage over both the EF-SWL and the Grove Skywire. We did notice that the PAR antenna seemed to come alive in the upper portions of the AM band when compared to the Skywire as we tuned higher in frequency.

On shortwave frequencies below 10 MHz, the PAR antenna was equal to, or in some cases consistently better, than our Grove Skywire on signals from selected shortwave stations we used for measurement. One notable exception was around 40 and 15-meters. Since the Skywire is cut for 40-meters, there was a noticeable difference between the two antennas in these two frequency ranges. Above 10 MHz, EF-SWL really shone. Signal levels were comparable on the selected shortwave bands to our longer G5RV antennas.

Our final test was a head-to-head comparison of the EF-SWL to our 150 foot north-south end fed longwire. Since both antennas were oriented in the same direction, we felt this test would give us a realistic idea of how good the PAR EF-SWL really was. I must point out that the height above ground for our 150-foot longwire antenna was not optimized, whereas the EF-SWL was.

Consistently across the entire 1-30 MHz tuning range the EF-SWL delivered a 5 db to 20 db signal over my 150-footer. But the real surprise was how quiet the EF-SWL was. In fact, at one point during the test, my wife Gayle Van Horn, who helped with this portion of the testing, questioned whether the PAR end fed was even connected to the receiver. It was that quiet!

**In Conclusion**

If you are looking for a good broadband, passive shortwave wire antenna for use in restricted space (i.e. attic, small city lot, etc.), then the PAR Z EF-SWL is your ticket. This antenna is especially ideal for portable operations, since it is compact, easy to install, and does not take up a lot of real estate.

You can purchase the PAR Z EF-SWL from Grove Enterprises (7540 Hwy 64 West, Brasstown, NC 28902; 800-438-8155; order@grove-ent.com). It sells for $59.95 plus shipping and handling. PAR also makes several versions of the EF-SWL for amateur radio operators. These are monoband end-fed antennas.

You can get more information at http://www.parelectronics.com or contact Par Electronics, Inc., P.O. Box 645, Glenville, NC 28736; Voice: 828-743-1338, Fax: 828-743-1219.

Digital Digest continued from page 35

working protocol (the AX.25 part). As astute readers might guess, the protocol was a stripped-down version of the popular ITU X.25 system. The “A” denoted it was for amateur radio use.

AX.25 Packet ushered in the age of communication from computer to computer over standard radio channels. The underlying signal, 200Hz shifted FSK at 300bd (HF) or 1200bd (VHF/UHF), was originally generated from a number of cheap telecomm chips available at the time for basically loudspeaker-to-modem connections using the Bell-series of standards.

Data is sent in formatted packets. In the case of AX.25, a packet has a maximum of 256 bytes of data sandwiched between blocks of data that tell the receiver the start and end of the packet, the sender and recipient callsigns, and information that allows the receiver to check for errors to the data during transmission.

Unfortunately, while very successful on VHF and UHF channels, the system was not well suited to noisy HF environments and despite a strong start in the late ‘80s and early ‘90s, was quickly overtaken by superior modes like PacTOR.

Among organizations to use the system were/are US Forces MARS, Cuban diplomats, the Italian Air Force, and various terrorist organizations throughout Africa and South East Asia.

**Resources**

WaveCom http://www.wavecom.ch
Hoko http://www.hoko.net
Monterio http://www.monteriollc.com
RadioRoff http://perso.wanadoo.fr/rodrorff/
SkySweeper http://www.skysweep.com
Tips from Our Readers

FM Band Preamplifier for FM-DXing
Designed and Developed by D. Prabakaran, Tamilnadu, India

This circuit is designed to work at VHF-FM band frequencies in the range 50-180 MHz. It has a gain of around 10dB and is suitable for boosting weak FM radio band signals. Transistor BF200 (widely used in TV boosters) is used here as the active element.

The tuned circuit connected at collector of “T1” comprising inductor “L1” and “22PF” trimmer capacitor resonate in the center of the FM band. The tuned circuit “L1” has four turns 18-20 SWG copper wire wound around 10mm drill bit, ensuring a low Q and therefore the possibility of a broad tuning range. The circuit should be enclosed in a metal case and a screen made between input and output, to avoid stray pick up.

Since the transistor is used in common base mode, its low input impedance is a good match for 50-75 ohm coaxial cable. The inductor L1 and 22pf capacitor form a tank circuit at the transistor’s collector, providing maximum gain at resonance.

Signal picked by the aerial can be coupled to the emitter through a low loss co-axial cable. For efficient results or FM DXing, keep the antenna as high as possible (just as for TV reception).

Roll Your Own 800 MHz Quarterwave
By Alan Bosch, KO4ALA, Arlington, VA

The conventional wisdom on multi-band OE rubber ducks is that they work equally poorly on all bands. That seems true in a paradoxical way if you live, as I do, in an urban area saturated with RF (from a forest of towers half a mile away featuring everything from broadcast AM, FM, and UHF TV, to business band, pagers, and longlines). Then a wide-band antenna is a sitting duck for myriad intermod products.

Aside from filtration, which must be outboard on a scanner, the best protection is an antenna tuned just for the band of special interest. The one pictured here cleaned up Arlington’s trunked system transmissions noticeably for me.

The ingredients all came from my junk box: two wire-nuts (one large, one small), 3.5 inches of #18 plastic-coated wire, and an F female-to-BNC adaptor. Construction is elementary.

Trim 1/16-inch insulation off one end of the wire so it just fits into the center contact of the F-connector. Select one wire-nut with a skirt diameter the same as the F-connector’s OD (outside diameter), drill a wire-sized hole through its top, slide it down over the wire, and fasten it with a couple droplets of Krazy-Glue. Screw on the smallest wire-nut that will fit the insulated upper end of the radiator and you’re ready for business.

Another benefit of this item is, of course, that its small size facilitates concealment where that is helpful.

Heatsink Those Soldering Jobs!
By Arthur R. Lee WF6P, Santa Cruz, CA

A couple of problems accompany every soldering job – that of not having enough heat, and that of having too much heat. By not having enough heat, solder will melt but not flow and make good contact. This is known in the trade as a cold solder joint.

The opposite is having too much heat and damaging the component to be soldered. Such is the case when soldering a terminal fitting to a piece of coaxial cable for radio use. Overheating a connector fitting can result in the melting of the coax inner insulating core, possibly leaving the center wire exposed to ground to the connector.

To help prevent this, after the solder has melted, immediately grab the end of the connector with a pair of heavy pliers, the bigger the better (Fig 1). Using two pair of pliers, one to clamp on the connector body, would help bleed off excess heat even faster.

Save Those Walls
By Arthur R. Lee WF6P

When our daughter moved into her new Sacramento home we had to find a place to set up her ham radio. We eventually settled on the ideal spot, near the computer in the spare second floor bedroom. Their L-shaped heavy office desk was a great place for both pieces of equipment, including the external power supply for the Kenwood HF rig.

A trapped vertical antenna was put up just outside the house and all was well. The coax feeding the vertical led in through the sliding glass
To keep most of the weather out, we resorted to the primitive method of stuffing rags between the window and the window frame. It was inefficient, but most of the air conditioned cold air could be kept in the house during the summer and heat in during the winter. It worked but didn’t look all that fancy from the standpoint of my daughter, KN6RR. During the rainy season, the rags dripped water and dust found a way in during the hot months. As an artist and home decorator, she wanted something more pleasing to the eye. Couldn’t something be done to improve the appearance of the antenna feed line?

To appease her for a while we used the temporary expedient of simply disconnecting the antenna coax, tying the end to a cord, and lowering it out the window a few inches. The PL-259 was wrapped in a plastic bag to keep it moisture and dust free. At least the window would now close. However, this took all the convenience away from using the radio.

After much pleading from our daughter (two years worth, really), my son-in-law and I had to come up with a workable solution. Drilling a few holes through my daughter’s new walls didn’t seem to be an ideal approach as she wasn’t sure the rig would remain in that bedroom forever. Also, the heavy desk blocked the wall we would use. This would require us to put the holes at waist high level instead of down lower, in a less obtrusive location near the floor.

Instead, we resorted to a rather old, but highly effective method. The modern double-paned window slid in a tight horizontal track. A quick trip to the local lumber yard produced a pine strip of wood 3-inches wide and the height of the window. After a bit of custom sanding, the strip was a snug fit for the inside of the window track. A 3/8-inch hole was drilled in the center of the strip, but to avoid the chore of cutting off the PL-259 and replacing it, we cut a slot to the edge of the wood strip (figure 2). The coax was slipped inside the slot to the hole and a wooden plug inserted in the slot.

A 1/8-inch hole was drilled a short way below the coax entrance to allow the ground wire to pass through. A length of foam rubber weather stripping was glued to the metal sliding window frame. When closed, the weather stripping forms an air tight seal, keeping dust and rain out. The window has a built-in lock for variable opening positions so security is not compromised.

The wood strip was painted to match the window frame outside the house and to match the room on the inside.

Change to RNZI Schedule
Effective 9/1/03, Radio New Zealand International is going to a 24 hour schedule, and a new weekday Pacific current affairs magazine, “Dateline Pacific,” will join the schedule several times a day.

As a result, please note the following changes to the information provided in this month’s SW Guide section (p.55):

<table>
<thead>
<tr>
<th>Time</th>
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<tr>
<td>0300</td>
<td>M-F</td>
<td>Dateline Pacific</td>
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<tr>
<td>0330</td>
<td>M</td>
<td>New Music Releases; T Mailbox/RNZI Talk, W Tradewinds, H World in Sport, F Pacific Correspondent</td>
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<tr>
<td>1100</td>
<td>M-F</td>
<td>Pacific Regional News</td>
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<td>1130</td>
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<td>1300</td>
<td>S/A</td>
<td>RNZ News, M-F (as 0300-0400 M-F)</td>
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<td>1308</td>
<td>S</td>
<td>Tagata o te Moana, A New Music Releases</td>
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<td>1335</td>
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<td>Touchstone, M-F relay National Radio, A In a Mellow Tone</td>
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Additional information will appear in October’s SWG. In the interim, consult RNZI’s web site at http://www.rnzi.com.

This image, courtesy EUMETSAT, is the first of the new LRIT (Low Rate Information Transmission) format being transmitted currently by MSG-1 (Meteosat Second Generation) as part of the test program before the operational phase starts next year. It shows channel 13 (this is channel 1 visible-light) image from 1145UTC on July 7. LRIT will replace WEFAX on all WXSATs in due course. (see page 90)
Follow ups on Some Worthy Gear

Just over two years ago, I reviewed the Icom IC-706MKIIIG. My conclusion then was: "For the casual ham operator who wants a whole lot of radio in a compact, reasonably priced package, the 706 delivers, and then some."

I stand by that conclusion. Every work day of the year at 6 am, I fire up the IC-706, and for the next 2+ hours, run a commuter assistance network on two meters for the Capital District of New York State. Although I rarely operate on HF anymore, the IC-706 has performed admirably, never missing a beat, always delivering solid performance.

The IC-706 is the amateur radio mobile/base station equivalent of a Swiss Army knife. It's small, just 6.6" wide x 2.3" high x 7.9" deep; light, just 5.5 pounds, and it has great coverage: receive, 30 kHz-1999.999 kHz and 400-470 MHz; transmit, all ham bands from 1.8 MHz to 450 MHz, with modes including USB, LSB, CW, RTTY (FSK), AM, FM and WFM (receive only). Power output on HF and six meters is 5-100 watts (SSB/CW/FM/RTTY) and 2-40 watts AM; on two meters 2.5-50 watts (SSB/CW/FM/RTTY), 2-20 watts (AM) and 2-20 watts (AM); and on 440 MHz 2-20 watts (SSB/CW/FM/RTTY) and 2-8 watts (AM).

The "706" includes tone encode, tone squelch, 102 alphanumeric memories (99 regular, 2 scan edges, 1 call), second VFO, crossband split capability, CW keyer, speech processor, and voice-operated transmit, plus some digital signal processing capabilities as well. A detachable front panel/display and optional remote separation cable make it possible to install the main "box" of the 706 in the trunk of an automobile and mount the front panel and microphone to the dash.

The performance simply sparkles, and I give the 706 my highest personal recommendation. For more info, check out http://www.icomamerica.com.

Minelab Explorer II Finds Antique Lock

I reported on the Minelab Explorer II metal detector last month, but since then there have been additional developments. After filing my column for MT, I decided to see what the Explorer II could do with the help of an experienced detectorist.

Carl Bell, proprietor of Upstate Detectors in Schenectady, NY, agreed to meet me at a bend in a creek near the site of a now closed restaurant. This particular location had been used by people for at least 200 years and was probably the site of an old mill.

Bell adjusted my Explorer II in advanced mode for detecting in an area with a lot of iron in the soil. While the Explorer will work okay in these conditions as it comes out of the box, now it will perform even better. He plugs a splitter into the earphone jack of my Explorer so we can both listen to the audio signals the detector makes.

We try detecting in an area behind an old stone wall. In a short while, the Explorer begins emitting a high clear tone over one spot. It's a pull tab. Bell rescans it with the Explorer and instructs the detector to ignore similar tabs.

A moment later there is another signal, different in tone, but equally clear. Bell advises me to dig everything in an area this old. I cut a horseshoe-shaped plug in the turf and lever it up. Bell shows me how to use a handheld pinpoint detector to zero in on the target in the hole. It's a neat brass lock, shaped like a shield, with stars and bars on it. The keyhole is on the thin side of the lock at the point of the shield.

"Wow, an old lock," I say. Bell replies, "Not just a lock, a nice lock!"

The Minelab Explorer II continues to amaze me. I had already thought that two-way wireless communication amounted to a type of wizardry, but the Explorer eloquently demonstrates that radio waves can work another kind of magic: finding relics and other goodies underground. Further, if you are considering the purchase of an Explorer II (or any metal detector, for that matter), I suggest buying from a local dealer who is willing to help you learn the ropes.

For more information about the Explorer II, visit http://www.minelabusa.com or call 1-702-891-8809 and ask for an information packet. To reach Carl Bell, try http://www.upstatedetectors.com or phone 518-393-0624.
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**Domestic Broadcasting Survey 5**

The DX season is gearing up and here’s a publication every DXer should have close at hand! Edited by DXer Anker Petersen, (Chairman, Danish Shortwave Club International) the **DBS-5** continues to be the leading annual publication devoted to tropical and domestic shortwave broadcasting stations.

The DSWCI offers this fine publication only in PDF format by electronic mail, thus eliminating the increasing cost of printing. Data is composed from experienced DXers worldwide, and draws on their expertise for timeliness and accuracy. Information includes frequencies, programming details, hours of transmission, relay sites, identifications or station slogans, language services, parallel frequencies, networks, and transmitter locations.

**The Shortwave Guide, Vol. 2**

Looking for a simple and comprehensive guide to aid in your shortwave listening? Then look no further.

The second edition of The Shortwave Guide, from World Radio TV Publications, is receiving kudos from the listening community, and rightly so. This colorful frequency guide covers the summer schedules, which are those that are not included in the larger annual WRTH.

Each entry is listed by frequency, station, country, kW, hours, target areas, and color coded languages. Frequencies shown are for international and domestic broadcasters, including the tropical bands. This uncomplicated “at-a-glance” arrangement makes it perfect to determine which station is broadcasting as you bandscan.

One beneficial aid is the “Last Log” column. Station information is listed here as when the reporter last heard the station, just prior to the **DBS** deadline. Former frequencies not heard in the last year are eliminated and compiled at the end of the survey.

The 2003 edition of **DBS-5** is, without question, very useful and accurate and an extremely valuable reference. The cost is affordable at $5 US, Euro 5, or seven IRCs. For additional information and a sample page of the survey, go to: [http://www.dswci.org](http://www.dswci.org). Fees should be sent to: DSWCI, Bent Nielsen, Egekrog 14, DK-3500 Vaerlose, Denmark.

I have relied on this excellent publication for many years, and continue to use it for each DX session. Every serious DXers should have a copy next to his receiver!

-- Gayle Van Horn

**Technician Class License Study Manual**

by Gordon West

The Amateur Radio Service now has reduced its license classes to three; the Technician, General, and Extra. This has required a revamping of the question pool, with the latest element introduced in July 2003.

Gordon West, W6ENO/A, well known for his license preparation materials, introduces this latest study manual, the Technician Class, a well-written, easy-to-use guide.

Well illustrated and accompanied by additional explanatory material, the test notes comprise more than 200 pages and contain all the possible questions the applicant could face at the exam.

This excellent study manual can be ordered from The W5YI Group, 7101 N. Ridgeway Ave., Lincolnwood, IL 60712, or from their website at [http://www.w5yi.com](http://www.w5yi.com). Cost is a very reasonable $9.50 plus shipping.

-- Bob Grove

**ARRL Books**

Reviewed by Larry Van Horn

**ARRL's License Question and Answer Study Guides**

Recently the amateur radio Question Pool Committee issued new question pools for the Technician and Extra class license exams and the American Radio Relay League (ARRL) has followed suit by publishing two new corresponding question and answer license study guides.

In the July issue of **MT** we reviewed the new **ARRL Tech study guide Now You're Talking! - 5th edition.** But, if you are technically inclined and do not need an exhaustive study guide to help you prepare for your exam, then the new **Tech Q&A - 3rd edition could be your ticket to the Tech license.**

The Technician class license exam consists of a 35 question written exam drawn from a pool of 511 questions. The 245 page Tech study guide includes each of the 511 questions and answers for the Technician (Element 2) test, with answer key, for use on exams beginning July 1, 2003.

Likewise, if you are taking the test for the Amateur Extra class (Element 4), the League has a new 332 page Q&A guide for this license as well. The 50 questions in an Extra class examination are drawn from a 806 question pool. This newest Extra Q&A guide includes the latest question pool with answer key, for use until June 30, 2006.

In both Q&A guides, each question is printed with the correct answer letter shown in bold type. An accurate, but brief explanation is included after each question. The straightforward, uncluttered question-and-answer format means no hunting around for answers or ex-
Planations. If you just need a review to prepare you to take your amateur exam, use these books to pass your test. (See below for contact information)


The ARRL DXCC List

Being an avid DXer in the ham bands, I use a lot of aids to keep track of my current DXCC (DX Century Club) stats. One of my favorite publications in this regard is the ARRL DXCC List.

The ARRL DXCC List is the official League source of DXCC information. You can record the DXCC entities you’ve worked and QSL’d! This new May 2003 edition includes a complete listing of DX Century Club rules, including the latest changes and clarifications. It contains information about each entity on the DXCC List, deleted entities, and the latest DXCC entity additions. Also included are a prefix cross-reference, the list of international call sign series, and much more.

Descriptions of all DXCC awards are covered, and information about how to get numerous DXCC items, such as pins and plaques. This is a “must have” for every amateur DXer.

ARRL DXCC List - May 2003 edition (ISBN: 0-87259-894-2) #8942 - $4.00 plus shipping and handling (see below for contact information)

YASME — the boat that carried young sailor Danny Weil on his first voyages beginning in 1954 — and the lives of famed ham radio amateur radio DXpeditioners Lloyd and Iris Colvin. YASME is a tale on the Japanese yasume, meaning “freedom.” The Colvins’ worldwide adventures continue to be recounted in ham radio circles, epitomizing the spirit of international friendship through amateur radio and their 30-year association with the YASME Foundation. This 320-page League publication was commissioned by The YASME Foundation and published by ARRL.


You can order any of these League publications online at http://www.arrl.org, or through their toll free order line at 1-800-277-5289. The League snail mail address is ARRL, 225 Main Street, Newington, CT 06111-1494.

Getting Started in Electronics

by Forest Mims III

For decades, Forest Mims has entertained and educated electronics experimenters of all ages. His casual freestyle method of writing and illustrating invites the most inexperienced newcomers as well as seasoned veterans to the world of electronics. This recent edition is no exception.

128 pages of simple electronic experiments utilizing readily-available components flash, beep, count, switch, calculate, detect, amplify, compute, time and regulate. Excellent introductory material explains components and how they work.

This is a terrific book for the electronically curious, a great way to figure out how to use all those parts you see hanging on the wall at Radio Shack, or inside those parts you see hanging on the wall at Radio Shack, or inside that old radio or TV set you wondered whether you could salvage! $12.50 plus shipping from W5YI Group, 7101 No. Ridgeway Ave., Lincolnwood, IL 60712, or from their website at http://www.w5yi.com.

- Bob Grove

Voice of America, A History

by Alan Heil

Ask any shortwave listener the first station they heard, and chances are, they will respond “Voice of America.”

Voice of America, A History, written by Alan L. Heil, Jr., is an in-depth history of the VOA’s founding in 1942 until its sixtieth anniversary. Mr Heil worked for the VOA from 1962 until he retired in 1998. serving (among other positions) as a foreign correspondent, chief of News and Current Affairs, and deputy director of programs. Using transcripts of radio broadcasts and numerous personal anecdotes, Heil has given the reader a close-up look into the major events of the past sixty years.

The 540 pages provide a very interesting and enlightening story of the VOA through the wake of Pearl Harbor, the Cold War, the first steps on the moon, the Watergate scandal, civil war in Rwanda, and the intense drama of Tiananmen Square. Heil also relates the outbreak of HIV/AIDS in the 1980s, ethnic strife in the Balkans, ter-
Getting started with Weather Satellites

Until about two years ago, someone who read an article, or heard from a friend about using a receiver to tune into weather satellites (WXSATs), faced a straightforward situation. They could set up a system to receive signals from polar orbiting spacecraft, and could also set up a dish system to receive signals from geostationary WXSATs. To some extent the choice is still there, but it is changing. This month I am updating the introduction.

**Polar WXSATs**

There are some half dozen satellites in low polar orbits, carrying earth-image sensing equipment of which the amateur user can take advantage. These weather satellites (WXSATs) transmit continuous signals that — using suitable equipment — can be decoded and converted to lines of varying brightness that build up to an image showing the ground over which they pass. These satellites are transmitting real-time data. Depending on your depth of interest (and also on the depth of your pocketbook), you can build or buy equipment to receive and decode some of these signals.

There are also many commercial imaging satellites, but these invariably require expensive decryption facilities, so are not covered in this review.

My own polar WXSAT receiver confirms that there are currently only NOAA (National Oceanographic and Atmospheric Administration) WXSATs in active service. At one time there was also a steady supply of Russian Meteor WXSATs, but, unfortunately, for what appear to be financial reasons, they are behind in their program of replacing no-longer functioning satellites. Each month I list the frequencies of currently transmitting WXSATs at the end of this column.

With suitable equipment — a good antenna, receiver, computer and software — you can easily receive the automatic picture transmission (APT) images direct from the satellites. These have a resolution of about 4km per pixel, so you can obtain a picture from most satellite passes, and they will clearly show the local cloud situation.

There are currently three satellites regularly transmitting APT: NOAA-12, NOAA-15 and NOAA-17. If you use a satellite tracking program with updated data, you can determine when any of these WXSATs are passing over your location. They are all in sun-synchronous orbits (those that keep pace with the sun from day to day). NOAA-12 provides two or three passes during the mid to latter part of the afternoon, and again twelve hours later. NOAA-15 passes over during the early morning and early evening. NOAA-17 — the most recently launched — is a mid to late morning and evening satellite.

**Equipment Requirements**

The APT-transmitting WXSATs require the simplest of the reception systems.* For the complete beginner who wants to test the cheapest options, you can use a simple dipole to receive the right-hand, circularly polarized signals from the NOAAs. Cut for 137 MHz, (although one cut for the amateur 2m band will do), such a dipole can provide a few minutes of signal during reasonably high passes.

A far better option is the crossed-dipole — a combination of two dipoles connected by a phasing harness that adds up the components of the WXSAT signal to produce a more consistent signal for longer periods. Such an antenna can be mounted permanently in a high position — perhaps on a roof-top — where it will hear any WXSATs as they come over your location. At these VHF frequencies, physical objects such as buildings or trees will obscure the signal.

Having sorted out an antenna, we need a good receiver. We occasionally see pictures posted on the Internet showing surprisingly good results obtained using general purpose receivers. These are not ideal for our purpose. The transmission characteristics of a 137 MHz band WXSAT signal require a bandwidth of about 45 kHz. Utility receivers are usually designed to offer a 15 kHz bandwidth, or one called NBFM (narrow-band frequency modulation). The 15kHz option is really much too narrow, and the other is far too wide!

The fact is that WXSATs are in a class of their own. Their telemetry format is specifically designed to allow the carrying of image data in a unique manner. Original image data (white clouds and dark land) is amplitude modulated onto a 2400 kHz sub-carrier. The resulting signal (the modulated 2400 kHz carrier) is then itself modulated onto an r.f. carrier — the 137 MHz band carrier. Consequently, to faithfully decode this complex signal, you need to have not only a 45 kHz bandwidth receiver, but optimized decoding circuits as well. For the price of a proper receiver you can be assured of the best possible image quality.

**Dealers**

My understanding is that Timestep Weather Satellite Systems is probably the main US supplier of all types of WXSAT hardware. Their web site address: [http://www.time-step.com/](http://www.time-step.com/)

Although based in Britain, they supply both directly (Timestep, PO Box 2001, Dartmouth Devon TQ6 9QN England) and through a dealer: Spectrum International Inc. (PO Box 1084 Concord Mass. 01742 Tel. (978-263-2145)

**Internet Site Update**

The “allmetsat” site offers a comprehensive selection of images from virtually all operational satellites, both polar and geostationary. To my surprise, it also includes high resolution imagery from the polar orbiters, recently collected by local meteorological organizations, such as Meteo-France. Composite imagery from NOAA-16 (see figure 1) of the Antarctic and Arctic regions, is included.


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*See p.85 for first glimpse of the next generation LRIT format*
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Rumors of DX Death Greatly Exaggerated!

Editorial by Doug Smith W9WI

Tests of the new IBOC digital broadcasts have FM and mediumwave DXers nervous. Both AM and FM DXers are saying things like "I'm going to catch all the DX now while I still can!" I suppose some of you may wonder why there hasn't been more concern expressed about IBOC in the pages of this magazine.

Well, for one thing I don't like to expend too much energy trying to change things I know can't be changed... The LPFM (low power FM) proceedings made it obvious that when an industry with lobbyists wants something from government, they'll likely get it. (I suppose scanner monitors can cite the ECPA and its amendments; and computer users can cite the DMCA.) If the National Radio Club can hire a team of Washington lobbyists, I suppose we might be able to stop IBOC. Somehow I doubt the NRC's treasury could support such an effort.

Existing broadcasters, and their lobbyists in the National Association of Broadcasters (NAB), want IBOC. They seem to feel it'll stem the gradual decline in radio listening by bringing CD-quality sound to the FM band and FM-quality sound to AM stations.

Maybe more importantly, the IBOC system brings digital radio without changing the relative coverage areas of existing stations (unlike the Eureka system used in almost every other country that has digital radio). Radio hobbyists and media activists may try to stop IBOC, but without lobbyists bearing campaign contributions, I doubt they will have any effect.

Why such a hullabaloo about IBOC?

On the AM dial, the digital data is placed in the outer edges of the station's assigned channel and in the adjacent channels. An analog station on 710 kHz occupies the area from 705-715 kHz; an IBOC station on 710 occupies 695-725. A listener with a good receiver can DX 700 and 720 even if he lives near an analog station on 710. If that analog station switches to IBOC, this listener will no longer be able to DX 700 or 720 kHz.

On FM, IBOC stations do not spill into adjacent frequencies. However, they do occupy the outer portions of their existing channels. With analog, these areas are "guard bands" between stations. The effect is the same: it will prove impossible to DX frequencies adjacent to those used by IBOC stations. The effect is the same: it will prove impossible to DX frequencies adjacent to those used by IBOC stations.

So chances are we will have IBOC in the United States. DXers have two choices: Live with it, or give up and take up a different hobby.

DXers have learned to "live with it" before. Here are some of the developments that over the years have threatened to put an end to the DX hobby:

- Seven-night-a-week AM broadcasting
- The end of the typical midnight-6am silent period
- Power increases on Class C channels, from 100 watts to 250 to 1,000
- FM
- TV
- Breakup of the "clear" channels
- Radio Marti and the high-powered retaliatory broadcasts from Cuba
- Docket 80-90 (which made hundreds of new FM stations and FM power increases possible)
- Low-power TV
- Low-power FM
- The end of VHF TV in the U.K.
- Blanket nighttime operating authority for most AM daytime-only stations
- Internet "radio"
- Cable TV
- Satellite TV
- Digital TV

Yet the National Radio Club, International Radio Club of America, and Worldwide TV-FM DX Association are as strong as ever. People are still DXing.

Sure, there are some things you can't do anymore. You won't hear California from the East Coast every night. You won't log Hawaii with a table radio in St. Louis. Double-hop trans-continental TV skip is now a once-in-a-lifetime treat, not an annual event. Many (most) DXers don't care. They get a thrill out of whatever they hear that's new and unusual.

Just in the last year, many DXers logged the Virgin Islands for the first time, thanks to the expanded AM band. The widespread adoption of unattended computer recording techniques have filled logs with new DX. Record-breaking 850-mile digital TV reception has been accomplished, and then surpassed when a digital TV signal was received via sporadic-E at a distance of over 1,050 miles. We have the first ever reliable report of reception of U.S. FM stations in Europe. And Australian DXers are receiving American UHF TV signals via reflection off the moon. DXers adapt.

Wait and See

Nor is it a foregone conclusion that IBOC will work. AM IBOC is still experimental; recent tests have left many participants unhappy with the "codec" -- the software that "tosses out" redundant parts of the audio to make the data stream fit in the necessary bandwidth.

Because of the adjacent-channel interference problems, the FCC is not allowing AM IBOC operation at night. For much of the year, commuters are driving home from work after sunset. These commuters are the most important radio audience. A digital radio system that doesn't work at night isn't going to work in the marketplace.

Finally, IBOC is expensive for the station. At the very least, an expensive digital "exciter" is necessary. At many stations, the entire transmitter will need to be replaced. At some, an entire separate digital transmitter and antenna may be necessary. At AM stations, complete redesign of the antenna system may be required.

Unlike AM and FM, IBOC is covered by patents. Those wishing to build IBOC receivers or transmitters must buy a patent license -- and stations wishing to broadcast IBOC will also require this license. Many stations today (especially AM) can just barely afford to pay their existing bills. Extensive transmitter modifications and an IBOC patent license will be beyond their means. Many stations will remain analog.

So, to be concise... IBOC digital broadcasting is coming. We can't stop it. If it succeeds (and it may not), it will change domestic-band DXing. It will never eliminate it.
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