

**IS THE FAA RUNNING OUT OF SPECTRUM?**

The lack of radio frequencies is quickly becoming as important a factor in aviation congestion as the lack of runways and limited airspace, these experts say. Moreover, technological advances to increase the system's ability to handle more communications are not expected to come soon enough to prevent the even greater crunch of delays and cancellations that will occur when all of the FAA's radio frequencies are being used to the maximum extent possible. Complicating the situation is a dispute between the FAA and the airline industry over how to solve the problem. The airlines argue that time is running out and are pushing for a system now being used in Europe, which could be in place as soon as five years but would probably be outdated in less than 20 years. The FAA and some other aviation groups prefer a long-term digital solution that could solve the problem for generations but would take nine to 12 years to implement.

"There is a brick wall somewhere in the future," said George K. Sakai, program director of the FAA's Office of Spectrum Policy and Management. "It's hard to predict where. But it's near." Aviation insiders have known for a decade or more that a day of reckoning was coming, but a solution has been delayed by the need for research and development of new technology, the need for worldwide agreement through United Nations agencies, and the need for consensus within the U.S. aviation community and the FAA. Now it appears those delays have pushed a solution beyond the inevitable frequency crunch.

"It is impossible to overstate the seriousness of this problem," said Anthony J. Broderick, former FAA associate administrator for regulation and certification who has served as an adviser on the frequency problem. He said the air traffic delays of last summer are only "tiny hints of what is going to become an everyday affair soon."

Broderick said the air traffic system is already suffering. FAA Administrator Jane Garvey must make the frequency problem a top priority, he

said. Otherwise, the aviation system soon will not be able to handle any growth.

"By 2005, it is absolutely clear you'll have gridlock, and it may come several years earlier," Broderick said. "Any flight involving a connection will become a daylong excursion."

**Gobbling Up Frequencies**

Radio is the lifeblood of aviation control. One major airport requires dozens of frequencies. Air traffic controllers must have separate radio channels to talk to pilots while they are at the gate, moving on the ground, taking off and landing. Additionally, dozens of separate frequencies are needed for the radar controllers in the surrounding area who line up planes for landing or give them directions after takeoff. Twenty major en-route centers need dozens of channels to guide planes at higher altitudes.

Automated weather reporting stations eat up dozens of channels. Each of many navigation aids, such as an instrument-landing system, needs separate channels. Fire and rescue personnel need more channels. As the aviation system grows, so does the need for radio communication. FAA officials say it is already difficult to find new radio channels when they are needed. This is particularly true in high-altitude airspace, above 18,000 feet, where the FAA has identified areas that tend to have in-air traffic jams, or "choke points." High-level airspace is controlled by the 20 en-route air traffic control centers across the country. Inside these centers are rows of computer screens where each controller is in charge of a portion of airspace called a "sector." When one of these sectors becomes too busy for one controller to handle, the standard solution is to split the it into two sectors. But the new sector needs a new radio channel.

The FAA has been reduced to artful scrounging to find the needed channels. For instance, the Cleveland en-route air traffic center, which controls high-altitude traffic over a large part of the Great Lakes region and Ohio Valley, was forced to use a frequency previously assigned to an automated

weather observation station to deal with a serious choke point where several air routes converged. The weather station, which had not yet been turned on, will be left to gather dust for a while. When new ground facilities such as runways are built, they require new radio channels. FAA officials said some pressure on radio channels was temporarily relieved because Atlanta is moving more slowly than planned to build a new runway. Atlanta air traffic facilities will require seven new channels when the runway is eventually opened. Sakai said finding seven channels will be difficult, but until the system hits the expected brick wall, "we will find it. It's our job to find it."

### Quick Fixes

Sakai said his group has identified 23 possible short-term "fixes" that could produce more channels. Among other things, he said, the FAA could convert some navigation channels from a form of Morse code to voice transmissions. He noted that the universal emergency channel -- 121.500 -- has a "guard band" of six unused channels around it, and perhaps two or four of them could be activated. Some of the possible fixes that Sakai has identified would require changing and juggling frequencies across wide areas. A frequency can be used at two or more locations as long as they are far enough apart not to interfere with one another -- usually hundreds of miles. In high-altitude airspace, where radio traffic from the 20 en-route centers can be heard for hundreds of miles, one radio channel can be used only three times nationwide. FAA and airline officials say there is no hope of getting new frequencies, so only a new solution can create new channels, and that will take a lot of time.

"We're not going to be able to do anything [in] under five years," said Steve Zaidman, the FAA's associate administrator for research and acquisitions. Yet Zaidman acknowledged the crunch point will probably hit within five years. "We can keep going for three to five years, but after five years, it gets dicey."

Officials say there is no way to accurately measure whether the frequency crunch is already exacerbating delays, but many suspect it's having a profound effect. "We have a far greater crunch than most people are aware," said Bill Stine, director of international operations for the National Business Aviation Association. He also heads the FAA advisory committee that began looking into the

problem in 1991. At issue is a dilemma facing all forms of radio communication. The demand for radio frequencies is outstripping supply, especially as new wireless communications flood the marketplace.

### Crowded Spectrum

The aviation system owns the spectrum from 108 to 137 megahertz, which is just above the segment used by FM radio stations. The FAA administers this band within U.S. borders. The radio spectrum became crowded many years ago, but initial solutions were relatively simple as radio technology advanced. First the FAA doubled the number of number of radio channels by cutting each frequency in half. Rather than turning to, say, 118.0 MHz or 119.0 MHz, the system could be tuned to 118.0 MHz, 118.5 MHz or 119.0 MHz. Later radio technology allowed the frequencies to be split again into the current arrangement -- 118.0 MHz, 118.25 MHz, 118.5 MHz, 118.75 MHz, etc.

That, however, was as far as the FAA could go using radio equipment available at the time of that last split. A next-generation solution was needed, which would require expensive new equipment on the ground and in the air. But the FAA and the industry also face another dilemma: Should they push forward with a high-tech digital solution that would split available frequencies into enough voice and data channels to meet the needs of the foreseeable future? Or should they use technology developed in the past few years to create a shorter-term solution?

In the mid-1990s, the International Telecommunications Union, a United Nations agency that controls frequencies worldwide, seemed to settle the issue by adopting a long-term digital plan -- called VDL-3 for "VHF Data Link, Mode 3" -- as the worldwide standard. But VDL-3, which the FAA has dubbed Nexcom, would take a minimum of nine to 12 years to develop, test, certify and implement, and some aviation professionals believe it would take even longer. A new generation of radio transmitting systems and radio receivers would have to be developed and manufactured by the thousands, and thousands of ground antennas and broadcasting facilities would have to be replaced. Congress would have to debate creation of the system and come up with funding for it. And, perhaps most important, the FAA would have to test and certify the system as working perfectly every

time, because any failure could be disastrous.

"You can't make me wait 10 years when I've got a problem in three," said Russell Chew, managing director of the American Airlines systems operations center. Like others, Chew said he supported Nexcom, but it's too late to begin development now, and a near-term solution is needed. Stine of the business aviation association said he prefers Nexcom, but it may soon be too late to consider it. "Certainly logic is in our corner," he said. "However, time is running out on logic."

### **Airlines' Alternative**

Chew and other airline representatives, at a Sept. 18 meeting that included the FAA, the airlines and various aviation groups, demanded that the FAA adopt a shorter-term analog plan that would split the frequencies again. This plan is widely known as the "8.33 plan" because it would split each frequency into 12 channels, leaving 8.33 kilohertz between each channel. Using current technology, channels placed that close together on the spectrum would interfere with each other. But radio technology has now been developed to mitigate such interference. There are drawbacks to the 8.33 plan, including the fact that it would be capable of only voice transmission, not data. It also would solve the problem for less than two decades.

The advantage of the 8.33 plan is that the Europeans have already proved it will work because it is widely used there now. European countries hit the frequency crunch much earlier than the United States, and obtained a waiver from international standards to install an 8.33 system. And because any airliner that flies to Europe must be equipped with an 8.33-capable radio, hundreds of U.S. airliners are already equipped with them. In fact, all newly manufactured airliners now come equipped with an 8.33-capable radio, meaning that 20 percent or more of U.S. airliners could switch to a U.S. 8.33 system now. However, the Europeans have also said they are already running out of 8.33 frequencies and must begin implementing a new solution by 2007. Zaidman said the decision will be a monumental one. Going for a short-term solution would merely put off the day of reckoning a relatively short time longer, and would make a long-term solution such as Nexcom much more difficult to achieve technologically and politically. Zaidman said Congress is unlikely to spend billions of dollars for a new system, only to start spending

billions more for a replacement system. "With funding, you get one crack at it," Zaidman said. "Whatever we do is permanent." Zaidman said he is discussing with the communications industry the possibility of a new radio receiver that can accept broadcasts on any of the various systems. But he said the FAA cannot order a reluctant airline industry to accept its Nexcom plan because the radio frequency problem is not a safety problem. Increasing delays and cancellations may be a problem of economics and convenience, but they are not unsafe, he said. Chew of American Airlines said a hybrid solution may be possible, using the 8.33 solution in combination with digital broadcasts now managed by Arinc Inc., a private company in Annapolis that was chosen by the FAA to manage the portion of the radio spectrum that is used for radio communications not related to air traffic control, such as conversations between pilots and airline dispatchers.

### **Digital Drawbacks**

Arinc's digital broadcasts cannot be used for critical air traffic control messages, such as instructions to change altitude or turn. However, Chew said Arinc channels can be used for routine non-critical air traffic messages. He pointed out that 40 percent of air traffic communications are to tell a pilot to switch to another radio channel in the next air traffic sector. "We want to unload routine voice communications so the controller can spend time controlling traffic," Chew said. James L. Pierce, president of Arinc, stressed that the company is not in competition with the FAA. Pierce said his system can help take up some slack for controllers but that is not an ultimate solution. "Obviously, the fact that we are heading for some kind of problems in mid-decade [means] we got to get our act together and pick a course of action soon," Pierce said. "This is going to be hard since we're split between the government and industry having a separate view."

Bill Blackmer, head of the safety and technology department of the National Air Traffic Controllers Association, the controllers' union, said he put it more bluntly at the Sept. 18 meeting, which sources said was acrimonious at times. "Basically, I kind of chewed those people out," he said. "I told them if they'd just stop having these meetings we could get something done." The next meeting is scheduled for Nov. 15. Pierce said he fears the consequences of a short-term solution, but there

appears to be no choice. He said it may be possible to use the 8.33 approach in a very limited way that would not preclude an eventual long-term solution. Some in the industry have suggested temporarily using 8.33 only for high-altitude channels.

"Although I think 8.33 is inevitable, none of us really like that," Pierce said. "And it's absolutely imperative that we don't go too far down that road, because that means you really have trouble extracting yourself and ultimately going to some kind of general com [communications] system. It's a reluctant course we're on, but one that's almost been dictated because of the Europeans and the way the airlines are equipped."

© 2000 *The Washington Post Company*

**MURS FREQUENCIES**

FCC set to authorize MURS: With no fanfare, the FCC is set to authorize a new Citizens Band Radio Service to be called the Multi-Use Radio System, or MURS. The service, which came about as part of the biennial review of Part 90 of the FCC's rules, will deploy five former Private Land Mobile Radio Service VHF "color dot" channels for voice, data and imaging transmissions. The channels, 151.82, 151.88, 151.94, 154.57 and 154.60--will be authorized for up to 2 W on an unlicensed basis under Part 95 of the FCC's rules. The establishment of MURS was buried within a huge Report and Order and Further Notice of Proposed Rule Making released this summer as WT Docket 98-182 and PR Docket 92-235. The FCC said it will "revisit" the issue of allocating additional MURS channels "at a later date should additional support develop." The effective date to deploy MURS is pending completion of the FCC proceeding.--FCC

**NY / NJ / CT SHOPPING MALLS LISTENING GUIDE**

For readers of The Urban DX'er, the appearance of this column signals the official start of the holiday shopping season. This list was originally created by searching the FCC databases. Our readers contribute to the list throughout the year based on their monitoring. The next time your significant other asks you to take a trip to the mall, grab your scanner, earphone and make the best of the trip! A word of warning - much of what you may hear will be the real time surveillance of would be shoplifters. While your curiosity may get the best of you, you

are strongly advised not to try and observe or identify the undercover store detectives. While it's far fetched, you could be charged with obstruction of justice and may find yourself in their security department.

If you venture into a mall not listed and discover some new frequencies, please make sure to send us the changes. E mail us at [nydxa@hotmail.com](mailto:nydxa@hotmail.com) Here's a few tips when looking for frequencies. Most mall activity falls in the 462.000 - 465.000 Search this region in 12.5 khz steps. Also, I have seen mall operations being conducted on the FRS channels. While not intended for this purpose, the price and availability of these radios makes them very popular. While in the malls, monitor the FRS channels and you will heard dozens of shoppers talking amongst themselves! Happy Scanning!

**Edison**

Menlo Park Mall 464.4375, 464.5375

**Hackensack, NJ**

**Riverside Square Mall**

463.925 Security  
464.825 Mall Operations

**Paramus, NJ**

**Bergen Mall**

463.4375 Mall Operations

**Garden State Plaza**

463.5625	WPLF270	Mall Operations
464.850	WPLF270	Mall Operations
464.875	WPGS631	Mall Operations
154.625	KNAV412	Macy's
462.850	WNKE551	Macy's
464.100		Macy's
464.275	WNGS836	Macy's
463.4375	WNSF435	Nordstrom
463.5625	WNSF435	Nordstrom
463.8375	WNSF435	Nordstrom
464.0875	WNSF435	Nordstrom
464.2625	WNSF435	Nordstrom
464.6125	WNSF435	Nordstrom

**Paramus Park Mall**

464.475	WNLY652	Mall Operations
151.655	KWM314	Mall Operations (Suspected Old Freq - Very little activity)
464.100		Macy's
464.6125		Sears
464.6375		Sears

**Fortunoff Rt. 17**

464.775 WNLG840  
 465.000 WNLG840  
 929.0875 WNLG840 (I suspect this is some sort of data channel)

**Mall at 4, Paramus**

464.5625

**LIVINGSTON MALL**

464.975 Livingston Mall

**Lodi, NJ Home Depot**

464.500

**Toys R Us - Paramus**

467.8125

**Home Depot - National Use**

461.2125, 463.2875, 464.6375

**Rockaway, NJ**

**Rockaway Town Square Mall**

464.975 (PL 97.4)  
 465.000 Macy's

**Short Hills**

Mall @ Short Hills 464.8250

**Wayne, NJ**

**Willowbrook Mall**

154.515 Mall Operations  
 463.5625 Mall Operations  
 464.6875 Mall Operations  
 464.775 Fortunoff  
 33.16 Macy's Licensed, but no activity ever heard  
  
 151.745 Macy's  
 151.865 Macy's  
 151.895 Macy's  
 464.100 Macy's (Most Active of the above)  
 464.6125 Sears  
 464.6375 Sears (Not much activity - suspect other freq's in use)

**Wayne Towne Center**

464.925 Wayne Towne Center

**Woodbridge Center Mall**

464.525 Woodbridge Center Mall

**New Jersey Malls Misc.**

Bloomindale's 461.675

Bradlees 464.7125  
 Bridgewater Commons 464.425  
 Burlington Center Mall 464.925  
 Cumberland Mall 463.625  
 Daffy's Inc 464.550  
 East Brunswick Mall 467.750  
 Englishtown Flea Market 152.870, 153.035  
 Fashion Plaza Mall 464.475  
 Ferren Mall - N Brunswick 464.775  
 Forrestal Village-W Windsor 464.3750  
 Hackettstown Mall 463.625  
 Hamilton Mall, Mays Landing 464.575  
 Home Depot-Lodi 464.500  
 K-Mart 457.5375, 457.5875, 467.850  
  
 Mall@Short Hill 464.825  
 Market Fair-Princeton 464.7750  
 Monmouth County Mall 151.805 (PL 151.4)  
 Ocean Mall-Atlantic City 461.900  
 Ocean County Mall 464.9125  
 Quackerbridge Mall 464.425, 464.525 (PL 192.8)  
  
 Sears Security 464.525, 464.550  
 Seaview Square-Ocean Twp 154.515, 464.925  
 Service Merchandise 461.3875, 462.6625 (Nationally Licensed)  
  
 Shore Mall 467.850  
 Us 1 Flea Market 464.3750 (New Brunswick)

**Palisades Center Mall**

Security 452.450, 452.500, 452.950, 469.575 (possibly 452.100 also)  
  
 Maintenance 467.850, 468.7625  
 Target Stores 151.625, 151.955  
 Old Navy 151.955  
 JC Penny 463.400, 464.550, 466.2625, 466.9625, 467.925,  
  
 Rain Forest Café 463.400, 464.975, 466.1375  
  
 Sports Authority 151.715, 154.57, 156.600  
  
 Clarkstown PD 156.195 (Services Mall)

**New York Malls Misc.**

BJ's Wholesale Club (East Farmingdale) 461.8875  
 BJ's Wholesale Club (East Farmingdale) 462.0375  
 Broadway Mall (Hicksville) 464.975  
 Busy Bee Mall - Massapequa, NY 461.3625  
 Centre Lock Shop Inc. (Rockville Centre) 43.00  
 Consumers Kitchen & Bath

<b>(trunked system)</b>	935.1875, 936.650, 937.200,
	937.2125, 937.225, 937.6375,
	937.650
	937.6625, 937.675, 938.7375
Cadillac Fairview Galleria, White Plains	464.875,
	464.925
Commack Arena Market	151.655
Cross Country Center - My Vernon	154.600,
	154.570
Gateway Plaza	464.8250
Genovese Drug Stores Inc.	461.8875
Genovese Drug Stores Inc.	462.1375
Great Neck Party Inc	463.225
Green Acres Mall (Valley Stream)	463.625
J.C. Penney Company Inc.	461.2125
	461.6125
	461.6625
	461.9375
	466.2625
466.8125, 466.9625, 464.375, 464.925	
K-Mart Corporation	457.5375
	457.5875
	467.850
Long Is Mdse Mall - Sayville	154.600
Macy's Northeast Inc.	464.100
	464.150
	464.175
	464.275
	464.625
Manhattan Mall, NYC	469.100
Marders Landscape Store(Bridgehampton)	464.775
Nanuet Mall	464.925
Newburgh Mall	154.57
North Shore Atrium	154.570
Pathmark Supermarkets	154.570
	MHz.
	Blue dot
	154.600
MHz. (Green dot)	
QP's Market - Long Is City	154.600
Queens Center Mall - Elmhurst	464.525
Roosevelt Field Mall	462.725
	464.375
	464.925
Sears, Roebuck & Company	463.7625
Smithaven Mall (Lake Grove)	151.600
	154.745
South Hills Mall -Poughkeepsie	464.525
South Shore Mall - Bay Shore	151.925
South Street Seaport - Security	461.7125
Sterns	154.570
Sunrise Mall (Massapequa)	151.865

	151.925
	461.475
	464.465
	464.800
Swezey's Department Store (Patchogue)	151.685
Toys 'R' Us	457.5375
	457.5875
	468.7625
	469.6625

**MACY'S THANKSGIVING PARADE**

Before we all realize it Santa will be passing Macy's and the start of the 2000 Holiday Season will have officially started. As in past years, the Macy's Thanksgiving Day Parade has provided some interesting listening - especially the night before when the giant balloons are being inflated in the streets adjacent to the American Museum of Natural History at 77th St and Central Park West. I suggest you start listening midweek, say Wednesday morning. The balloons and floats are stored in a large warehouse in Hoboken, NJ. In past years the preparation and transportation to New York City was interesting. If the schedule remains the same the tunnel from NJ to NY will be closed about 11:00 p.m. Thanksgiving eve and the procession will proceed from Hoboken to Manhattan for several hours. In addition to the frequencies below, Port Authority and NYPD frequencies may be active. Please note that these frequencies have been active in past years. There is always the possibility of change, so don't rule out search mode.

Balloon inflation takes place the night before the parade on 77th and 81<sup>st</sup> Street, between Central Park West and Columbus Ave. Work begins at about 6:00 p.m. and public viewing remains open until 11:00 p.m. During the parade, grandstand viewing is not available to the general public. Many spectators find it worthwhile to bring their own folding chairs for more comfortable viewing. The best viewing area is between 61st and 74th Street on Central Park West, on the West side of the street.

**Macy's Parade Control**

464.175, 464.275, and 464,625

**NBC TV**

450.3875  
 450.4125 (Chopper 4)  
 450.750  
 450.8875 (Chopper 4)  
 455.4125 (Chopper 4)

455.8875 (Chopper 4)

161.670

**INSIDE NASCAR**

<http://www.rayvaughan.com/nascar.htm>

Ever wonder how NASCAR covers all that fast moving action? Check out this web page. Lots of photos and technical descriptions.

**ARE DX TESTS A THING OF THE PAST?**

Phil Bytheway who publishes the AM-DX News Flash passed along these comments....*"Both CPC Chairpersons are reporting that stations do not seem to be interested in conducting tests (er, letting us know when they conduct tests)... thus the lack of tests this season. It's a shame, this section was quite busy at this time of the year in the past..."* It's a shame since the AM broadcast band has been quite good this early in the season. Stay tuned!

***The Urban DX'er would like to thank all those who contributed to this months issue!***

Charlie - N2NOV, "R", Joe Walc - K2JAW

---