

### Restructuring of Ham Radio is here

The FCC has made good on its promise and has released the long awaited Report and Order on restructuring the face of ham radio in the United States. It's a document that is filled with surprises as we hear from Newline's Paul Courson, WA3VJB in the nations capital:

Traditionalists may fret that the code test for the Extra Class license will be only 5 words-per-minute, and that the Novice, General, and Advanced Class licenses will NO LONGER be available to newcomers. The NO CODE license will continue and be called the Technician Class, allowing operation only above 30 megahertz. The FCC believes the changes, announced in the final hours before the agency broke for the New Year's holiday, will streamline and revitalize the structure of the Amateur service. They take effect April 15th.

The Commission's executive summary highlights the changes like this:

- Only three types of license from the present six.
- Only a single, 5 wpm code test for the new General and Extra Class license.
- Only a three-part range of written tests for licensing, instead of five possible elements under the current system.

Newly licensed hams will have available to them a Technician, a General, and an Extra Class license. Most existing licensees retain the option of renewing and keeping the name and operating authority of a present-day class, such as Advanced, and Novice. The Tech-Plus license will renew as Technician with existing privileges on HF. Incoming Technician licensees face a 35 question test element, and a candidate for General will have to pass that test PLUS an additional 35 questions, and the 5 wpm code test. The Extra Class license will require a written test of 50 questions plus the two sets of 35 just mentioned, along with the 5 wpm code test.

It's been ten years since the last major overhaul of regulations governing the Amateur Radio Service. The FCC said the latest restructuring takes technological change into account, as well as operating trends which have minimized the prominence of Morse code. And while the Novice class license won't be issued anymore, except for renewals, the Commission said the comments received did NOT provide a clear consensus on what to do with the protected band segments on HF, now set aside for Novice CW use. Instead, the agency said it will wait and see whether rising technology could qualify for those protected sub-bands, license class notwithstanding.

The Commission deliberated the code controversy as presented among the 22 hundred comments filed in response to the Notice of Proposed Rulemaking after it came out more than a year ago. The FCC concluded that the more stringent CW requirements did not serve any regulatory purpose, nor did the faster speeds prove someone could advance the art of radio as defined as a purpose for the Amateur Service. The agency relied on the old international treaty justification to explain why it must preserve a code requirement. The 5 wpm test, the Commission said, meets that international standard for operations below 30 megahertz. Moreover, the FCC said it would NOT "sunset" the remaining 5 wpm test should future treaties abandon the requirement. The Commission suggested it'll deal with that issue when and if the time comes.

Other changes in the restructuring include phasing out separate station licenses for RACES, the Radio Amateur Civil Emergency Service, dating back to 1952. It was established as a temporary communications system for civil defense. The licenses won't be renewed, but the FCC anticipates emergency communications will continue as they have been doing under club, military and individual station calls. Among changes for the Volunteer Exam Program, existing Advanced class licensees will be able to prepare and administer tests for prospective General Class operators. The FCC is also giving more power to Volunteer Examiners to design and carry out the testing of prospective hams.

What about the impact of restructuring on the ham in the street? What will it mean to him or her. For an analysis, we go to CQ Magazine editor Rich Moseson, W2VU: The immediate impact of the FCC's restructuring decision, in my view, is that our hard working Volunteer Examiners had better get ready for a crush of applicants before April 15th, especially those with Tech-Plus and Advanced Class licenses, who want to pass written Elements 3B or 4B, respectively, and qualify for instant upgrades to General or Extra after the new system kicks in. This is because the FCC will recognize credit for all exam elements already passed, and waiting until after Tax Day to take the upgrade exam means Techs and Advanced hams will have to be retested on material they've already passed in Elements 3A and 4A. Getting credit for those written "B" elements ahead of time means they'll have everything they need to qualify for an upgrade after April 15th.

Here's an important note: there will be no automatic upgrades. Even if you already have all the element credit you need to upgrade, you will still need to come to a VE session, show the examiners proof of all that element credit

and fill out a Form 605. And yes, you'll have to pay the \$ 6.65. Why the extra paperwork? It's simple -- the FCC won't take on any new responsibility that's going to cost it money or add to its workload. By transferring the paperwork responsibility to the licensee and the VEs, the applications are processed through the electronic system already in place and cost the Commission zero in terms of dollars or hours.

Overall, this decision should reverse the trends we've seen in recent years of declining numbers in the middle license classes. Removing the barriers of 13 and 20 word per minute code exams should prompt many hams to dust off their study guides, although it might be best to buy one that's up-to-date. Our advice in the February issue of CQ: No matter what license class you have, besides Extra, get studying, and have as much element credit as you can in hand before April 15th.

This is only the beginning of the restructuring story. Obviously, not everyone will be happy and requests for reconsideration on several parts are inevitable. The complete text of this Report and Order is available for downloading at our website. That's at: [www.arnewsline.org](http://www.arnewsline.org)  
**(Feedline Source: Amateur Radio Newslite)**

## DX

In DX, the Amateur Radio society of New Caledonia, has announced an Islands on the Air DXpedition that may activate a new DXCC entity. The location is the Chesterfield Islands with a team headed by Eric Esposito, FK8GM. Look for the part one of the operation to commence on March 15th. Pending action on the society's application to the IARU for membership, the second phase may turn out to be the initial operation from a new DXCC country. This is slated for March 23rd. This DXpedition is sponsored by Yaesu and supported by the Radio Society of Great Britain's Islands on the Air management team. (OPDX)

And a lot higher in frequency, the newly formed Roadrunners Microwave Group in Texas has announced plans for its first cumulative contest for all bands above 220 MHz. Called the Year 2000 event, it begins on January 1st and ends next December 31st. The object of the contest is to promote greater day to day use of the higher amateur frequencies. For complete rules, scoring sheets, multiplier sheet and the like, send a self addressed stamped envelope to the: Roadrunners Microwave Group, P.O. Box 93175, Austin, Texas 78709.

**(Feedline Source: Ham Radio Online)**

## More Closed Than Open

Southern California has far more closed and private repeaters on the 70 centimeter band than it has open ones. This according to Worldradio Magazine editor Rick McCusker, WF6O. McCusker got interested in the open verses closed Southern California repeater situation while on a business trip last October's ARRL Southwestern Division Convention on board the Queen Mary Ocean Liner in Long Beach. He notes that the ARRL Repeater Directory lists 482 repeaters operating in an area that includes Los Angeles, Orange, Kern, Imperial, San Bernardino, San Diego and Ventura counties combined. Of that 482 only 39 are listed as open and available to the general ham radio populace. The remaining 443 machines are off limits to all but those chosen by the system license holder.

WF6O also reports that he's heard rumors that some of these closed and private repeaters charge between \$100 to \$200 a year. His editorial appears to question the legality of charging to access a repeater, asking the question of what constitutes a reasonable access fee. According to McCusker, he had the opportunity to bring this situation to the attention of the FCC's Riley Hollingsworth, K4ZDH, at the recent Northern California Pacificon ham radio convention. WF6O says he gave Hollingsworth a peak at Southern California repeater listings in the ARRL directory. Hollingsworth's only comment to McCusker quote "This isn't good."

**(Feedline Source: Worldradio)**

## Feds Raid Electronic Hobby Vendors

2600 has learned that several small electronic hobbyist vendors were recently raided by federal agents brandishing semiautomatic weapons. News of these raids has been kept out of the media and many of those involved fear retribution if they openly discuss the case. Until now, these companies had operated for years selling harmless educational electronic kits (like wireless microphones) to students, hobbyists, ham radio operators, and hackers. Now their inventories are being seized at gunpoint--and their owners could be facing bankruptcy and prison time.

The U.S. Dept. of Justice is apparently re-interpreting federal [wiretapping](#) and [smuggling laws](#) to include small hobby radio transmitters. Even **possessing** so-called "Mr. Microphone" type toys can now put hobbyists at risk of

looking down the barrel of a federal agent's loaded gun, a felony conviction, federal prison time, loss of property, and legal fees into the tens of thousands of dollars.

[Ramsey Electronics](#) and [Super Circuits](#) are just two of the companies recently raided at gunpoint. Both have good and longstanding reputations for selling inexpensive, quality educational kits and components to electronics hobbyists for many years through ads in electronic hobby magazines and their websites.

A high-ranking Justice Dept. official told one of the business owners the orders for these raids are politically motivated and originated from a very high level in the Clinton administration as a result of the Linda Tripp wiretapping case. "They just need convictions," the official said.

Earlier this year the Justice Dept. indicted [Bill Cheek](#), the well-known and loved author of books on radio scanner modifications and Monitoring Times column writer. Bill was selling very simple "data-slicer" circuits (made from parts available at any Radio Shack) that could be used with a PC and a scanner to monitor radio data transmissions--including unencrypted police mobile data terminal (MDT) transmissions. Even after Bill had been diagnosed with terminal cancer, the Federal government refused to back off, even issuing a summons to court on the same day he was to begin chemotherapy.

In 1995 2600's Bernie S was locked up in five different maximum-security prisons over 14 months by the [Secret Service](#) for possessing his laptop computer, his software, and ordinary electronic parts available at Radio Shack. He had been distributing parts, software, books, and pamphlets about cellular and coin telephones. The Justice Department's final investigation report stated "There were no victims in the offense."

This is a clear pattern of harassment and abuse of power by our Federal government against people teaching others about electronic communications. It appears our government doesn't want people to know this information. 2600 strongly feels this knowledge is important for people to have, and will continue spreading it at every opportunity. Write and call your legislators to complain about this injustice. You could be next!

**(Feedline Source: Ham Radio Online and 2600.COM)**

## FEDERAL PRODUCT RESTRICTION INFORMATION PAGE

A recent US Federal Government action has prohibited us from selling a number of products to you because they feel you are using it for illegal use. For over 25 years, Ramsey Electronics, Inc. has been selling wireless hobby and educational kits for your fun, pleasure, and education in kit building.

Investigators believe world class "kidnappers and organized crime" are using things like our \$5.95 wireless microphone kits for their "surreptitious" international espionage use! When in reality, they've been used for years and years as a valuable educational kit used in things like model trains, amateur radio, school projects, Scout projects, baby monitoring and more.

Further, our FM-5 kit has become the most popular "starter" kit to learn all about Surface Mount Technology. Schools use them around the Country for their students first hands-on project with SMT!

Yes, we've been advised that some of our award winning low cost hobby kits, the same ones you see below, and that were FORMERLY ordered by thousands of scouts, schools and hobbyists for all these years, might be in violation of [US Code Title 18, Section 2512](#) because they believe their "primary use" was designed for such "surreptitious" use, and not for hobby, and educational use....*GO FIGURE!*

FM-1	FM Transmitter Kit	MTV-A9WT	Synthesized Transmitter
FM-2	FM Transmitter Kit	ATV-74	Downconverter
FM-4	Hi Power FM Transmitter Kit	ATV-74WT	Downconverter
FM-5	Micro FM Transmitter Kit	ATV-79	Downconverter
FM-6	Crystal Controlled FM Transmitter	ATV-79WT	Downconverter
PB-1	Telephone Transmitter	CLK-3000WT	Disguised Clock w/audio
ME-2000	MicroEye Camera/Transmitter	SMK-3000WT	Disguised Smoke w/audio
MTV-7A	Synthesized Transmitter	SCN-1	800 MHz Converter Kit
MTV-7AWT	Synthesized Transmitter	SCN-1WT	800 MHz Converter Wired
MTV-7A4	Synthesized Transmitter	C-3000	Video & Audio Cube
MTV-7A4WT	Synthesized Transmitter	C-3001	Hi Power Video & Audio Cube
MTV-7A9	Synthesized Transmitter		

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**(Feedline Source: Ham Radio Online)**

## KONTEST KORNER

Some of the upcoming contests in January that may be of interest to club members.

January 22 1900Z - January 24 0400Z ARRL VHF Contest

January 28 2200Z - January 30 1600Z CQ 160CW \*

\* K4HA will be operating with W2XL at VE9DX on Campabello Island in New Brunswick, Canada. For more contest information see <http://www.contesting.com/Links/calendars.htm> TNX ES GUD LUK in the contest.

**(Feedline Source: Bob Lukaszewski, K4HA)**

## First Down Markers on TV - How Do They do That?

Sportvision's most popular product, 1st & Ten, was introduced last season by ESPN on the Sunday Night Football broadcasts. In this upcoming season, 1st & Ten will be seen on a large number of NFL broadcasts and numerous college games. 1st & Ten enables television football fans to see the first down line as easily and clearly as they see the goal line or any 5- or 10-yard line. It does so by painting a virtual first down yard line in video, and this line appears to be on the field under foot, just like the actual yard lines. The only visible difference is the first down line is yellow (or any color the producer chooses).

### How it Works

The central computer in the 1st & Ten system examines every frame of video in real time (i.e. 30 times per second) and determines which pixels to change to yellow. These are all the points in the image where an actual painted-on-the-field first down line would be visible, such as grass along the line that is not obscured by a player or referee. It determines which pixels to change based on very precise information about the camera's view, a 3D model of the field, which camera is on air, and a palette of colors for the field and another palette for players. Pixels along the line with colors from the field palette are changed to yellow unless that color is also in the palette for players. Player colors and other colors not on the field palette are left unchanged. This makes the virtual line visible where the field is visible and hidden where the field is obscured, just as a real line would be.

Each camera in the 1st & Ten system, is instrumented with very precise encoders for pan, tilt, zoom, focus and extender (1x or 2x doubler). A computer at each camera reads the encoders and transmits these readings to the Sportvision production truck 30 times per second. Another computer in the truck gathers readings from all the cameras and transmits a consolidated data stream to the central computer. These readings and the 3D field model go into a geometrical calculation that determines which pixels in the video frame would be in an unobstructed view of a real first down line.

Yet another computer determines, also 30 times per second, which camera is tallied (on air). It does this by comparing the video streams from each of the 1st & Ten cameras to the program video. This computer allows for graphics, such as the constant time and score box, that are not in the camera view but are introduced into the program video. The result, camera 1, 2, 3 or none of them, is transmitted to the same computer that is consolidating data from the three cameras, and it adds tally to the data stream going to the central computer.

The final computer has only one simple but crucial task, draw the yellow line in video 60 times per second (every field, not just frame) and send that to a linear keyer to superimpose the yellow onto the program video.

There are eight computers (four SGIs and one PC and three special purpose data acquisition computers), three sets of special encoders and abundant wiring dedicated to generating the virtual first down line in video format. The data collection and computation requires time, and the virtual first down line must be superimposed on the program video at exactly the correct field every 60th of a second, requiring substantial video and audio processing.

Program feed without the 1st & Ten line comes from the primary production truck into Sportvision's 1st & Ten equipment. Digital feeds from each of the three game cameras also come from main production to 1st & Ten. Program video then goes (undelayed) to the central computer and to a series of frame delays. The camera and program feeds are combined by a quad split unit into a single video feed that goes (undelayed) to the tally computer, which determines which of the three cameras (if any) is on air, as described above. The audio feed goes to an audio delay to be synchronized with the delayed video.

To synchronize the computed virtual first down line with the program feed, the 1st & Ten system delays program video and audio a fixed number of frames. The delayed program video and the generated virtual first down line are both input to a linear keyer that combines the two and outputs the video that will go to air. **(Feedline Source: Sportvision.com)**

## Sale on Leftover Children's Books at Amazon...

1. You Are Different and That's Bad
2. The Boy Who Died From Eating All His Vegetables
3. Dad's New Wife Robert
4. Fun four-letter Words to Know and Share
5. Hammers, Screwdrivers, Wires and Scissors: An I-Can-Do-It Book
6. The Kids' Guide to Hitchhiking
7. Kathy Was So Bad Her Mom Stopped Loving Her
8. Curious George and the High-Voltage Fence
9. All Cats Go to Hell
10. The Little Sissy Who Snitched
11. Some Kittens Can Fly.
12. That's it, I'm Putting You Up for Adoption
13. Grandpa Gets a Casket
14. The Magic World Inside the Abandoned Refrigerator
15. Garfield Gets Feline Leukemia
16. The Pop-Up Book of Human Anatomy
17. Strangers Have the Best Candy
18. Whining, Kicking and Crying to Get Your Way
19. Mommy and Daddy are Getting Divorced and it IS your fault.
20. How to Meet Secret Friends on the Internet.

## CARC January Program for January 27, 2000

January's program will be on the Piedmont Coastal Repeater Network and will be hosted by Danny Hampton, K4ITL. If you're interested in repeaters, this is a "must attend" program. Danny will talk about the history of PCRN, where all the machines are, some of the things that he does to make them work and perform so well (I'm sure he won't tell all of his secrets!).

## The definitive Top 10 gadget list of all time

By Gary Krakow MSNBC

Here it is. Just what everyone needs. Yet another Y2K, end-of-the-millennium list. But, I feel I'm entitled to do one. Especially since I've spent a good amount of time whittling the list of every gadget ever made down to a somewhat manageable Top 10. Some of them make it possible for you to be able to read this column at all.

**The Wheel.** Along with fire, and tools, one of the oldest, most important gadgets from pre-historic times. The invention of the wheel allowed mankind to transport large loads over great distances. Think of the modern-day Ford Excursion as a direct descendant. It was also an important part of the wristwatch, my favorite Wheel-O toy, plus numerous bicycles, motorcycles and automobiles I've owned. Don't forget "Wheel of Fortune" and Vanna White. Oh yes, it was also an integral part of the pulley, another important gadget of the ages. (I guess you could say the wheel caused a "revolution." Ed.)

**Portable Fire.** Everyone knows about fire. But, portable fire that was a great gadget! Wooden matches, paper matches, kitchen matches and safety kitchen matches were all advances of the state of the art in fire. And who can forget the contribution of cigarette/cigar lighters? Portable containers holding flammable liquids that could produce fire, almost anywhere, when a manual spark is applied. Amazing. By the way, that spark is usually made by a flint being struck by a wheel. See "The Wheel" above.

**The Telegraph.** Speaking of sparks, the telegraph really started out as a way to harness the communications properties of the spark. Sparks and telegraphs were really the first digital method of sending and receiving information. On or off. Ones or zeros. Not only did the telegraph ignite the development of theretofore uncharted areas on this planet, but it also ignited the telecommunications industry, telephones, radio, TV and the Internet as we now know, use and love it. That's a huge accomplishment for such a mechanically simple product. Electricity goes in

at one end and goes out the other when the black telegraph key is pressed, and the circuit completed. The world's first mass-media, digital communications medium. Can't forget a special thanks to Samuel Morse for his code.

**The Telephone.** Alexander Graham Bell, and his children, the Baby Bells. Think of it. People knew they get information by dots and dashes, but it was Alex who made the human voice the communications medium of the 20th century. Somehow, some way, most every home and business depends on using a telephone. Where would we be without it? If it hadn't been invented no one would have made the answering machine, or the RJ-11 jack. And then, how would modems attach to the Internet?

**The Vacuum Tube.** Actually, this distant cousin of the light (which just missed my Top 10 list) bulb and forerunner of the transistor made it possible for the invention of many cool gadgets throughout the 20th century. Radios, televisions, amplifiers, record players and even computers all had circuitry based on vacuum tubes. Ever see pictures of the first Univac computer? Those gadgets took up a whole room. As for vacuum tubes, try to find a supply these days. You can get them, but it's not as easy as it used to be. Vacuum tube-designed circuits live on. Just ask an audiophile. "Tube" equipment still sells for a premium. Once you listen to a properly designed vacuum-tube circuit, you'll understand why.

**The Transistor.** Remember when transistor radios were the coolest gadgets around? We must give thanks to Bell Labs for more than inventing Unix. The transistor, really a solid-state vacuum tube, was probably the most important breakthrough of the 20th Century. It single-handedly shrank the size of everything that worked on electricity and is the primary reason for everything small and portable that we cherish today. Next time you hear how many millions of transistors some company has squeezed into their super-duper computer chip, just remember what that processor would look like if they had to use 1958-era transistors, or (heaven forbid) vacuum tubes (see above)! Bell Labs, now Lucent Technologies, invented the transistor back in the '50s. They were pretty big. Now there are thousands upon thousands of them crammed into one computer processor.

**Radio.** Big ones. Little ones. Analog ones, and soon-to-be digital ones. AM/FM, long wave, shortwave. Ham, and mobile, portable, one-way, two-way. You name 'em, they're an integral, daily part of our lives. The "family gathering 'round the warm glow of the vacuum-tube radio" in the living room of the mid-20th century has turned into millions of people speaking into their cellular phones (actually private, two-way radio devices) at the beginning of the 21st. On the other hand, the same medium that brought us news of the end of World War II and Orson Welles' "War of the Worlds" now brings us all-news, all-talk, golden oldies and Howard Stern.

**Television.** Then came the boob tube. It was only a matter of time before radio with pictures would overtake radio alone as the No. 1 communications medium. For me, and my generation, we've never known a world without it. These days, TV as we know it is changing. Like radio, the shift from analog to digital is under way. Slowly. HDTV is still very expensive. It's difficult to ask people to stop using perfectly good TVs and spend a few thousand dollars for another one. There are also some very bad technical teething problems. Such as no place to construct broadcast towers in New York City and other big cities. At its best, television informs, educates and entertains us. At its worst, it provides us with "My Mother the Car" and The "Howard Stern Show."

**Computers.** Thank IBM and Apple and Amiga (and too many more to mention all of them) for what is happening today. I gotta believe the scientists who invented the first computers never, ever imagined what the world would look like as we enter the year 2000. Forget the possibility of them predicting the Internet. Or the convergence of every one of the gadgets mentioned above (except for fire). Computers dominate our lives. Think of something we use today that isn't connected in some manner to computer circuitry. There aren't many (exception below). I can't wait to see where computers will take us in the next 100 years. (Hint: Think portable, wireless and beyond.)

**Electric Hand Dryers.** Without a doubt one of man's greatest achievements! You're in a public bathroom. You wash your hands. As you look around for a paper towel or two and you spot the giant white box on the wall. It sits waiting, silently, to do its intended job. You follow the instructions, press the big chrome button, place your hands underneath the air outlet and rub them gently. Within seconds, as if by magic, the water disappears and your hands are dry. By the way, where does all that moisture go when it's finished? No messy paper to dispose of. No refuse containers to empty. Plus, your hands are dry. Fancier models let you change the direction of the hot-air jet to dry your face, or other body parts. The latest models know when your hands are ready for drying. This is, in my opinion, the ultimate gadget of all time. You may disagree, but for me, this one box harnesses electricity, wind, and heat to handle situations of excess moisture. Happy New Millennium.

**(Feedline Source: MSNBC.COM)**

### Feedline

Feedline is a member-supported publication of the Cary Amateur Radio Club and is published monthly. Deadline for submissions is the second Thursday of the month. Editor: Tom Klimala, KM4LB, send snail mail to 1545 Seabrook Avenue Cary, North Carolina 27511 klimala@mindspring.com