The Minuteman

Volume 26 Issue 4

March 1997

President's Corner

Thanks to the efforts of both Dave (KT1X) and Lynne (KA1NLD), working with Walter (N1HBR), our membership has increased to over 300. Their work produced reminders to former members that were effective....a lot of people responded, renewing their memberships within a few weeks of receiving those reminders. It just proves that the MMRA is still viewed as the kind of organization we've been bragging about.

The work of the technical crew has been important to the membership drive; all the work done to improve and stabilize the network over the last year has borne the fruit of appreciation by users of the system. All of us appreciate the fact that members have shown that everything that has been done is important to them.

Dave and Lynne plan to work on ways to acquaint new hams with the MMRA. You can help here....if you know a recently licensed amateur, tell him or her about the MMRA. Show the new hams a copy of the newsletter and get them to attend a meeting.

Take a look at the license restructuring proposals described in

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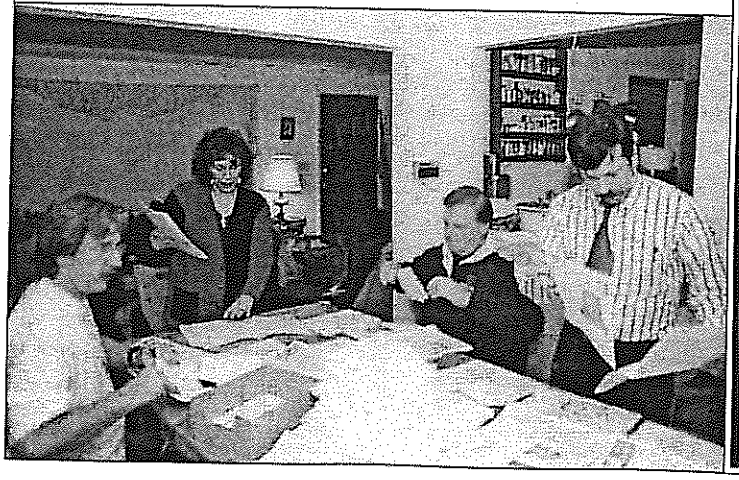
In a previous issue, I mentioned the group that helps get out the newsletter....while they are not all pictured here, I was glad that Ed (N1NOM), took this picture. He actually took two; the other one had everyone in it, but I could not use it in good conscience...it was intended as a greeting to me in appreciation of the fact that I could not attend the folding party, with all the participants making some sort of gesture...

Shown below (left to right) are Bill (N1QPR), Lorraine (N1XXZ), Fred (K1KMN) and Clark (N1NVK). Dave (KT1X) and Lynne (KA1NLD) have hosted this and numerous other folding parties, providing a great atmosphere and good coffee. Others who regularly come are Chris (N1NVL), Walter (N1HBR) and Shelley (N1VJE). N1NOM Photo



Stepping on a Fox

By Steve D'Amelio, N1KML

Up until Saturday March 8th I had been involved in a total of one, count em', 1, fox hunt in my amateur radio existence. That hunt was back in 1991 and was sponsored by the folks at Worcester Polytech. I had a fun time at that one, and yes, even eventually found the fox.

Lately I had been experimenting with APRS and kept noticing these bulletins for MMRA fox hunts on Saturday mornings. I started tuning in on a couple of the hunts and soon began to get more interested. I made a note to get a 2m beam antenna together and throw my hat in the ring for the next hunt. By Thursday the 5th I had compiled a small pile of junk which included a handful of topographical maps, a dual band HT, a 4 element beam antenna and a compass.

The March 8th foxhunt was to be held on the Stoneham repeater. Living near the RI border I wasn't too familiar with that area, but lack of knowledge never stopped me from doing something, and this would be no exception. So when the day of the hunt rolled around, I picked my spot atop a hill I found on my topos. This hill was off of rt. 117 just East of rt. 495. Near Stoneham you might ask? No, my maps didn't reach Stoneham, I was going to be real clever....***not***. Needless to say, at 10AM sharp, the fox began transmitting right on schedule, and also needless to say, I didn't hear a thing on the input to the repeater, I had all I could do to hear the repeater. My strategy, or lack thereof, failed

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MARCH MEMBERSHIP MEETING

WEDNESDAY, MAR 19, 1997 - 1930 HRS

CAMPION CENTER, WESTON MA

PROGRAM:

New RF Regulations
Dave Croll, KT1X

HT Clinic

Raffle

Other Stuff

Repeater Report - By Chris Conti, N1NVL

Generally, everything is working well right now; all the core systems are in good shape. There are a still a few problems here and there on the newer machines, and a lot is going on behind the scenes and site improvements are being planned for the warmer weather. I am looking forward to getting back into the swing of things; it's been a busy winter for many of us on the tech crew, and there is already talk of summer projects.

53.810 W1BRI/R Marlborough, MA

What's up with all the call changes? Yet another trustee got one of those Vanity Calls... so now the KA1YQB 6 Meter repeater has become W1BRI. This was Bryan's Grandfather's call, so he took a stab at getting it...and lo and behold he got it! Bryan has worked out the use of the Autopatch over the link, so that now when the link is up on 6 you can use the 440 Autopatch code and make calls. User link codes need to be wired into the controller, (it's a hardwire job) and should be in by the next meeting.

146.715 N1NVL/R Stoneham, MA

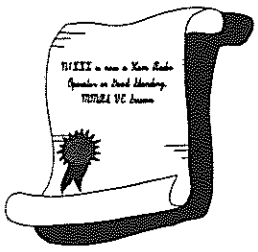
What time is it? It's the American Time Zone "Stoneham Standard Time." Yes, I know the clock is going nuts. Walter N1HBR got a replacement Real-Time-Clock module and gave it to me. I haven't had the chance to install it yet, but will get to it soon.

145.790 N1QPR/APRS Marlborough,. MA

Since we already have a 2 meter antenna on the tank used for the 145.03 Netrom Packet Node, we decided to try making a combiner out of an old set of cans. This would allow both the APRS machine and the packet repeater to share the same antenna, just as is done in many commercial sites.

It worked just fine, except for the fact that the homemade duplexers would not remain stable over the temperature ranges in the Slygo shelter. The first solution was the use of a heater in the shelter to give temporary relief. It did the trick, but the electric bill shocked Walter (N1HBR) and Ian (AF1R). The Slygo shelter is not very airtight, and the heater was essentially trying to heat the whole hilltop. Bill N1QPR and Clark N1NVK built a Styrofoam box with duct tape and a 40W bulb on a thermostat which seems to do the trick, and costs a lot less money.

Using the antenna on the tank has probably made this APRS digipeater the widest area machine in the region; not too many of them can boast an antenna at this height.



MMRA VE Sessions

3rd Saturday of Each Month
Marlboro Public Library, 9AM
Contact: Bill Wade, K1IJZ
617-891-9079 Evenings 6 to 10 PM,
Weekends 8 AM to 10 PM.
Accredited - ARRL VE Program

MMRA VE Session Schedule Change

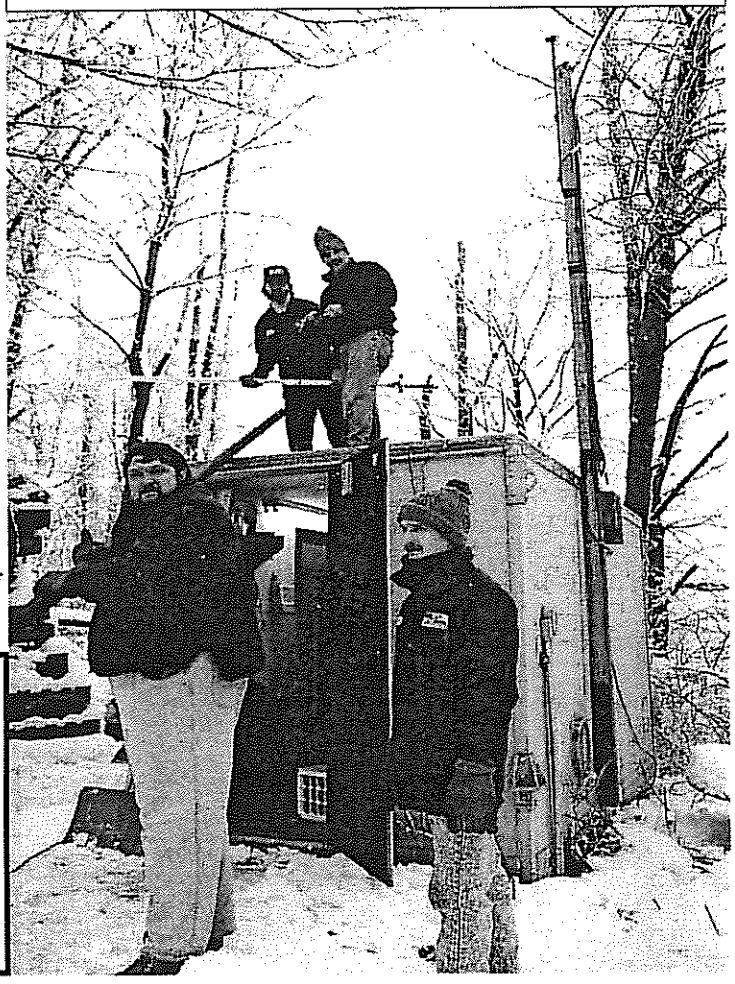
MMRA hosts regular VE sessions at the Marlborough Public Library.The schedule for the first half of 1997 is as follows:

March 15
April 19
May 17
June 21

Exams are held at 9:00 AM. Please contact Bill Wade, K1IJZ, at 617-891-9079 for reservations and the latest exam session information.

This is an ARRL/VEC coordinated program.

BELOW: BRYAN AND HENRY ON THE ROOF OF THE '61 SHELTER ALONG WITH DAVE AND N1SZH ON THE GROUND PROVE THE OLD ADAGE THAT ANTENNA MUST BE INSTALLED IN LOUSY WEATHER TO WORK PROPERLY. NOTE THE SNOW..... N1NOM PHOTO



The President's Corner

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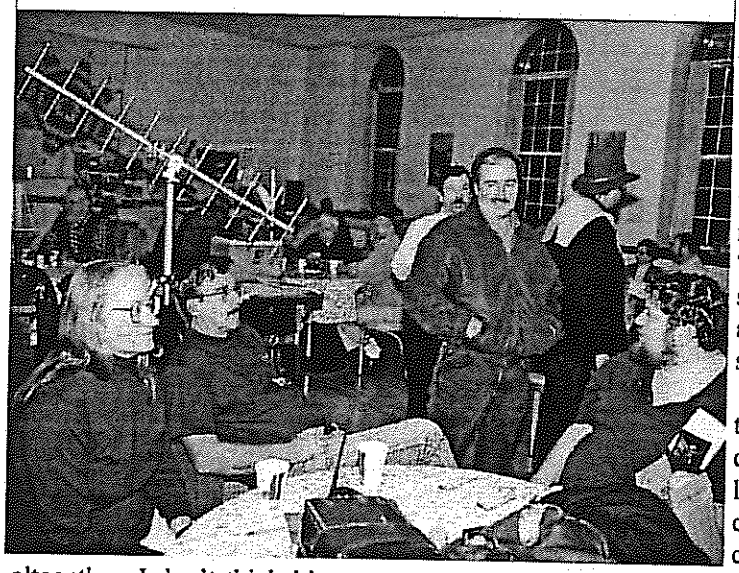
the "Items of Interest" section. They look kind of interesting; I think the idea of eliminating the novice license makes some sense, and allocating some useful phone bands to the the low end licensees would be a smart move. It would address the level of inactivity cited at the novice level by giving people more to do.

I'd be curious to know what people think about the code requirement changes....I like the general class requirement at 10 WPM - that's what it is in some other parts of the world. I could never really understand the reason for a 13 WPM rate.

The proposal to make the code test more stringent, returning to the straight copy requirement and including a sending test will make the CW enthusiasts happy, but I'm not certain that it's really necessary. While I'm not ready to accept elimination of CW altogether, I don't think it's necessary to make the tests more difficult. Doing so would add additional work for the VE's who have to check for one minute of clean copy....I think that would be more time consuming than checking answers to questions.

Below: If you don't believe we have fun at our meetings, look at the group shown. In January we had a pretty full house. Shown are Shelley, Bill, Bryan and Dave in the foreground. Lurking behind Bryan is Clark. Chris is the one with the hat. The facility is great - one of the small dining rooms at the Campion Center. N1NOM Photo



I do believe the whole idea warrants your attention; the ARRL is out there getting ready to make this proposal, and has solicited comment. So let them know what you think. Also, send your comments to the Minuteman. We would like to print a compendium of the opinions of our members.

Also take a look at the article reprinted from Hamradio On-line. It raises some very penetrating issues about the Amateur Radio Service. I'd like to hear your thoughts about it...in the last issue I spoke to the relevance of our hobby. If you agree with what I said, then the things said in that article should concern you as much as it does me.

Stepping on a Fox...Continued

(Continued from page 1)

fast and miserably.

I spent the next 45 minutes making a beeline for the Stoneham area. A bee would have taken a more direct route; I had to go North on rt495, South on Rt3, North on rt. 128... you get the idea. After listening to the other hunters get closer and closer to the fox, I *finally* heard him on the input when I reached the rt128/rt. 3 area. I got a hint from my fellow hunters (I was pretty angry at myself at this point, my dejected voice brought much sympathetic info!) to listen around the exit 38 area.

I exited the highway at the recommended exit 38, this was certainly better information than anything I had gotten on my own this far. This area (Wilmington I believe) was a hunters nightmare. Nothing but Malls and huge industrial complexes as far as the eye could see. And the terrain was basically flat. I thought I would be more apt to get a good signal using moon bounce at this point. I took a couple right hand turns at the end of the ramp just to get away from the traffic jams around the exit. I found myself in one of the many industrial parks in the area. I noticed one spot - not great, maybe barely good - but it *was* slightly higher than the surrounding terrain, and the parking lot would provide a listen in at least two directions. I had nothing to lose, so I headed for the lot.

Now in the past hour I had only gotten to set up my beam antenna once, and then I didn't hear anything, so I was happy I was at least going to get a chance to actually hear a signal. I used my mobile Icom rig since it has an attenuator built into the unit. The fox came in loud and clear! I set the attenuator to it's highest setting (20db I think), and started swinging the beam. No doubt about it, North Northeast. For the first time that morning a small smile, a snicker perhaps, came to my face.

My four dollar Wal-Mart compass was worth every penny at this point, that is to say, it was acting just like a four dollar compass should, it was pointing directly toward the nearest power lines. So I had to count on my GPS unit to give me a good compass heading. Surprisingly enough, if you keep moving, you can get a pretty good compass heading reading from a GPS. Not surprisingly, when you keep moving right through a red light, people get mad at you. What could I do at that point but yell out the window. "I'm hunting wabbit!" Fox, rabbit, whatever. Amazingly enough, there was a road that kept me on the exact heading I wanted to be on. But I had to get another fix before I traveled too far. I searched the horizon for any small rise in elevation, when I spotted a small parking lot at the very end of my current bearing.

The parking area was empty except for one vehicle, occupied by a guy in a sweatshirt. I only saw one small antenna on the vehicle, looked to be 800Mhz, so I dismissed him as a fox hunter. If not for the lack of antennae on the car, I might have taken him for a ham. Scroungy beard, that lack of sleep look only hams seem to have. At this point he rolled down his window and looked a bit

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Items of Interest

From the ARRL Letter

ARRL MEMBERS ASKED TO COMMENT ON LICENSE RESTRUCTURING IDEAS

ARRL members are being invited to add their ideas, comments and recommendations to those of the ARRL WRC-99 Planning Committee, which has suggested sweeping--and potentially controversial--changes to the Amateur Radio licensing structure in the US. On the table for open discussion and debate are proposals that include:

- elimination of the Novice license
- creation of a new Intermediate license to replace the Technician Plus
- expanded HF privileges for Intermediate licensees, including phone on 160, 75 and 15 meters
- a 10-wpm General CW test (with more stringent testing standards for all CW exams)
- expanded phone privileges for General-class and higher licensees

Details of the plan, discussed during the recent ARRL Board of Directors meeting in Albuquerque, New Mexico, will appear in March QST. The Board says it seeks comments from members to ensure that before any plan goes forward, it enjoys broad support from the amateur community. The Board will not act on the issue at least until its July meeting.

After its research revealed that as many as three Novices in four are inactive, the committee concluded that the Novice license is no longer useful. Although the committee would end the Novice license, its plan provides current Novices with an easy means to upgrade (via an open-book test) to the new Intermediate class license, which would replace the current Technician Plus. All present Tech Plus licensees would become Intermediate licensees. The Basic license would supplant the Technician license--now the hobby's most-popular entry-level ticket--with no changes in privileges. In addition, the committee's plan would phase out the current Novice and Tech Plus bands on 80, 40 and 15 meters, and replace them with new Intermediate-class allocations. The committee's consensus plan for Intermediate-class licensees calls for new CW bands on 80, 40 and 15 meters starting 25 kHz up from the lower band edge, digital and phone-band privileges on 75 and 15 meters and a 50-kHz phone or CW segment at the top end of 160 meters, plus expanded Novice and Tech Plus CW and phone allocations on 10 meters.

According to the proposal, Intermediate CW bands would be 3525 to 3700 kHz, 7025 to 7050 kHz, 21025 to 21150 kHz and 28050 to 28300 kHz. Digital operation was suggested for 3600 to 3625, 21100 to 21125 and 28100 to 28189 kHz. Phone privileges would include 1950 to 2000, 3900 to 4000, 21350 to 21450, SSB from 28300 to 28500 and FM from 29500 to 29700 kHz. Transmitter power for Intermediate-class licensees would be limited to 200 W PEP output (other licensees using these bands would not be limited to 200 W, however).

General-class and higher amateurs also would benefit from the plan, if it's adopted according to the committee's outlines. General-class hams would get additional phone privileges 3800 to 3850, 7200 to 7225, and 21250 to 21300 kHz; Advanced-class hams would add 3725 to 3775, 7125 to 7150 and 21175 to 21225 kHz; Extra-class hams would also have 3700 to 3750, 7125 to 7150 and 21150 to 21200 kHz.

With the exception of 40 meters, where Novice and Tech Plus licensees already have privileges, the committee suggested no changes on the hobby's narrowest and most crowded bands--including 20 meters and the narrow WARC bands at 30, 17 and 12 meters.

The Intermediate CW test would be 5 words per minute (the same as the current Tech Plus requirement), but the committee proposed that the General class CW requirement be set at 10 wpm. There still would be no additional CW exam for the Advanced ticket, nor would there be any change in the 20-wpm requirement for the Extra. Exams for all classes would include a return to a sending test and the requirement for one minute of solid copy during a five-minute test--instead of the current method that tests on the content of the CW text.

Right now, these major changes are only in the talking stage. "Let us be very clear about this," said ARRL Executive Vice President David Sumner, K1ZZ, who characterized the committee's proposals as a starting point for discussion, not a done deal. "The changes are not ARRL policy; nothing has been proposed to, or by, the FCC, and the ARRL Board is committed to making no decision before its July 1997 meeting." Sumner said there is no timetable to complete the process. Only after there is an opportunity for in-depth consideration and discussion by the membership will the ARRL Board consider taking the next step--to approach the FCC with a rulemaking proposal--a process that automatically invites additional comments and suggestions.

Between the time they receive March QST and May, members are asked to voice their opinions on the committee's suggestions to their directors, whose postal and e-mail addresses are listed on page 10 of QST. All suggestions and comments--positive and negative--are welcome.

MMRA Information - Repeaters, Officers and Board Members

MMRA Repeaters:

Marlboro	146.61	N1BHI/R	FTL	P	
Marlboro	449.925	N1HBR/R	FTL	P	PL - 88.5 in and out
Quincy	146.67	KA1HKP/R	PTL	P	
Quincy	224.40	N1KUG/R	FTL	L	PL - 103.5 in, none out
Weston	146.82	KA1AL/R	PTL	P	PL - 146.2 out, none in
Weston	224.70	N1HBR/R	FTL	L	
Hopkinton	223.94	N1BHI/R	FTL	L	PL - 103.5 in and out
Stoneham	146.715	N1NVL/R	PTL	P	PL - 146.2 out, none in.
Stoneham	446.725	N1NVK/R	PTL	L	PL - 88.5 in, none out
Taunton	449.575	N1NVL/R	FTL	L	PL - 88.5 in, none out

[FTL = Full Time Linked PTL = Part Time Linked]
[L = Patch available via link] P = Local Autopatch]

MMRA Officers:

President:	Andy Morrison, N1BHI	To Contact Officers
Vice President:	Clark Conti, N1NVK	or Board Members
Secretary:	David Croll, KT1X	
	Lynne Ausman, KA1NLD	Call MMRA Voice
Treasurer:	Ian MacLennon, AF1R	Mail Line:
Clerk:	Ed Mulhern, N1NOM	
Directors:	Tom Qualtieri, WB1GMA	508 - 489 - 2282
	Al Kunian, KA1AL	Toll Free from
	Chris Conti, N1NVL	508 and 617 Areas
	Bob Feltmate, WA1ZJE	
Newsletter Editor:	Andy Morrison, N1BHI	MMRA E-Mail
		mmra@mmra.org

Minuteman Articles — Solicitation

If you have ever built anything, fixed something, or have an experience that you want to share, then you should submit an article to the MMRA Minuteman. Contact Andy Morrison, N1BHI, if you want to talk about it. We can scan artwork and schematics to make an article more interesting and useful. Give it a try!

Important MMRA Club Information:

Membership Meetings: 3rd Wed of Sept, Nov, Jan, Mar, May at Campion Center, Weston at 7:30 PM
Meeting Dates for 1996-97 Season: September 18, November 20, January 15, March 19, & May 21.

Board Meetings: 3rd Wed of Oct, Dec, Feb, Apr. Meetings are open and members are welcome.
If a visiting member wants to be on the agenda, please contact Andy Morrison beforehand.

MMRA Voice Mailbox (508) 489-2282. -- This is a local call from any 508 exchange phone, and is a free call from both 617 and 508 areas.

Newsletter Information	September issue	November issue	January Issue	March Issue	May issue
Mailing Date	Sept 11, 1996	Nov 13, 1996	Jan 8, 1997	Mar 12, 1997	May 14, 1997
Submission Deadline	Sept 1, 1996	Oct 26, 1996	Dec 28, 1996	Feb 22, 1997	Apr 26, 1997

The MMRA is dedicated to Amateur Radio and the public service. The MMRA is a registered non-profit Massachusetts corporation. Membership is open to all amateurs. Annual dues are $25.00 individual, $35.00 family.

Stepping on a Fox.....Continued

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surprised that I had parked in the lot. In hindsight, my next question seemed ridiculous, even to me. I asked him if he was fox hunting. Can you imagine what this guy must have been thinking? Here he is looking at some guy drive up to a vacant lot, open up his tailgate, take out some contraption with wires and elements and then ask if he is fox hunting! Did he think I was trying to kill foxes with some home made ray gun? God I felt stupid, but this was just the beginning. The gent simply replied "no". I felt obliged at this point to explain that I was radio direction finding, I decided not to go too far into any explanation. I then asked him if he was a security guard, he again simply replied "no".

As I began to ready my equipment, standing there on the tailgate of my Bronco, I noticed the curious looks now and then from the gentleman in the Jeep Cherokee. The first lightbulb in my head began to glow slightly "didn't someone mention the fox was in a Jeep?". Nah! I thought, and finished hooking up the radio. "That's a little bit long for a cellular antenna" I thought, the bulb grew brighter. "What exactly is this guy doing parked here anyway?" LIGHT DAWNS ON MARBLE HEAD! He's not fox hunting, because HE'S THE FOX! At that very moment in time, my rf meter at full scale, I see the gentleman in the Jeep Cherokee lift the microphone towards his mouth, and hear "This is the fox".

So there I was, my first MMRA fox hunt. I started out of bounds, I took a total of one bearing, I didn't have a map of the area I was in, I had a four dollar Wal-Mart compass, I won, and I didn't even know it.

My God, isn't Ham radio wonderful?

Editor's Note: **Nice article, Steve....This is the kind of thing I would really like to see from more people. I got this from Steve via Email on the last day before printing...because it was a good read, and came from a member, I held the presses, so to speak, and plated Steve's article. Let this be an indication to anyone who wants to submit that we'll print it! So dig out your pen, fire up your computer, crank up your literary spirit and write! Everyone probably has a story to tell, and it's especially fun reading when the author pokes fun at himself. Thanks again, Steve.**

The Decline of Amateur Radio?

by Ed Mitchell, KF7VY

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Demand for spectrum, politicians thirsty for the "free money" of spectrum auctions, new technologies, and the loss of Amateur Radio's novelty are combining to potentially render Amateur Radio obsolete. We wrote about these challenges in Is Ham Radio Still Relevant?. The solution is a dramatic rethinking of our technology, our regulatory policies, our internal processes, and our mission. The following is a critical, no-holds barred, any question goes bit of soul searching. If we do not act, there is serious risk that Amateur Radio may fade into the static of history.

The Amateur Service Is In Decline

In January 1997, Fred Maia, W5YI, published results of his investigation showing that in 1996, the U.S. Amateur population grew by 1% [see note 1]. Worse was that the combined total of General, Advanced and Extra class licensees declined; only the growth of Technician class license holders, which now make up 43% of all U.S. Amateurs, enabled a slim 1% growth According to W5YI, almost no Amateurs are upgrading to higher license classes and the number of exams being given is declining. QST reports the ARRL's revenue is 10% under forecast. One Washington D.C. insider told us that "An [FCC] Commissioner recently said publicly that the Amateur Service is shrinking and less interesting nowadays, having been supplanted by newer technologies and services."

Note 1: In February, the ARRL reports the actual increase for 1996 was 1.9% but in January 1997, the total number of amateurs decreased by about 650. This is not good. The ARRL reports that revenue dropped by $700,000 and VE exams submitted is off by 16%. The Novelty and Excitement of Amateur Radio Is Losing to the Competition.

Only 10 years ago communicating via radio was a novelty. Hams were in a unique position to engage in long distance HF communications to countries throughout the world, to make a phone patch on a local VHF repeater, to send computer data over the airwaves or the truly unique, communicate via satellite. Times have changed. Worldwide Internet communications and international phone calling are routine. Cellular telephones are in widespread use. 28.8 kbps Internet access over the phone lines - soon to be 56 kbps - is more interesting than 1200 bps packet. Satellite TV reception is ordinary. Digital cameras, even digital video is coming to your home PC. When you talk to kids, their interests lie in computers and the Internet - those subjects are the future. Inventive minds are building unlicensed, 1 megabit per second, several mile range, wireless Internet access using unlicensed frequencies at 0.9, 2.4, 5.1, 5.2 and 5.7 GHz (hams, ironically, are prohibited in a practical sense, of building similar devices even though most of these bands are also ham bands). We must be cognizant of the competition for "mind share" - other activities are encroaching on an interest in ham radio. How can we leverage these interest areas into the Amateur service?

Amateur Spectrum Under Assault

Compared to most services, Amateurs have broad access to the radio spectrum. But between 1980 to 1989, U.S. Amateurs lost 89 MHz of UHF spectrum. In 1989, Amateurs lost 220-222 Mhz (and have since regained some access to 219-220 Mhz) Doppler wind shear detection radar has been deployed at 448-450 MHz. Radar, automatic vehicle location systems and a plethora of consumer cordless devices now operate in the 902-928 MHz band. Those of us living north of "Line A" near the Canadian border have lost access to 420-430 MHz. In late 1996, the U.S. Congress told the FCC to auction 2305-2310 MHz. The "Little LEO" industry plans to deploy a satellite-based two-way messaging service and is requesting "sharing" of 146-148 MHz, 219-225 MHz and 430-450 MHz. Changing technologies, new services and an ever expanding population create a demand for more spectrum. Since spectrum can not be created, only reallocated or used more efficiently, there will continue to be demands to use Amateur allocations for other purposes. See The Politics and Business of Spectrum for more information on spectrum allocations and the importance of spectrum efficiency.

Amateur Radio Needs a Dramatic Rethinking

It is tempting to conclude that threats to Amateur Radio come from spectrum auctions alone. But the problem is more complex than that. What if nobody wants to become an Amateur Radio operator? What if our "product" is wrong and there are no buyers? No amount of fiddling with our marketing - or license structure - will sell the product if we have the wrong product to sell in a world awash with interesting and competing technologies. * From a public relation's perspective, should the Amateur service even be called "Amateur"? The word "amateur" has negative connotations ranging from inexperienced, cheap, low quality, unreliable to worse. * Amateur Radio has changed little in 30 to 40 years. Today's Amateur Radio Service relies on technology that is "old" and not spectrum efficient. FM is 50 years old; SSB is 40 years old; CW is over 100 years old and 1200 bps AX.25 packet is based on the 15-year old obsolete "dumb terminal" rather than personal computer-based networking. Yes, these technologies "still work" - but how do we advance forward from here? Regulatory structures and our "voluntary" band plans stifle innovation and institutionalize the status quo. The result: we are growing stale as the world rushes by.

Regulations Stop Innovation

The #2 reason that Amateur Radio exists is stated in 97.1(b): " Continuation and extension of the amateur's proven ability to contribute to the advancement of the radio art. " Yet our regulations stop innovation dead in its tracks. Read on.... * Not long ago the U.S. regulations prohibited use of the popular ASCII code for computer data.

Current regulations place burdens on spread spectrum (SS) systems - techniques that are now state-of-the-art in unlicensed wireless systems and some cellular phone networks (our home's cordless phone uses direct sequence spread spectrum). 97.311 requires that you "Maintain a record, convertible to the original information (voice, text, image, etc.) of all spread spectrum communications transmitted" for a full year. You cannot realistically use SS technology for routine Amateur communications unless you are prepared to maintain a copy of every transmission you ever made. By law, we are prevented from adopting state-of-the-art technology for routine Amateur communications.

Paradoxically you can operate an unlicensed SS transmitter at the 1 watt power level in the Amateur bands at 902, 2400 and 5725 MHz and do anything you want - but not as an Amateur station! Part 15 SS devices sharing the Amateur bands can do anything they want. Does this make sense to you?

In 1996, the Tucson Amateur Packet Radio group had to fight hard for a special temporary authority to operate direct sequence spread spectrum communication technology in the Amateur bands. While the ARRL said it supported TAPR's efforts, it then opposed most of the details in the TAPR proposal.

Legally, you can transmit digital data using data compression - but you must "Maintain a record, convertible to the original information, of all

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Ham Radio In Decline...Continued

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digital communications transmitted" forever (see 97.309(3)). This renders the use of data compression as a method of improving spectrum efficiency unuseable for routine digital communications for data, voice or image operations. Merely using the popular PKZIP program to compress computer files before sending them over packet requires that you keep a copy of those files, forever. Does this make sense?

Part 97 effectively prohibits Amateurs from adopting modern digital communications technology for routine day-to-day communications. Yes, you can experiment but forget about widespread adoption of your inventions.

The Part 97 rules contain outdated notions of Amateur emergency communications. Strangely, the "RACES" rules limit Amateurs to a maximum of one hour per week of participating in RACES training (except that twice per year you can apply to the government for special exemption to this rule). When your government runs a mass casualty drill that lasts a full day, you can hardly walk off the job an hour after arriving. The RACES rules are oriented towards a historical Amateur service consisting of large, fixed location, point-to-point HF operations- yet most RACES operations take place at VHF and above.

Only recently was FCC 97.113 rewritten to clarify the legality of calling a tow truck for a motorist who's vehicle is disabled on the side of the road. Poorly thought out rules led to situations where Amateurs questioned whether it was okay for hams to provide emergency communications support for disasters - wasn't this just helping a fire department in its routine business operations and are not business communications prohibited? Sigh.

Voluntary Band Plans and Spectrum Hoarding

Lyle Johnson, WA7GXD, in his ARRL/TAPR Digital Communication Conference speech observed that we have done peculiar things with our voluntary band planning that results in vast tracts of spectrum de facto allocated to voice repeaters, many of which see little use. The result is spectrum hoarding - literally spectrum not being used with any degree of efficiency. In some areas of the country, Amateur repeaters are "closed", meaning they may not be used by the general Amateur population but only by friends of the owner (or in one case that we know of, the immediately family only) The result is that the Amateur bands have become "private personal radio services". How can we meet the legitimate interests of repeater owners while preserving the public's interest in our airwaves?

Band Plans That Stop Innovation

With spectrum "hoarding" in effect we have no procedure by which spectrum can be reassigned to new uses and to experiment and deploy new and efficient access schemes. See how the ARRL opposed TAPR's proposal to do spread spectrum experiments. Our own institutions stifle innovation and lock us into a status quo of largely unused 40 to 60 khz channels per voice system. As Lyle notes, anyone can set up a spectrum analyzer and see that we are not using our allocations efficiently. The Little LEO industry appears to have done just that.

Licensing Structure

In 1996, 100% of all Amateur service growth is occurring in Technician licensees who make up 43% of all license holders and are active almost exclusively on VHF and UHF. In 1996, there was a decline in the number of General plus Advanced plus Extra class license holders. Looking at that another way, 100% of all Amateur growth is at VHF and UHF frequencies. Yet we have an incentive licensing system where all of the incentives are focused on the HF bands. Our introductory license - the Novice - has proven mostly unsuccessful as a source of new Amateurs: three out of four Novice license holders never continue on with Amateur radio. Our license structure is broken and no longer reflective of what the "market" is -------- telling us about those who are becoming Amateur operators. What changes should be made to this license structure?

* The FCC's PRB-1 is a tool to reduce local government restrictions on Amateur antennas but it has no effect on private contracts such as "CC&Rs" that ban the installation of outside antennas. Our HF-centric license structure is at odds with the reality that nearly all new home construction in the United States - for the past 20 years - has restrictive CC&R's banning or restricting the installation of all outside antennas. What impact do you think this has had on the growth of the HF-focused Amateur licenses?

* Since 1992, the State of Washington, where we live, has had a strong Growth Management Act law that requires that population growth and development be steered into cities and that cities promote high density housing. The result is that most new housing here is multi-family dwellings - town homes, condominiums and apartments. An Amateur Radio service that focuses mostly on large HF station operation is not merely out of place - but mostly non-existent in this new world. As the population increases, we presume that other areas will see similar "growth restrictions" on new housing, placing traditional Amateur Radio further out of the hands of young people who are just entering the housing market.

* Similarly, our state has "voluntary" single-occupancy vehicle (SOV) reduction goals to mitigate highway traffic congestion. My suburban employer has a goal of 45% of all employees will arrive to work in something other than a single occupant vehicle. For most workers, this means riding on buses and in car pools. Neither transport is friendly to the use of mobile Amateur gear - unless you happen to commute with a car full of hams!

* In a world where our charter says we must move technology forward, we need license holders who have an interest in pushing back the envelope and moving into the future. Does the CW requirement hinder the Amateur Service from attracting smart people who might develop exciting innovations in communications technology? Morse code does not represent the future of communications technology but the past. Should our licensing structure focus on the requirements of the past or the future? Then again, have we seen an increase in appropriate experimentation and innovation as a result of a code-free Technician license? If the answer is "No", why is that?

* Digital convergence is what happens when unrelated technologies merge into common digital technology: is Amateur radio following this phenomena? Radio is rapidly turning into a software business like everything else (see "The Software Radio Architecture", IEEE Communications Magazine, May 1995, pg 26, by Joe Miller who describes innovations in software radios as placing us "on the threshold of another revolution in radio systems engineering") but we don't test anyone's software development or digital technology competence. The technologies of communications are rocketing forward yet we remain largely focused on some rather narrow bits of radio engineering. Should we expand our focus to encompass new technologies?

Operational

Many of our cherished operational habits, contests and activities reward the operation of large, high power, fixed location, point to point communication systems. In this day and age, functional equivalents to our operations can use a well deployed, low-cost, world-wide fixed communications infrastructure (telephones and the Internet) - and make no use of precious spectrum. Do our operations promote activities that inspire politicians to support us? One interpretation of the decline in General/Advanced/Extra class licensees with the simultaneous growth of the Technician class, is that the "market" decided that the Technician's mostly mobile/portable VHF/UHF operation is desired more than expensive, fixed, point to point operation, typical of HF - and today, better served with a more reliable personal computer and Internet connection.

(Continued on page 8)

Ham Radio In Decline....Continued

Pay Attention To Politics

In the past few months, several FCC staff members who were hams and strong supporters of ham radio, have retired or moved to the private sector. Literally, Amateur Radio has lost strong boosters within the Commission. More than ever, we must be attuned to the whims of politics.

Politician's and regulators all have "hot spots" that grab their attention. Focusing on the "hot spots" can garner political points. These hot spots include:

- o Technology for education
- o The Internet
- o Technical Advancement
- o Spectrum Efficiency
- o Volunteerism and Public Service

Technology For Education

Amateur Radio has long been a service of self training and has provided "hands on" demonstrations of electronics, physics, space sciences and other topics to students. Amateur Radio can continue to provide an important role in education but note that the Internet has replaced Amateur Radio as a tool for studying geography - the Internet provides easy access to people and information all over the world. Still, our efforts in the education area should be doubled and double again.

Technical Advancement and the Internet

Amateur Radio digital communications could instantly extend high speed Internet access to many users . Amateur 56 kbps wireless modems are available - and there is no fundamental reason why we are not building networks up to 1 million bits per second. The technology is available off the shelf, today. Amateur digital communications must tie itself to the Internet - a technology that Bill Gates, co-founder of Microsoft, calls more important than the personal computer. However, wireless Amateur Internet access might conflict with extensive "content" restrictions regarding what is legal to transmit over Amateur radio. Have we legislated ourselves into a dead end?

Advances in ad hoc, dynamic Amateur networks for both data and digital voice - and the Internet - are just waiting to happen. But those innovations are more likely to come from non-hams building high speed Internet access on the new unlicensed "Wireless NII" band, free of innovation-stopping regulation.

Volunteerism and Public Service

The public service functions of Amateur Radio may keep Amateur Radio off the auction block. Commissioner Susan Ness notes that "Public safety and amateur radio are two other areas where auctioning may not serve the public interest". Further, the Commission in WT Docket 96-86/FCC 96-155 defines public service communications systems to include the Amateur Radio Service. The very first Amateur rule in Part 97 says that our purpose is "Recognition and enhancement of the value of the amateur service to the public as a voluntary noncommercial communication service, particularly with respect to providing emergency communications." We must fix our broken RACES rules and address continued fallout over confusion inspired by the original wording (since replaced) of 97.113.

* Public service is important to Amateur Radio but its role must also change with the advent of new technology. Amateur functions at the Seattle Marathon have been slowly replaced by donated Nextel digital radios as Amateur's themselves have become more and more scarce as volunteers. If we have volunteers, there will continue to be many important functions for Amateurs to perform in public service and public safety roles. It is essential that Amateurs continue as part of organized emergency response teams that operate at the direction of local government officials.

Summary

* The public gives the Amateur Radio Service access to spectrum in exchange for us giving something back to the public. We must ensure that we give back an amount appropriate to the public's generous subsidization of "our" frequencies.

* Incredibly our own government regulations, our voluntary band plans, our operational procedures - all make modern technological innovation difficult in the Amateur bands. This boggles the mind. Stated another way, if you want to innovate in modern digital communications, skip ham radio and go straight to unlicensed technology! Is this really the message we want?

* Amateurs excel at creating ad hoc, dynamic communications solutions that fit any situation. There is opportunity for technical advancement in the creation of ad hoc digital networks, automatic interference avoidance radios, weak signal developments - but our regulations and our processes must be fixed to overcome impediments to innovation.

* The available data and straightforward analysis of the "competition" for Amateur Radio suggest that Amateur Radio has begun a period of decline. Many of the features that once made Amateur radio a novel experience have disappeared. Numerous third parties demand access to our spectrum. Technology is providing cheaper, more effective substitutes for the Amateur Radio experience. The "Wireless NII" band may siphon away innovators who might otherwise contribute to the Amateur service. Our HF-centric license structure is at odds with growth management restrictions on new single family housing, private CC&R restrictions on antennas, and is out of touch with the competitive threat of low-cost, worldwide communications made possible by the Internet. All of us should be thinking about how to make Amateur Radio compete effectively with other interests.

* It is easy to blame "society" or spectrum auctions or a Morse code requirement but the root cause may be that fundamentally there is a decline of interest in Amateur Radio itself. If we don't address the declining interest problem, no amount of tinkering with licensing structures will change the fundamental problem. We may be marketing a stale product - and finding few buyers.

* Tinkering with the license structure, as the ARRL proposes, is part of the solution but it is not going to solve these problems. The Amateur Radio Service needs to look itself in the eye and question everything it sees. * We don't need to survey existing hams to prepare for WRC-99. We need to survey non-hams to learn what it takes to get them involved. We must fundamentally and dramatically rethink all aspects of Amateur Radio to ensure that Amateur Radio is the hobby of the 21st century.

* We have a lot of questions. Many others, including non-hams are asking these questions too. We wish we had all the answers. What do you think?

What *do* you think? If it's all true....*do we want to let it happen?*