



CAARA Newsletter



AN ARRL AFFILIATED CLUB

JUNE ISSUE- 2009

President's Corner

by Curtis AA3JE



Well it's time to get ready for Field Day. I would strongly urge EVERY member to stop by for either the set up Saturday or the Takedown on Sunday at Babson's field at the Rockport-Gloucester line. You will get to see K1TP's infamous tennis ball launcher. You will get to see (not to be missed) a team of dedicated amateurs put up tents. You will eat the hot dogs. It will be a good time for all.

News at the club includes contesting which is going STRONG, kit building which is going to be our next New York Times bestseller (Sunday's with Dave) and we have a Superheterodyne Radio Theory Course which was a real surprise. It filled in less than a day! (I did not think that many people really wanted to know how their radio worked).

On a more serious note, we are heading into the public service event and hurricane season. We seemed to have dodged the bullet with the H1N1 influenza, but please be aware that we may need you in a big hurry if we get hit with a significant storm.

Now is the time to make sure you have an "A" cell tray for your hand-held, that you have a box of AA batteries (good as cash during Katrina) and have stopped by the FEMA website to download a copy of their basic self-preservation document "Are You Ready?"

Most of all, take a radio outside and operate. This is QRP weather, and we need a few wires in the trees to mark the arrival of summer.

73'

Curt Wright-AA3JE

Part 2 - History of CAARA- Dean-KB1PGH

1977-The Cape Ann Amateur Radio Association incorporated and became a Massachusetts 501C3 non-profit corporation.

1978-The first emergency repeater, 145 MHZ frequency, with telephone patch capability, was built and put into operation. The repeater antennas were initially put on a tower at Frank Vidal's-WU1S house and then moved to the club and finally to a tower on the rooftop of Varian. This move gave the repeater greater receive and transmit coverage.

1989-A 220 MHZ frequency repeater was donated to the club and put on line. This repeater would serve as the primary back-up machine during disasters. The 145.13 MHZ repeater was moved to the Cellular One site. Cellular One rents CAARA space on their tower for just one dollar per year. As a result, CAARA's 145.13 MHZ repeater provides one of the widest coverage emergency communication systems on the North Shore.

1999-The 6 Stanwood Street CAARA facility is designated as one of the 13 Gloucester official disaster shelters

2003-CAARA renovates the club facility which included doubling the amount of communication stations, improves the kitchen, and upgrading the emergency power wiring

2009-Caara has 107 active members and leases out 6 Stanwood Street from the city of Gloucester for \$1000.00 a year and we have the lease until 2011.

Hello to all CAARA Members,

This is a reminder that the CAARA Emergency Communications Group will be participating in the Massachusetts Emergency Management Agency's Statewide Hurricane Communications drill coming up on Monday June 1 at 7 PM at the clubhouse at 6 Stanwood Street in Gloucester. Anyone who is interested in seeing how this operates is welcome to attend.

73's

Dean Burgess KB1PGH
CAARA Clerk

CAARA Newsletter
Cape Ann Amateur Radio Association
6 Stanwood Street
Gloucester, MA 01930

CAARA Newsletter is a monthly publication of the Cape Ann Amateur Radio Association (CAARA). It is the policy of the editor to publish all material submitted by the membership provided such material is in good taste, relevant to amateur radio and of interest to CAARA members, and space is available. Material is accepted on a first come, first serve basis. Articles and other materials may be submitted by internet to Jon at k1tp@arrl.net. If possible, material should be in Word format. Material may also be submitted as hard copy to Jon-K1TP or any Club Officer.

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Jon Cunningham-Editor
K1TP

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Welcome to CAARA:

CAARA, an ARRL affiliated club, operates the 2 meter W1GLO repeater on 145.130 MHz with antennas located on the Cingular tower in the Blackburn Industrial Complex in Gloucester Massachusetts. It has an average effective radius of 60 miles, and serves Eastern Massachusetts, Cape Cod, Rhode Island, Southern New Hampshire, and maritime mobile stations. CAARA also operates the W1GLO repeater on 224.900. The W1RK 443.700 repeater with antennas located in Magnolia is owned and operated by club member Ralph Karcher and it too is available for club use.

The Association is one of the few amateur radio clubs that has its own clubhouse. Located at 6 Stanwood Street in Gloucester, it includes a permanent HF station with rotating beam and vertical antenna along with a 2 meter packet station and 2 meter voice and 220 MHz transceivers.

Amateur radio exams are held on the second Sunday of each month at 10:00AM at the CAARA clubhouse. Anyone who is considering a new license or an upgrade, is welcome to test with us. There is no pre-registration necessary. Contact the head of our VE team Bob Quinn if you have any questions about monthly testing.

Monthly member meetings are held on the first Wednesday of each month at 7:30 PM except for July and August.

Each Sunday evening at 9:00pm, the club operates a 2 meter net on 145.130. This is an open and informal net which disseminates club news and prepares operators for emergency communications work. All are invited to check into the net as club membership is not a requirement.



**MAY 2009 NEARFEST Report
Jon- K1TP**

Lot's of military gear as well as military vehicles on display complete with the ops in military attire.

Below is a photo of one of the vendors in the commercial buildings. The Acer Netbooks shown were going for about \$225.00.

I car pooled with Curtis-AA3JE, who purchased a beautiful Drake 2C, an oscilloscope and wave generator, a resistor and capacitor substitution box....and they all worked when he powered them up in his home shack.

I



ARRL and eQSL Award Status

For those members who operate W1GLO from our CAARA clubhouse at 6 Stanwood Street, it might be of interest to know how we are doing on achieving various ARRL Awards via LOTW and eQSL awards through these digital QSL services. We are also receiving QSL cards by mail from the Area 1 Bureau, but these have not been processed for credit toward the ARRL awards.

LOTW - the ARRL digital QSL system - takes uploaded files that have been verified for call sign, date, time, band and frequency - stored by computer - no hard copy facsimile available.

We have recorded with LOTW -

As of May 5, 2009, we have verified contacts from 65 Countries and 35 of 50 States - We can apply for the ARRL DX100 award when we have received verified QSO/QSL with LOTW when we have 100 different countries on record. We need 35 more different countries to be contacted to qualify for that award. We can apply for the WAS award when we have verified contacts in all 50 states - that means we need 15 more states. There are over 300 "countries" recognized by ARRL - including many islands that are parts of France, Spain, Portugal, the United States, Brazil, The Netherlands, Italy, Greece and various islands in the Atlantic, Pacific and Indian Oceans. We are likely to pick up many of the missing States as part of our regular Field Day activities and several new countries as well. I will provide another update after we file the ARRL Field Day reports in digital format for LOTW.

We have recorded with eQSL -

As of May 5, 2009, we have received the EQSL: Certificate for the first 25 countries contacted and now have 55 countries verified by eQSL - reports to eQSL can be done individually or by uploading appropriate digital files. This means we need 45 additional countries to qualify for the DX100 award from eQSL We also have 31 states verified toward the eQSL WAS award. Note that these awards are not certified by ARRL due to the different systems of verification used for proof of radio contact. This will also change significantly after we file the Field Day reports and other additional contest logs.

ARRL makes separate awards for Mixed band contacts, modes, and separate bands. The numbers above are for the combined mixed band and mixed mode contacts. We can also qualify for SSB, CW, RTTY (including various digital formats such as PSK 31) DX100 and WAS awards as well as 80 M, 40 M, 20 M etc awards for DX100 and WAS.

Our routine operations provide the data if filed either directly to eQSL and ARRL or uploaded as digital files from contest operations or digital summaries of our logs at 6 Stanwood. All awards depend on both W1GLO data as well as confirmation from those stations we contact. Our rate of verification runs about 20 % of the contacts we file, and verifications are often historical depending on the digital storage of old logs and filings from old contacts. When we registered with eQSL there were dozens of records in their storage banks from W1GLO past field days. Similar records also exist on LOTW for contacts reported to ARRL but not verified by W1GLO in the past. When we fail to report our contacts to either LOTW/ARRL or eQSL, the stations we have contacted may still have reported and their digital data has simply not been verified. This means roughly 80 percent of those we contact do not report their QSOs with W1GLO.

In the past, W1GLO has not been interested in reporting QSO data or working on the awards offered by ARRL and eQSL. This is changing as we have increased activity from 6 Stanwood and our portable operations for Field Day and other special events. When you use the Station equipment there should be a logged record of our contacts and each operator should be aware that the time should be reported as UTC (now on clocks on both

floors of our building at 6 Stanwood). Portable operations on Field Day and special events such as W1T on Thatcher's Island also need logs with correct data. Our movement to digital logging will facilitate the ability to achieve wards.

Hank McCarl W4RIG

QSL Chairman for W1GLO

FCC Looks to Raise Vanity Call Sign Fees for Second Consecutive Year

The FCC released a *Notice of Proposed Rulemaking and Order* ([NPRM](#)) on May 14 seeking to raise fees for Amateur Radio vanity call signs. Currently, a vanity call sign costs \$12.30 and is good for 10 years; the new fee, if the FCC plan goes through, will go up to \$13.40 for 10 years, an increase of \$1.10. The FCC is authorized by the *Communications Act of 1934 (as amended)* to collect vanity call sign fees to recover the costs associated with that program. The vanity call sign regulatory fee is payable not only when applying for a new vanity call sign, but also upon renewing a vanity call sign for a new term. Instructions on [how to comment](#) on this NPRM are available on the FCC Web site.

The vanity call sign fee has fluctuated over the 12 years of the current program — from a [low of \\$11.70 in 2007](#) to a high of \$70 (as first proposed in the FCC's 1994 *Report and Order*). In 2007, the Commission lowered the fee from \$20.80 to \$11.70. The FCC said it anticipates some 15,000 Amateur Radio vanity call sign "payment units" or applications during the next fiscal year, collecting \$201,000 in fees from the program.

Vanity Fee Due for New, Renewal Applications

The vanity call sign regulatory fee is payable not only when applying for a new vanity call sign, but also upon renewing a vanity call sign for a new term. The first vanity call sign licenses issued under the current Amateur Radio vanity call sign program that began in 1996 came up for renewal three years ago.

Those holding vanity call signs issued prior to 1996 are exempt from having to pay the vanity call sign regulatory fee at renewal, however. That's because Congress did not authorize the FCC to collect regulatory fees until 1993. Such "heritage" vanity call sign holders do not appear as vanity licensees in the FCC Amateur Radio database.

Amateur Radio licensees may file for renewal only within 90 days of their license expiration date. All radio amateurs must have an FCC Registration Number (FRN) before filing any application with the Commission. Applicants can obtain an FRN by going to the [ULS](#) and clicking on the "New Users Register" link. You must supply your Social Security Number to obtain an FRN.

1718 J.Puckle, London, patents the world's first machine gun.

1885 Edison patents ship-to-shore wireless telegraphy system, by induction.

1896 Edison patents first fluorescent electric lamp.

1897 Marconi transmits 14.5 Kms across Bristol Channel.

1897 Braun displays his cathode ray tube, Boston Exhibition

The Ameco AC-1 Clone Project

By Jon-K1TP

While I was in Florida this winter I attended the Orlando Hamfest for the first time. One of the first things that caught my eye was an old Ameco AC-1 transmitter with a hefty price tag of \$275.00. It was sold in the late 1950's for about \$15.00 in kit form and featured a 6V6 which chirped out about 8 watts if you were lucky. The little cw transmitter covered 40 or 80 meters using separate plug in coils.

In the late 50's I chose the DX-20 from Heathkit because for not much more than the cost of the Ameco, I could have 50 watts and it covered 10-80 meters with no coil switching. I continued walking around the hamfest but could not get that darn AC-1 out of my mind. I knew I did not want to pay that amount of money for a piece of nostalgia but I thought why not build one.

I went online and searched the web and found there was a Yahoo Ameco group full of AC-1 followers with data, photos, schematics, part sources, etc. I decided I would build one and started the search for parts. The fun part of any ham homebrew project.

I found I did not have much left in the shack and started to ask local hams if they had any parts. I immediately struck gold, Curtis-AA3JE had a power transformer that fit the bill saving me \$75.00. I found many of the resistors, caps, and inductors at the clubhouse courtesy of Dave-WOZ. I bought the tubes from Essex TV and Radio on Route 133 in Essex. I bought the Bud Aluminum Chassis from Allied online. I bought a coil form from a ham in the Yahoo Ameco group as well as a decal for the front panel. Radio Shack provided a switch and some enamel wire. Last and not least, while talking with a friend on 20 meters about my project, he offered me a free 7.040 crystal. I was ready to build!



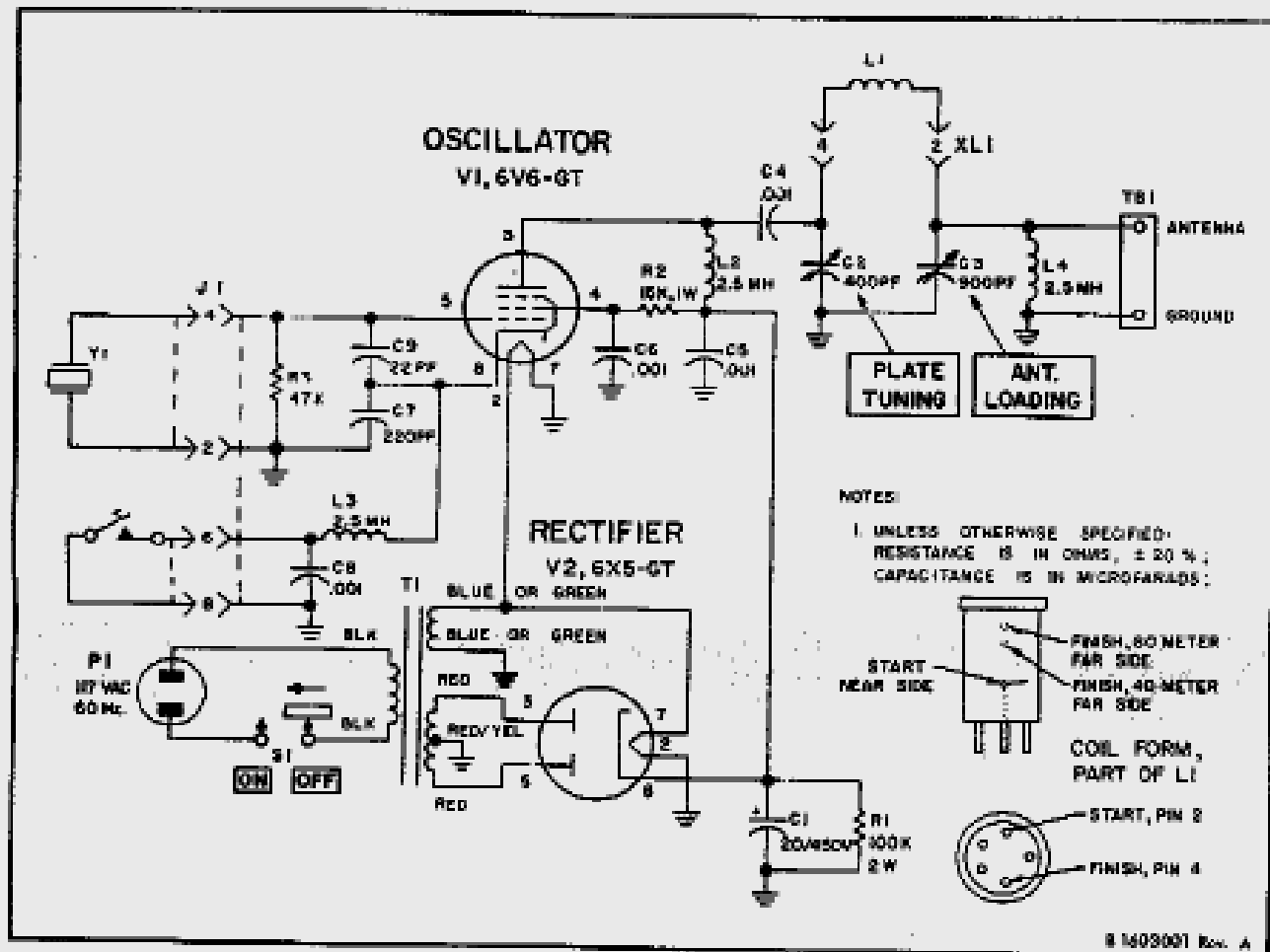
What it looked like back in the 1950's in kit form.



What it looks like in my shack in kit form.



I started by punching and drilling for the variable caps.

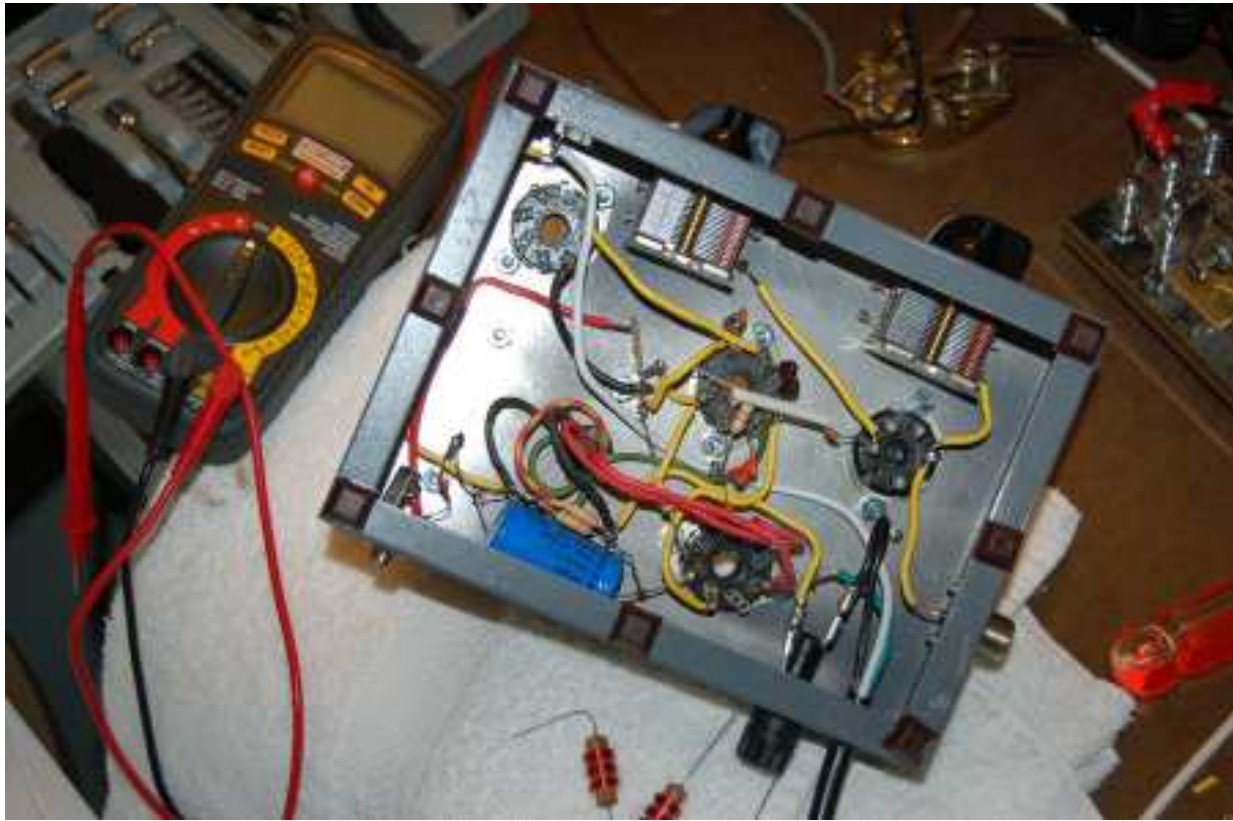


AC-1 SCHEMATIC DIAGRAM



After priming the chassis, I applied two coats of Krylon Smokey Grey. I could not find the specified Hammertone paint at the hardware store. A day later I found a can of Hammertone spray paint on the second floor of the clubhouse- too late!

The picture on the left shows my little radio with the decal applied and tubes and transformer installed, etc.. I just had to see what it would look like before I started the wiring and testing.



My AC-1 with just 3 rf chokes away from double checking the wiring and testing.

NASB urges development of simple, inexpensive DRM receivers

At its 2009 annual meeting in Nashville, Tennessee on May 8, the **National Association of Shortwave Broadcasters** (NASB) adopted a resolution encouraging radio receiver manufacturers ‘to develop and produce as a high priority simple to operate, inexpensive DRM receivers.’”

The NASB resolution applauded the efforts of the DRM Consortium and manufacturers for introducing several models of excellent receivers to the market, but it added “many of the currently available receivers are priced beyond what the market can bear in Africa, Asia, and other countries outside North America and Europe.”

Therefore, asserted the NASB, “there is an urgent need for the availability in the marketplace of simple to operate, inexpensive DRM HF/MW capable receivers.”

Allan McGuirl Jr of Galcom International, a Canadian company that makes fix-tuned shortwave receivers for many religious broadcasters, announced at the same meeting that its engineers are working to develop a low-cost, no frills DRM receiver, although no details are available yet.

Adil Mina of Continental Electronics gave a general update on DRM and the receiver situation at the joint meeting of the NASB and the DRM USA group. Technical consultant Dr Donald Messer gave the group an overview of the propagation experiments that he plans to undertake with the Digital Aurora Radio Technologies regional DRM project in Alaska.

MAY MEMBERS MEETING

Radio telegraphy on Medium and High frequencies

Here is a photo from CAARA's May Members Meeting. The speaker was Steve Russell WA1HUD from the New England Radio Historical Society. He did a presentation of the society's efforts to preserve commercial morse radio telegraphy on medium and High frequencies. The society is also planning to build a new CW station on 472 KHZ which will communicate with museum ships across America. They have concluded that over the lifetime of Maritime mediumwave CW over 10,000 lives have been saved. There are only a handful of commercial CW stations left. WLO in Mobile Alabama on 12.992 MHZ and KSM in Point Reyes, California on 12,993 MHZ. Steve has only heard two SOS's in his lifetime. In 1999 The United States Coast Guard no longer used CW on mediumwave and it has been replaced with GMDSS. These maritime stations can run from 1 Kilowatt to 80,000 Kilowatts. You may find out more by going onto their website at www.nehrs.net



CAARA PERFORMS WIFI TESTING



Stan and Ken perform WiFi tests with Briggs taking the photos at Stage Fort Park

Long Distance WiFi Testing Results

Stan Stone

In preparing for bring Internet service to Thatchers Island, so over-water tests were proposed that could be done without getting in a boat. Cape Ann provides many locations that are publically

To pretest the WiFi link to Thatchers Island, several locations were identified for over-water testing where both ends of the test path are at sites that are on the mainland and are generally publicly accessible. Sites were evaluated for approximately equal distance to the design range (1.3 miles—a little longer is preferred to determine if there is some margin in the design) and their accessibility.

The Linksys router is well know in the WiFi hacking circles in that its firmware is based on Linux. This use of Linux obligated Linksys to publishing their source code for the router. This allowed developers to add features to the router, and make certain aspects available to control that are not normally available—including the power level. In this case the Linksys firmware was replaced with dd-wrt. Note that is is important to follow the firmware upgrade instructions very carefully, or it is possible to render the router useless (“brick” is the term used for this process, as in converting the unit into a brick). The author has personal experience with this, and was able to revive the \$50 router with some emergency procedures.

Wireless routers are sold under FCC Part 15, that is unlicensed and not meant for modification. Half of the WiFi band falls within the ham bands, so it is legal for a licensed ham to modify the router and replace the antenna, as long as the FCC part 97 regulations are adhered to.

Two test stations were constructed consisting of a simple camera tripod, an MFJ-1800 2.4 GHz Yagi antenna (15 dbi gain), a feedline, a Linksys WRT54GL WiFi router and an 8 ah 12V lead-acid gelcell battery.

The author conducted the tests with the assistance of Briggs Longbothum (AB2NJ) and Ken Burdsall (WB1GYM). Two sites were chosen, designated as 3a and 3b. Site 3a between Stage Fort Park and Pavilion Beach was attempted first (0.51 miles) with good results. The second test was between Stage Fort Part and the Eastern Point Lighthouse (3b – 1.72 miles). The second test was also successful. The likelihood of a workable link from Thatchers Island to the mainland is good.

A third test was conducted on the next day between Lanes Cove and Little Neck beach in Ipswich. In this test, the Lanes Cove station was unattended, having been set up and aimed in the morning. The test was performed on a lunch break, and the signal from Lanes Cove was easily detectable and a reasonable signal-to-noise ratio was achieved. The range distance was 6.9 miles.

Test Results

Test 1 – Stage Fort Park Parking Lot

Initial test were conducted over a parking lot at Stage Fort Park.

Test Designator: None

Range: 300' (determined by pacing)

Range relative to reference (1.27 mi): 4.5%

RSSI: -34 dB, Noise: -89 dB, SNR 55 dB (316,000X)

Test 2 – Stage Fort Park to Pavilion Beach

Test Designator: 3a

Range: 0.51 miles (from map)

Range relative to reference (1.27 mi): 40.2%

RSSI: -44 dB, Noise: -81 dB, SNR 37 dB (5000X)

Test 3 – Stage Fort Park to Eastern Point Lighthouse

Test Designator: 3b

Range: 1.72 mi. (from map)

Range relative to reference (1.27 mi): 135% (over 1.3X)

RSSI: -61 dB, Noise: -84 dB, SNR 23 dB (200X)

Test 4 – Lanes Cove (Gloucester) to Little Neck Beach (Ipswich)

Test Designator: 6

Range: 6.9 mi. (from map)

Range relative to reference (1.27 mi): 543% (over 5X)

RSSI: -83 dB, Noise: -95 dB, SNR 12 dB (16X)

Comment: Very low noise, probably due to limited signal from other WiFi stations located across the water. Other stations on Ipswich side likely back fed into antenna.

Conclusions

The proposed combination of a high gain Yagi antenna and Linksys router positioned at each end of a wireless link appear to have sufficient signal strength and signal-to-noise ratio to carry a broadband signal across a primarily over-water path.

CAARA TO HAVE THATCHERS ISLAND EXPEDITION AGAIN !!!!!

The Cape Ann Amateur Radio Association will once again sponsor a radio expedition to Thatcher's Island on Saturday, August 8, 2009. On Thursday, May 21, Briggs-AB2NJ, Stan-W4HIX and Dick-WB1W attended the Thatchers Island Association meeting and the Association was nice enough to grant our club the use of the island for the "Preservation for Amateur Radio" Activity. Last year we operated CW, PSK 31, VHF PHONE and HF PHONE- all on battery power. You can look at last years picture to get a better idea-just click on the picture link on the club website at www.caara.net. We will give more details as the date gets closer.



"Mary, Harding's Elected!"

SEVEN ELECTIONS AGO, a tiny station near Pittsburgh broadcast the returns of the Harding-Cox contest. It was the world's first regularly scheduled radio program.

The station was KDKA. The year was 1920. And what a tremendous change has taken place since then... in radio, in KDKA, and in Pittsburgh!

Radio, in 1920, was hardly more than a stepchild of science, practically unknown to the public. Only a handful of crystal-set listeners heard that original program, broadcast from a transmitter which radiated less power than is consumed in your 100-watt table lamp.

Now, of course, radio is a major industry... a source of entertainment and information for uncounted millions.

Pittsburgh, in 1920, was a city of 589,000. Today more than 700,000 dwell within the city limits alone. And in the KDKA-Pittsburgh trading area... a tri-state region famous for its agriculture as well as its industry, both of which are expanding even further today... live more than 7,000,000 men, women, and children.

For these people, of course, radio has become a part of everyday life. And for most of them, KDKA... more than any other station... means radio. They listen to KDKA for educational and farm programs. They listen for local musical and variety programs. They listen for ever-popular NBC network programs. They listen frequently and they hear well... for KDKA, alone among Pittsburgh stations, transmits its programs with the full power of 50,000 watts, for the benefit of people not only in Pittsburgh itself but in more than a hundred surrounding counties.

Yes, Pittsburgh and KDKA have come a long way in 28 years. But don't think for a moment that they have stopped growing. Pittsburgh, already launched on a history-making program of civic improvement, looks forward to an even greater future. And KDKA will be part of it... bringing to all the people of this great area the best that radio offers.

Westinghouse Radio Stations Inc owns and operates KDKA—and KEX, KYW, WBZ, WJZA, WOWO, and WBZ-TV. National representatives, NBC Spot Sales, except for KEX; for KEX, Free & Peters.



WESTINGHOUSE RADIO STATIONS Inc

A VISIT TO HRO- 'THE CANDY STORE'



Every ham operator has to visit the HRO store in Salem, NH sometime in their career to purchase a rig, an antenna, cable, connectors, books....or to just spend sometime playing with the new rigs. The staff is friendly and they encourage you to try different radios.



Every rig can be connected to a wire antenna or a beam for receiving only. I spent over an hour playing with the new Yaesu FT9000 which listed for over \$14,000 for the 400 watt version loaded with filters and modules.



The Heil microphone station lets you try each microphone while you listen thru headphones. I brought back a case of HRO catalogs and left them at the CAARA clubhouse. Feel free to take one.

Ham radio comes to the Manchester Emergency Operations.

On May 13th, Ham Radio reached a new high in Manchester with the installation of a dual band, 2M/440 MHz antenna atop Town Hall. This will provide for emergency backup communications in the town's command post for emergencies, aka the Emergency Operations Center.

The antenna installation was completed by a Manchester Fire Department team led by Lt. Jim Ducette. Jerry Jodice, W1ZQM a member of NSRA and, Bill Canty, W1OKD did all design work, planning and small parts procurement to have the installation proceed smoothly

The antenna and Yaesu FT-7800 Radio were acquired by the town by a grant from the Federal Emergency Management Agency on a request submitted by Fire Chief Andrew Paskalis.

Picture on the right shows the completed antenna installation



Picture shows a view behind town hall during installation by the Manchester fire Department.

Courtesy Bill-W1OKD

May Emcomm Meeting by Dean-KB1PGH

CAARA held it's monthly Emergency Communications Group meeting on Wednesday, May 20. This meeting was led by the clubs Emcomm Manager and club President Curtis Wright -AA3JE.

During this months meeting we had updates on how the state was handling the swine flu outbreak, how the town of Essex was planning to set up their new Fema Grant 2 meter radios, building relationships with the local chapter of the Red Cross in Beverly, we talked about the new digital mode NBEMS which can be used on 2 meters to send text and photos for emcomm use. We also had updates from Bill Canty-W1OKD that Manchester had installed it's new Fema 2 MTR radio and antenna at the Town Hall. We also were informed that MEMA would have a statewide Hurricane drill on Monday June 1, 2009 at 7 PM and that CAARA would participate this year. We also discussed making ID's and sign out sheets for future use when our Emcomm members are sent out to a disaster site. If you are interested in emergency communication work, the ARRL has a 10 week online Level 1 Emergency Communications Course that envelopes all the aspects of how to prepare for and operate in emergency conditions. You may also look on the FEMA website and take the ICS 100 and ICS 700 courses.

These cover the Incident Command system that all Government agencies operate by during a disaster situation.

If any club members are interested in joining our Emcomm group please feel free to stop by on the third Wednesday of every month at 7:30 PM at the CAARA clubhouse at 6 Stanwood Street in Gloucester.



NEWSUPERHET RADIO COURSE WEDNESDAY EVENINGS BEING HELD AT THE CAARA CLUBHOUSE

On Wednesday May 20th the club held it's first Radio Theory Course. This course is being taught by our club President Curtis Wright -AA3JE. Over the next several weeks the course will teach the students all about the radio theory involved in the superheterodyne receiver. Each student received an Elecnco Electronics Model AM 550K Radio Kit free of charge which they will build and test during the course. The students are:

Dirk Vanlightnberg N1PSF

Jen Cormier KC2THF

Jim Carroll W1DFG

Jon Cunningham K1TP

Dave Marsh W7WPD

Cabot Dodge KB1PBL

Dave Delkas KB9YOZ



Attentive class as instructor, Curtis-AA3JE, talks about AC-DC circuit principles and how it relates to Ohm's Law

D-STAR Info Newsletter

A new quarterly newsletter devoted to the Amateur Radio digital voice mode **D-STAR** has been launched and can be downloaded free.

The **D-STAR Info Newsletter** will feature news about D-STAR products and software, regional news on D-STAR systems and activities, hints and tips for users and everything D-STAR.

The newsletter should appeal to all users from the brand new to the experienced.

The first issue includes these articles:

- * California Looks to 1.2 GHz for Frequencies
- * D-RATS - Maps and Messages
- * Grant Sources Can Fund New D-STAR Systems
- * WOS Salutes Titanic
- * The BC to SF Net

You can download the PDF from
<http://www.dstarinfo.com/newsletter/>

The Field Day Story



Where the spirit of “Amateur Radio Past” joins forces with the Next Generation of Innovations, Interests and Individuals!!!

ARRL Field Day is the most popular on-the-air operating event in amateur radio. On the fourth full weekend in June, tens of thousands of amateur radio operators gather for a public demonstration of our service. Field Day is part educational event, part operating event, part public relations event – **and ALL about FUN!**

Amateur radio is about knowledge and growth. It is a hobby and service that truly offers “something for everyone.” **Amateur Radio embraces both the old and new.** While CW may no longer be a testing element, it is still a strong and favorite operating mode for many. Tens of thousands of operators are embracing digital technologies, from RTTY to newer digital modes like PSK31 and Olivia. Phone operation, probably the largest segment of the hobby, also has new frontiers to be explored with digitized voice, VOIP, and IRLP. And this is why Field Day – the largest annual on-the-air operating event – is so exciting. It gives all – the old timer and the newcomer, the brass-pounder and the computer assisted operator – the chance to share and teach the broad range of modes and technologies we find in our hobby.

Field Day is truly the time in which **we bring amateur radio to Main Street USA.** By setting up in parking lots, malls, Emergency Operations Centers, parks and even at home, amateur operators learn skills that will allow them to better serve their communities. Setting up in these public venues gives added public relations value – their friends and neighbors can see and experience the fun and public service capability that their “ham radio” neighbors bring to the community.

EMP a Real Threat to Hams and the USA

[Dave Garner \(K4YRK\)](#)

One second after.....

One second after what, you may ask? The answer to this question is in the form of a new novel by **William R. Forstchen**, "*One Second After*". I finished reading this best selling novel a few weeks ago and it has caused me to consider my own family survival if the situation that the novel describes takes place in our country.

The novel describes an Electro Magnetic Pulse attack on our country, and the resulting break down of government, society, and all support measures that we currently depend upon.

EMP is shorthand for Electro Magnetic Pulse. It is a rather unusual and frightening by-product when a nuclear bomb is detonated above the earth's atmosphere. We all know that our atmosphere and the magnetic field which surrounds our planet is a thin layer which not only keeps us alive, but also protects us from dangerous radiation from the sun. On a fairly regular basis there are huge solar storms on the sun's surface which emit powerful jets of deadly radiation. If not for the protective layer of our atmosphere and magnetic field, those storms would fry us. At times though, the storm is so power that enough disruptive energy reaches the earth's surface that it drowns out radio waves and even shorts electrical power grids. . .this happened several years back in Canada.

View the detonation of a nuclear bomb, two hundred miles straight up as the same thing, but infinitely more powerful since it is so close by.

As the bomb explodes it emits a powerful wave of gamma rays. As this energy release hits the upper atmosphere it creates an electrical disturbance known as the Compton Effect. The intensity is magnified. View it as a small pebble rolling down a slope, hitting a larger one, setting that in motion, until finally you have an avalanche.

At the speed of light this disturbance races to the earth surface. It is not something you can see or hear, in the same way you don't feel the electrical disturbance in the atmosphere during a large solar storm. 1

For all electrical systems though, it is deadly. As ham operators and potential emergency responders this represents a huge threat for our mission as communicators in a time of emergency. Any solid state radio hooked to an antenna or even to the AC power line would most likely be fried. This EMP effect would also disable all telephone systems, cell phones, and the entire electricity power grid system. Almost all vehicles made since 1980 would suffer damage to the electrical system and computer control vehicle engine systems. Even more dire, any civilian airplane in the air at the time of the EMP wave would most likely crash due to loss of all electrical control systems.

One second after such an attack, we as a country would be set back to conditions similar to the mid 1850's in a society not able to cope without modern support systems.

Unlike a lightning strike, or other power surge, an EMP surge is "front loaded." Meaning it doesn't do a build up for a couple of micro-seconds, allowing enough time for the circuit breaker to "read" that trouble is on the way and shut down. It comes instead like a wall of energy, without any advance wave building up as a warning. It therefore slams through nearly all commercial and even military surge protectors already in place, and is past the "safety barrier" and into the delicate electronics before the system has time to react. 2

Such an attack could be carried out fairly easy by a rogue nation or terrorist group with just two or three very small nuclear warheads exploded above our atmosphere by a small rocket such as North Korea and Iran currently have. The threat is very real and could be carried out by these groups now or in the near future. We as a country are not prepared for this type of attack. Our military and some government sites are hardened for this but the civilian side of life, for the most part, is totally unprotected for this.

What can we do as individuals to protect ourselves and families and also as ham operators our equipment and ability to get on the air to handle emergency communications? I have been researching the Internet for information on EMP and steps you can take to protect yourself and electronic equipment. I have also consulted with several hams, who are retired military and industry experts who have done extensive professional study of EMP. They suggest we store our main radio, or a backup radio, in a metal box, to protect the circuits from an EMP blast. Any modern radio hooked to an antenna and plugged into a power supply will probably not survive the attack even if you have lightening protection on your station already. Interestingly, any older rig with tubes instead of modern solid state would most likely survive if not connected to an antenna or AC power. A simple thing called a "Faraday Cage" is nearly a fool proof protector of electronics from an EMP. Your metal box or screen could be as simple as a metal filing cabinet or box or small wire screen grounded.

We will need alternative power, as the AC will be out for a very long time. Batteries with recharge ability would do. Solar panels to recharge 12 volt batteries will do fine. Small gas generators will do but you must protect them from EMP if they have any computer or electronic control circuits built in them.

You should prepare to survive without any additional food or water sources from existing normal supplies. Also complete cut off of all medically supplies. There will be no grocery store or pharmacy to re-supply you for a very long time after such an attack.

I am not writing this to scare you but to inform you of the possibility of such an event that our country is wide open to an attack. I encourage you to research this topic on your own. Start with Dr. Forstchen's website, www.onesecondafter.com. Other websites with information are: http://www.unitedstatesaction.com/emp_and_faraday_cages.htm

I also encourage you to read the novel, **One Second After**, by William Forstchen.

An editor of Aviation Week and Space Technology, after reading this novel declared. "It is not a question of if it will happen . . . it is merely a question of when."

Dave Garner

K4YRK

1. ***"EMP 101" A BASIC PRIMER & SUGGESTIONS FOR PREPAREDNESS By William R. Forstchen Ph.D. Author of "One Second After"***

2. ***"EMP 101" A BASIC PRIMER & SUGGESTIONS FOR PREPAREDNESS By William R. Forstchen Ph.D. Author of "One Second After"***

QST Magazine Articles - 1986

In 1986, QST magazine published a 4-part article on "Electromagnetic Pulse and the Radio Amateur". The article offered some in-depth technical information on hardening radio equipment against lightning strikes or nuclear explosions. More than you ever wanted to know...

Three Amateur Radio Cubesats launched

At 19:55 EDT on Tuesday May 19 three CubeSats carrying Amateur Radio payloads were successfully launched from the NASA Wallops Flight Facility in Virginia.

The CubeSats are:

PHARMASAT-1 - Santa Clara University on 437.465 MHz AX.25 1200 bps

HAWKSAT-I - Hawk Institute for Space Sciences on 437.345 MHz

POLYSAT CP6 - California Polytechnic State University on 437.365 MHz
1200bps AX.25

Initial reports on the web indicate that signals have been received from Pharmasat-1 and Polysat CP6.

A 'High Quality' video of the launch titled 'Minotaur 1 (TacSat 3)' can be seen on YouTube at <http://www.youtube.com/watch?v=YEf9trI1Hf8>
(click on player's HQ icon)

A lower quality version is at
<http://www.youtube.com/watch?v=FEs2STSF7Lo>

PharmaSat launch and beacon alert
http://www.southgatearc.org/news/may2009/pharmasat_launch.htm

FCC looks to raise Vanity Call Sign fees for second consecutive year

The FCC released a Notice of Proposed Rulemaking and Order (NPRM) on May 14 seeking to raise fees for Amateur Radio vanity call signs.

Currently, a vanity call sign costs \$12.30 and is good for 10 years; the new fee, if the FCC plan goes through, will go up to \$13.40 for 10 years, an increase of \$1.10.

The FCC is authorized by the Communications Act of 1934 (as amended) to collect vanity call sign fees to recover the costs associated with that program. The vanity call sign regulatory fee is payable not only when applying for a new vanity call sign, but also upon renewing a vanity call sign for a new term. Instructions on how to comment on this NPRM are available on the FCC Web site.

The vanity call sign fee has fluctuated over the 12 years of the current program — from a low of \$11.70 in 2007 to a high of \$70 (as first proposed in the FCC's 1994 Report and Order). In 2007, the Commission lowered the fee from \$20.80 to \$11.70. The FCC said it anticipates some 15,000 Amateur Radio vanity call sign "payment units" or applications during the next fiscal year, collecting \$201,000 in fees from the program.

The vanity call sign regulatory fee is payable not only when applying for a new vanity call sign, but also upon renewing a vanity call sign for a new term. The first vanity call sign licenses issued under the current Amateur Radio vanity call sign program that began in 1996 came up for renewal three years ago.

Those holding vanity call signs issued prior to 1996 are exempt from having to pay the vanity call sign regulatory fee at renewal, however. That's because Congress did not authorize the FCC to collect regulatory fees until 1993. Such "heritage" vanity call sign holders do not appear as vanity licensees in the FCC Amateur Radio database.

Amateur Radio licensees may file for renewal only within 90 days of their license expiration date. All radio amateurs must have an FCC Registration Number (FRN) before filing any application with the Commission. Applicants can obtain an FRN by going to the ULS and clicking on the "New Users Register" link. You must supply your Social Security Number to obtain an FRN.

The ARRL VEC will process license renewals for vanity call sign holders for a modest fee. The service is available to ARRL members and nonmembers, although League members pay less. Routine, non-vanity renewals continue to be free for ARRL members. Trustees of club stations with vanity call signs may renew either via the ULS or through a Club Station Call Sign Administrator, such as ARRL VEC.

League members should visit the "ARRL Member Instructions for License Renewals or Changes" page, while the "Instructions for License Renewals or Changes" page covers general renewal procedures for nonmembers. There is additional information on the ARRL VEC's "FCC License Renewals and ARRL License Expiration Notices" page.

License application and renewal information and links to the required forms are available on the ARRL Amateur Application Filing FAQ Web page. The FCC's forms page also offers the required forms.

The links to the above-mentioned websites can be found at, <http://www.arrl.org/news/stories/2009/05/18/10825/?nc=1>

You may not know it, but if you have a wireless router, a cordless phone, remote car-door opener, baby monitor or cellphone in your house, the FCC claims the right to enter your home without a warrant at any time of the day or night in order to inspect it.

That's the upshot of the rules the agency has followed for years to monitor licensed television and radio stations, and to crack down on pirate radio broadcasters. And the commission maintains the same policy applies to any licensed or unlicensed radio-frequency device.

"Anything using RF energy — we have the right to inspect it to make sure it is not causing interference," says FCC spokesman David Fiske. That includes devices like Wi-Fi routers that use unlicensed spectrum, Fiske says.

The FCC claims it derives its warrantless search power from the Communications Act of 1934, though the constitutionality of the claim has gone untested in the courts. That's largely because the FCC had little to do with average citizens for most of the last 75 years, when home transmitters were largely reserved to ham-radio operators and CB-radio aficionados. But in 2009, nearly every household in the United States has multiple devices that use radio waves and fall under the FCC's purview, making the commission's claimed authority ripe for a court challenge.

"It is a major stretch beyond case law to assert that authority with respect to a private home, which is at the heart of the Fourth Amendment's protection against unreasonable search and seizure," says Electronic Frontier Foun-

dation lawyer Lee Tien. “When it is a private home and when you are talking about an over-powered Wi-Fi antenna — the idea they could just go in is honestly quite bizarre.”

George Washington University professor Orin Kerr, a constitutional law expert, also questions the legality of the policy.

“The Supreme Court has said that the government can’t make warrantless entries into homes for administrative inspections,” Kerr said via e-mail, referring to a 1967 [Supreme Court ruling](#) that housing inspectors needed warrants to force their way into private residences. The FCC’s online FAQ doesn’t explain how the agency gets around that ruling, Kerr adds.

The rules came to attention this month when an FCC agent investigating a pirate radio station in Boulder, Colorado, left a copy of a [2005 FCC inspection policy](#) on the door of a residence hosting the unlicensed 100-watt transmitter. “Whether you operate an amateur station or any other radio device, your authorization from the Commission comes with the obligation to allow inspection,” the statement says.

The notice spooked those running “[Boulder Free Radio](#),” who thought it was just tough talk intended to scare them into shutting down, according to one of the station’s leaders, who spoke to [Wired.com](#) on condition of anonymity. “This is an intimidation thing,” he said. “Most people aren’t that dedicated to the cause. I’m not going to let them into my house.”

But refusing the FCC admittance can carry a harsh financial penalty. In a 2007 case, a Corpus Christi, Texas, man got a visit from the FCC’s direction-finders after rebroadcasting an AM radio station through a CB radio in his home. An FCC agent tracked the signal to his house and asked to see the equipment; Donald Winton refused to let him in, but did turn off the radio. Winton was later [fined \\$7,000 for refusing entry to the officer](#). The fine was reduced to \$225 after he proved he had little income.

Administrative search powers are not rare, at least as directed against businesses — fire-safety, food and workplace-safety regulators generally don’t need warrants to enter a business. And despite the broad power, the FCC agents aren’t cops, says Fiske. “The only right they have is to inspect the equipment,” Fiske says. “If they want to seize, they have to work with the U.S. Attorney’s office.”

But if inspectors should notice evidence of unrelated criminal behavior — say, a marijuana plant or stolen property — a Supreme Court decision suggests the search can be used against the resident. In the 1987 case *New York v. Burger*, two police officers performed a warrantless, administrative search of one Joseph Burger’s automobile junkyard. When he couldn’t produce the proper paperwork, the officers searched the grounds and found stolen vehicles, which they used to prosecute him. The Supreme Court held the search to be legal.

In the meantime, pirate radio stations are adapting to the FCC’s warrantless search power by dividing up a station’s operations. For instance, [Boulder Free Radio](#) consists of an online radio station operated by DJs from a remote studio. Miles away, a small computer streams the online station and feeds it to the transmitter. Once the FCC comes and leaves a notice on the door, the transmitter is moved to another location before the agent returns.

NEXT MONTH: FIELD DAY RESULTS WITH PHOTOS, BUILDING A HEXBEAM ANTENNA,