CAARA Newsletter

AN ARRL AFFILIATED CLUB OCTOBER ISSUE- 2011

President's Corner

by Stan-W4HIX

Summer's officially over, the Red Sox flamed out in grand style and CAARA held its Annual Members Meeting. I like to welcome back Hank and Dean as club officers and thank them for staying on another term. Curtis Wright led the effort to change the constitution to allow the clerk and treasurer to serve up to four consecutive terms. Hank and Dean are two excellent officers and it would be a loss to the club if they didn't continue in their current roles. Dick MacPherson and I have a year left on our terms, so now that we've gotten a few things figured out, we'll be working hard to move the club forward. I'd like to welcome the new board members and thank the outgoing board members for their service. I still expect a lot out of the officers, and board members—this is a dynamic club with many things to do.

The Members Meeting was a very good time to reflect on the accomplishments of the year, and to look forward to what needs doing in the next year. One issue is processing donated equipment. This is a service we perform and a source of revenue for us. To everyone who has helped sorting and inventorying the gear—thank you. We still have work to do in sale and disposal, so I'm going to keep asking for help. We need to be efficient in this task.

I helped out in a Red Cross radio drill a couple of weeks ago at CAARA. Looks like we can talk to Red Cross in Cambridge on 47.42 MHz, so they are going to give us a radio and license us to use it. Also, a radio will be installed at Fuller School (Gloucester EOC) for emergency communications there.

We had another successful scholarship breakfast this month. We are doing well in our fundraising and I think we'll be able to give several awards this year. Everyone in the club should be proud.

Enjoy the fall—it is a great time to operate and get out and do some portable work. If anyone has an idea for a social event before the Christmas party, let me know and we'll see what kind of interest there is. Oh, and don't forget Tech-in-a-Day on October 29th—a great opportunity for someone you know to get their Tech license

Hello to all CAARA Members,

Club President Stan Stone W4HIX will be holding another Tech in a Day Class which will be sponsored by the Cape Ann Amateur Radio Association. The class will be held on Saturday, October 29th at the Lanesville Community Center on 8 Vulcan Street in Gloucester, MA. The doors will open at 8 AM for check-ins and the course starts at 8:30 AM. This course will provide a quiet place to study and the course will be broken into 6 seperate sections during the day with breaks in between and an hour for lunch. The course will go to 4 PM and then the CAARA VE's will administer the FCC Technician Class Amateur Radio License exam to the attendee's. The course will cost $20.00 which includes the testing fee and snacks. Those attending this course must bring their own lunch or there are a few places around where they can purchase their own. Those who wish to take this course must register with course leader Stan Stone W4HIX at techinaday@caara.net as space is limited. If you are planning on taking this course please remember two bring two forms of ID on that day. One being a picture ID and the other with your Social Security Number so the FCC can process the exam. We would like to take this time to welcome David Macculloch KB1VZR and Robert Cavender KB1VSS as new members of CAARA so remember to give them a welcome the next time you see them at the clubhouse of hear them on the repeater.

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.

Jon Cunningham-Editor
K1TP

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 former W1RK 443.700 repeater with antennas located in Magnolia is now located at the CAARA clubhouse and has a very limited range.

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.

Hank W4RIG,Mark W1MAW and Al NIQEH chat it up during sunday mornings at the Caara clubhouse

One of the old receiving rigs at the clubhouse

A pic of the new Digital projector that the club purchased and mounted on the ceiling by Dick Ober K1VRA

CAARA and NSRA members provide public service communications.

On Monday September 5th 14 amateur radio operators from the Cape Ann Amateur Radio Association and the North Shore Radio Association provided a combined 40 hours of volunteer public service for the Annual Cape Ann YMCA Labor Day Road Race.They provided logistic and safety communications using the CAARA repeater frequency of 145.130 MHZ for hundreds of runners who ran a 25k course along RT 127 and RT 127A in Gloucester and Rockport.Every year amateur radio operators from CAARA and the NSRA provide about 200 hours of event communications for over a dozen events such as road races,boat races,parades and triathalons over the course of the summer around Cape Ann.All of which they recieve to recompense for their dedicated hard work while using their own radio equipment costing hundreds of dollars bought at their own expense at no cost to the cities and towns of Gloucester,Manchester Essex and Rockport or the event organizers themselves.

Dean- KB1PGH sets up at the Field Day site for a day of portable ham radio operation. A few members came by and operated and had a great time.

Stan-W4HIX, Dean- KB1PGH, Ross-W1RAB, and Rick-WZ1B portable at Fuller School playing a little portable radio.

Deana setup his Yaesu FT817 QRP rig and his trusty Buddipole Antenna system

Dean, Stan, Ruth, and Rick enjoyed the warm weather and good band conditions

Gloucester Daily Times Letter: Praise due community responders to Irene

To the editor:
I came back to Gloucester from California to deal with Hurricane Irene, and any impact it would have on my property in Lanesville.
It was very impressive and reassuring that all the city department heads and resources were at one emergency operations center where priorities and communication could be maximized.
As the founder of LEAP, the early advocate with MEMA for CERT funding in Gloucester, and a member of Cape Ann Amateur Radio Association, I want to say congratulations for making sure the city was ready to deal with difficulties while minimizing poor communications through a non-coordinated effort. I monitored the Police Department, Fire Department, Department of Public Works, hospital and Caara Net and was quite impressed with everyone's performance.
National Grid's timely response and remedy of a downed mains power line in Lanesville was superb. Done in under three hours from power outage.
All in all, it was great performance by all.
I'm grateful and proud of Gloucester people being on top of things so aggressively while many cities were floundering with disorganization.
Ross Burton-W1RAB
Washington Street, Gloucester

TECH IN A DAY CLASS: Club President Stan Stone W4HIX will be holding another Tech in a day class which will be sponsored by the Cape Ann Amateur Radio Association. The class will be held on Saturday October 29th at the Lanesville Community Center on 8 Vulcan Street In Gloucester Mass. The doors will open at 8 AM for check-ins and the course starts at 8:30 AM. This course will provide a quiet place to study and the course will be broken into 6 seperate sections during the day with breaks in between and an hour for lunch.The course will go to 4 PM and then the CAARA VE's will administer the FCC Technician Class Amateur Radio License exam to the attendees. The course will cost $20.00 which includes the testing fee and snacks. Those attending this course must bring their own lunch or there are a few places around where they can purchase their own. Those who wish to take this course must register with course leader Stan Stone W4HIX at techinaday@caara.net as space is limited. If you are planning on taking this course please remember two bring two forms of ID on that day.One being a picture ID and the other with your Social Security Number so the FCC can process the exam.

73's
Dean Burgess KB1PGH
CAARA Clerk

Three hams purchase HRD suite source and rights

Mike Carper WA9PIE, Randy Gawtry K0CBH and Rick Ruhl W4PC have acquired the source and rights to the **Ham Radio Deluxe** suite of software. The trio plans to continue the improving the best ham radio package available.
"Simon has done a fantastic job with this software. His vision for integrating rig control, rotor control, logging, digital modes, and satellite operations into a single integrated feature-rich software suite has captivated the ham radio community. We'd like to see this product continue in a way that respects the hard work put into this package by Simon and others," said Mike Carper. "Maintaining that vision, while delivering timely fixes and feature enhancements in the future, will be the number one priority."
"After many years writing the HRD software it's necessary to take a break and hand the whole project over to

another team," said Simon Brown (HB9DRV). "The support effort required has become more than I can realistically manage – with many thousands of users, new radios and other hardware appearing all the time and unexpected changes to the infrastructure used by HRD such as QRZ.com I no longer have any time at all for other projects. As some of you will know I have formed a company SDR-RADIO.com GmbH and am now working in the Software Defined Radio arena with RFspace. This is the technology of the future; a future which I want a part of. In 2012 I plan to return to England and get back on the air, something I haven't done much during the last 25 years."

The trio is in the process of building a development environment for HRD and plans to begin by addressing some of the bugs in the existing "To Do List" for an upcoming 5.1 release. The 5.1 release will be made available at no charge to registered users when completed.

All three principals have more than 25 years of experience with radio data communications. Rick Ruhl is the president of W4PC Software, Inc. whose products include the PakRatt, PKTerm and Radio Operations Center software suites. Randy Gawtry is the president of Timewave Technology Inc. whose products include the PK and DSP families of data controllers and other commercial data products. Mike Carper is an experienced Fortune 500 technology executive, educator, and featured speaker in the areas of wireless technologies and IT Service Management.

WA9PIE is on the web at http://www.wa9pie.net/hamradio

NEAR-Fest X

Friday October 14th and Saturday October 15th 2011

0900 Friday through 1500 Saturday Deerfield Fairgrounds - Deerfield NH, USA

Here is Brian Coffen of Hamton N.H. with his parents holding up his new FCC Technician Class Amateur Radio License after taking the exam at the September ARRL VE test session at the CAARA Clubhouse. Brian was one of 3 who earned their Technician Class licenses that day.One also earned his General class license and one earned their Extra Class License as well. CAARA holds FCC Amateur Radio License exams on the second Sunday of every month all year long at the CAARA clubhouse on 6 Stanwood Street in Gloucester.If you wish to take and exam with us doors open up at 9:30 AM and testing starts shortly after.Please bring two forms of ID,one being a picture ID and the other with your Social Security Number.Please bring $15.00 for the testing fee as well. There is one other benefit of testing with us. If you take and pass your Technician Class license exam with us and you join CAARA that day you automatically get half off your first years dues which is $15.00. Not bad for all the benefits of being a member....*courtesy Dean-KB1PGH*

CAARA ANNUAL MEETING- September 2011

Stan- W4HIX giving a Powerpoint Presentation on the club's accomplishments this year.

CAARA Club President Stan Stone W4HIX welcoming new Directors Paul Anderson- KA1GIJ and Joe Perry- KB1VQF into the Board.

ARRL FIELD ORGANIZATION

Dear Dean – KB1PGH:

It is our pleasant duty to inform you that your application for Field Organization has been approved by your Section Manager, and received here at ARRL Headquarters for entry in the Field Organization records. Your official appointment Public Information Officer has been entered into our records. Congratulations and welcome!

A list of supplies and resources are now available to you online at: http://www.arrl.org/public-service-field-services-forms If you need more information or have other questions, contact Leona Adams at (860) 594-0341 or email at ladams@arrl.org

The Membership and Volunteer Programs Dept. staff here at Headquarters exists for one purpose – to serve you. If there is anything we can do to make your job easier, please don't hesitate to contact us. Thank you for taking on an appointment in the ARRL Field Organization.
Sincerely yours,

Steve Ewald

Steve Ewald, WV1X
Supervisor, Field Organization/
Public Service Team

Downtown Gloucester.

Big Dreams in Orange and Green
by Curtis Wright

It started, like most things that get men in trouble, about age 12-13. My step-father had a bum leg, and he had bought a lawn tractor to use when cutting the grass. I had little interest in grass-cutting, but I loved to drive that tractor. The area where we lived had not yet been developed (read “dirt roads”) and I tooled up and down the road on that thing at a top speed of 6 miles an hour till I had burned up all the gas I could afford. My step-dad and I finally reached an agreement, trading grass-cutting for gas that lasted up till I was 16 and was finally able to drive one of the pickups.

So I had a fond spot in my heart for lawn tractors, and years later when I bought a house that had a big back yard, I went to the dealer and priced one. I must admit that it was a reputable store, they were nice to me, and after they bandaged my head (I had cut it on the gravel when I fainted after looking a the price) they suggested I might look over one of their fine collection of used machines. I settled on an 8 year old “Iron Horse” that looked pretty clean, and I embarked on several years of battle with the roots and rocks of the back yard.

I must admit that dollar for dollar, that old lawn tractor was a great value, but I had long nursed a secret passion, held in the depths of my soul. Unlike my friends in town, this was not to dress in a pink tutu and dance the “Nutcracker” (I live in a pretty progressive New England artist’s colony). I wanted a real tractor, with a real front end loader. A big one, with a diesel engine, and big tires.

Well the day finally came when the old “Iron Horse” seemed ready to be put out to pasture, and I began secretly scanning Internet sites. I quickly found out that my state had been completely stripped of tractor dealers, owing to spreading “gentrification” turning all the farms into condominiums and a neighboring state with no sales tax. I broadened my search, and I found that I was not the only man with “tractor-envy” (a condition that affects men advancing in age who feel the need for bigger equipment. Of all kinds).

Everyone it seemed, at least every tractor maker, had set their sights on the aging baby boomers as a target demographic. There were tractors, compact tractors, sub-compact tractors and one maker even named its new line the “Baby Boomer”. Each had a wonderful new website with really professional programming, and each had charts and graphics showing that their product was MUCH better than the competition.

There was one problem, but it was a big one. The designers of these machines had realized that they needed to scale the big tractors down, and they did so perfectly. They also realized that if they showed a man on the display tractor they would discourage the female buyer, and if they showed a woman, they would lose the men. So they showed the tractor, with no one on it. So there was nothing to give any sense of scale. So I could not get any idea of how big these things were. This mattered, since the cost of the “BIG GREEN” Model 2300 and the “BIG GREEN” Model 5200 were not that different, but I suspected they might be a wee bit different in size.

After I had pestered some very nice salesmen via the Internet, who sent me quotes for various tractors, it became clear that I needed to see these things in person. It also became clear that I needed to do some preparatory work on my spouse. She had long dreamed that one day her car might actually spend a winter in the garage. She thought about a car that was warm, dry, snow-free, and a pleasure to get into and drive. She had been hinting that this might be the year, and I knew that there would be trouble if I surprised her by dropping a new tractor into her preferred garage space with no warning.

So I invited her to come along to a “Tractor Hunting” excursion into the neighboring state. To my surprise she agreed, and off we went. I was to learn that each tractor company had a preferred color, and we went to Orange

tractor dealers, Green tractor dealers, Red tractor dealers and even a Blue tractor dealer. I was expecting, as a dilettante, to be treated with disdain by the “tractor guys”, but I had forgotten that we were driving my wife’s car. The sight of a Lincoln Navigator pulling up to the dealerships galvanized salesmen like accidentally hitting the cattle fence used to affect my old dog. (Old Blue never learned that you NEVER, EVER, EVER relieved yourself against a fencepost carrying an electric fence).

The salesmen knew their business, and within seconds of arriving at a dealership I was in the seat of a running tractor and lurching around the parking lot. I helped a number of salesmen develop their spiritual condition as I careened and lurched toward: expensive machines, their car, the showroom windows, but no serious damage was done, and by the end of the day we were tired, happy (well I was happy), and on our way back home.

I had really wanted to buy AMERICAN, but I was appalled to find out that the models that were the size I needed were all made in Japan (or Korea, or China). There was one brand that made a “compact” tractor in America, but their idea of “compact” was somewhat unique, since the thing stood five feet high at the shoulder and was larger than my car (not the Lincoln, MY car). So I ended up doing what every red-blooded husband does, I asked my wife.

“The little orange one seemed nice.”

AHA! I was set. The instant we got home I called “Orange Tractors N’ stuff” and set up delivery. Well, that is, I tried to set up delivery.....

“So what accessories you want?”

“Accessories?”

“The base tractor comes with nothing. Unless all you want to do is ride around, you need some accessories. You know, like a mower, bagger, front-end loader, backhoe, weight bucket, scraper blade, cultivator, post hole digger, flail mower, ...”

As he droned on I realized that I was not buying a motor vehicle, I was entering into a long-term relationship. I was to find out that I could buy hundreds of things that plugged into something called a “3-point hitch” and that the price of the accessories made the tractor look like a bargain.

So I settled on a front-end loader, a mid-deck mower, and a rear scraper blade. We set up a delivery date and I strolled back into the living room.

“Honey?” my wife’s voice was strangely mellow.

“Yes?”

“Now that you have ordered you tractor, can we discuss my Berninia sewing machine?”

“Any kind of sewing machine you want, dear.” After all, how much could a sewing machine cost?

Shoring up Straitsmouth.....Interesting article regarding the Island next to Thatcher's Island where we hold our yeraly Island DX-pedition!

By Jesse PooleStaff Writer Gloucester Daily Times

The small island just off the coast of Rockport is the subject of actions and plans to both restore and maintain the three structures that sit on it — a lighthouse, an oil house and a dated, dilapidated house of a long-gone lighthouse keeper.

As picturesque Straitsmouth Island lies in the sun all day — if the weather is nice — only rocks and birds surround it and green bushes and shrubbery appear to cover it. But so do two needy structures and the already-restored little oil house that sits between them.

The Thacher Island Association spent this past summer and roughly $3,000 restoring the old oil house, which was once used by the lighthouse keeper to store oil. The association is now using it to store tools, supplies and a generator.

These are all things that might contribute to helping with the association's next endeavor: to restore its neighbor — the white, scenic and still-active Straitsmouth lighthouse.

The Thacher Island Association has plans to raise finances — an estimated $200,000 to $300,000 worth — in order to fix the lighthouse that "could eventually come (falling) down," according to Paul St. Germain, president of the association.

"We love having the lighthouses as part of our town," said St. Germain, referring to the dual lighthouses on Thacher Island and the one on Straitsmouth, which he said was originally built in 1834 and last restored in 1898.

The lighthouse and the property it sits on are part of the national register of historic places in the United States, according to both St. Germain and the National Parks Service website.

In an effort to maintain the historically significant location, St. Germain and the association have plans to look to the town's Community Preservation Committee for funding in the future, as well as to perform other fund-raisers, which have not yet been planned, he said.

The lighthouse, which is constructed of bricks, needs to be stabilized with new inside beams, as the current ones are rusted, according to St. Germain. It also needs other work, including restoring it's interior walls and staircase.

St. Germain said that, in the past, the association has looked to International Chimney Corporation for outside contractors, and they may look to them again for this project.

The island itself covers approximately 31 acres. Rockport owns 1.8 acres of it, after the town applied for the land in 2008, when the U.S. Coast Guard was giving it away. The rest of the island is owned by the Massachusetts Audubon Society — and reserved for the birds.

The Coast Guard still owns the foghorn and the light in the lighthouse — and continue to use both, said St. Germain.

The small amount of land that the town does own includes only the northeastern tip — the lighthouse and the land running into the sea, much of which is underwater at high-tide.

But Audubon and the Thacher Island Association are working closely, said both St. Germain and Gary Clayton, Audubon's vice president of conservation programs.

Though the little oil house is owned by Audubon, the association paid for its restoration, in return for the its use, which is a win-win according to both St. Germain and Clayton — a fixed structure for Audubon, storage space for the association.

Audubon has also allowed the association to make a small path from the western side of the island to the lighthouse, which, according to St. Germain, has been extremely helpful.

The lighthouse keeper's house that sits just a little further back on the island is also owned by Audubon, which plans to board it up as it's become dangerously unstable over the years, said Clayton.
Audubon recently sent a helicopter out over the island, delivering lumber and setting it down near the house.
"We will be starting some structural work in the very near future," Clayton said. "It's to stabilize the house."
He said that a section of it — the wall that faces northeast — needs a lot of help, as it is deteriorated.
"The island is not prepared for the public," said Clayton. "It's to be enjoyed from the mainland and as people boat or paddle around it, but the house is still dangerous."
As Audubon plans to get started on the project, working through a contractor — and acknowledging the possibility that it might carry over into the Spring, after a winter break — the Thacher Island Association has a longer time-line ahead.
"Our goal is to raise the money and get started on construction by 2013," said St. Germain.
One great advantage the association has, is that it now has an old boat, as of Sept. 17, when it christened its new boat: the Thacher Island II.
"We don't want to ruin our new boat, we'll use the old one," she said with a chuckle.
The association raised $300,000 for its new boat and bought the new one for $170,000.
It's not only the Thacher Island Association that thinks this lighthouse restoration project is important.
According to Clayton, Audubon sees it as important also.
"I think they (the association) and the town sees the lighthouse as an significant part of the cultural legacy of the town," said Clayton. "And one needs to spend time and money to maintain it; that's the way it is."
Clayton also suggested that perhaps the association and Rockport would be interested in restoring the house as it is also an historical landmark. Audubon is not necessarily looking to restore it, just make it safer.
"We're happy to support the efforts of the town," he said.

How Hard Could it Be?
by Curtis Wright

There used to be a show on television called “Home Improvement”. Most of those that watched it considered it a comedy. In our house, it was viewed as a documentary. I had been raised by a conservative Midwestern mother who believed, as most women from that area do, that the man of the house had a gender-based duty to excel at fixing things. Any man who could not repair a leaky faucet, unplug a stuck toilet, install a trellis in the garden or fix a squeaky floor had better buy a leotard and audition for a dance troupe.

This was a very old-fashioned, if not a brutally prejudiced outlook, and it was a very grave mistake when she married my father. My father felt that the proper way to deal with these household emergencies was to summon the domestic staff, and had never quite gotten over the shock when the servants vanished during the Great Depression, never to return. The result was that while most boys learned how to fix things by watching their father attend to household chores, a leaky faucet in our house turned into a domestic stalemate as both my father and my mother hinted how nice it would be if someone were to fix the darn thing. For me the result was that I grew up learning that I had a moral duty to learn how to fix things, but none of the skills needed to actually accomplish such repairs.

In the fullness of time I ended up a homeowner, and since our means were modest, I ended up with older houses that provided a lot of opportunities for practice. Since I really had not the slightest idea what I was doing, I tended to procrastinate, badly. This would have been fine if I had a nice urban wife who expected me to call the repairman, but I married a stalwart New England beauty whose father had been a master carpenter, and who had built or rebuilt scores of homes in his lifetime.

So when the dog died, as dogs do, I found myself with a problem on my hands. We had purchased a nice, varnished, feeding station for the dog, and had as a nice touch, had the dog’s name printed on the thing. Although we had a new dog, my wife found the daily reminder of dear “Bowzer’s” demise depressing. So she wanted to buy a new one, with the new dog’s name imprinted. I took the position that this was silly, that all that was needed was to sand off the old name and put on a new one. How hard could that be?

So in short order I was down in the workshop, trying to figure out how to accomplish this task. The easy way seemed to be to disassemble the thing, sand the old finish and lettering off, re-finish the wood, add new lettering and screw it back together. It seemed to be put together with screws, so I popped the little bung things that covered the screw holes off, and started taking out the screws. Well, some of the screws. Perhaps half the screws.

It seemed that some of the screws were down in little holes in the wood, quite a long way down, very deep inside, actually. So after a trip to the local hardware store for a longer screwdriver, I found out that the screws down in there did not have slots, but were some strange kind of hexy, spliny thing called a “Torx”. These are a new kind of fitting, well suited for robots, and a neat new way to send the homeowner back to the store to get a new set of screwdrivers with “Torx” heads. I was now down about $40, but I at least had a new set of tools. So I got the screws out, pulled all the wood apart, and set about sanding. I had thoughtfully bought some new sanding belts for the sander, ($6.00), and some sheets for the other sander ($4.00), and set about the task. Well, tried to.

It seems that it is very important when sanding using rough sandpaper and a belt sander to hold the work piece firmly, or the board in question will shoot off the bench and hit you in the solar plexus. After I got off the floor, and gagged a few times, I went upstairs seeking the solace of my family and balm for my wounds.

What I got was a hysterical fit of giggling from my wife, a whopping bruise, and a set of helpful instructions on how to nail down a few cleats to the bench to hold things when sanding. About 6 tablets of ibuprofen later, I was back at it, and found that nailing a cleat to the bench really worked quite well, and after a half hour or so I had sanded the boards clean and smooth. It was true that there was an astounding amount of sawdust around, and I decided that another break was in order before I returned to sweep it up.

After a brief rest, I swept up the sawdust, cleaned off the bench, and applied a coat of varnish to the boards to the accompaniment of “What is that nasty chemical smell? Are you cleaning machine parts inside again? Do it outside or at least open the window!”. For some reason, nice clean smells like gasoline, turpentine, mineral spirits, and engine degreaser seem offensive to my family. Puzzling. Oh yes, $30 for varnish and brushes.

While waiting for the varnish to dry, I took the wife out to dinner (“I am so nauseated by that stink I can’t face cooking food”), but we went to a local restaurant that was quite inexpensive ($40). It was late when we got back, and I was watching a little television when I heard my wife call from the bathroom. “There is NO hot water. What have you done this time?”

I went to the bathroom. Yep. Stone cold. I toddled down to the basement and found the furnace shut off. Or it had turned itself off, or something. This was a problem, as the furnace heated the hot water. I read the tag on the furnace.

“If the furnace is shut off, press the red button ONCE and see what happens.”

This seemed a sensible thing to do, and I did so.

Instantly the furnace roared into life, but all was not well. Black smoke billowed from the top, the sides, and every orifice, filling the cellar in seconds. Gasping and wheezing I ran from the room, hitting the emergency shut off switch. With a heart full of despair, I realized that the phone number of the furnace company was written on the furnace, in the cellar, on the other side of the door (in the black smoke).

I am prepared for adversity, and I went upstairs and after a half hour or so found the old gas mask I had bought back after 9/11. Suitably attired I went back down and retrieved the phone number.

“Hello? Acme Oil Company? This is Dr. Wright, yes <u>again</u>. I seem to have a problem.”

I described the problem, was told NOT to turn any switch or press any buttons and in an amazingly short time a very competent person was at our door. He quickly established that the cause of the problem was a clogged air vent on the oil burner.

“Never seen one do this. I seems to be clogged up with sawdust.”

I assured him that it was a mystery to me as well, and after he cleaned out the vents, replaced the oil pump, fixed a few leaks and kicked it on, it roared into nice clean combustion. It took 5 hours ($300 plus $160 in parts), but it was about time for service. anyway.

The soot added a nice patina to the varnish, and the dog really likes his new dish holder. I checked. We could have bought a new one for $49. But what was the fun in that?

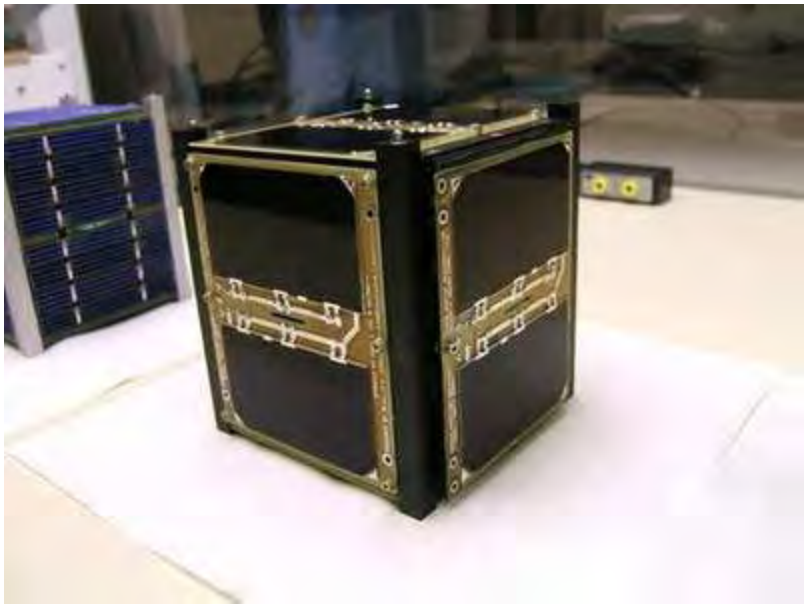
A quarter century of smallsat progress

by Jeff Foust

The concept of small satellites, or smallsats, is hardly new: after all, the very first satellite, Sputnik, weighed in at 83 kilograms, while the first American satellite to reach orbit, Explorer 1, weighed just under 14 kilograms. Of course, at the time satellites were small primarily because that's as much as the launch vehicles of the era could launch. As launch vehicles became more capable, satellites grew larger as developers sought to make them more capable.

However, while bigger is often better, bigger is also usually more expensive and takes longer. In recent years, though, there's been a resurgence of interest in smallsats. Advances in technology mean that spacecraft developers no longer need to sacrifice capabilities in order to get a useful payload into a package that weighs anywhere from a few hundred to as little as a few kilograms, with concomitant reductions in cost and development times. This resurgence of interest in smallsats is creating new opportunities, but also new challenges that must be overcome for smallsats to secure their place in the industry.

Smallsats rise again



The first era of smallsats was in the early Space Age, as noted above, when the performance of launch vehicles limited the size of satellites. There was a surge in launches of smallsats through the first half of the 1960s as the United States and the Soviet Union ramped up their space programs. "The early '60s was a fabulous time," said Siegfried Janson of The Aerospace Corporation in a presentation at the 25th Annual AIAA/USU Conference on Small Satellites, held last month at Utah State University in Logan, Utah. "It was a new field, people were building satellites left and right, and most importantly for this community, launch vehicles weren't that big, at least in the Western world."

"The early '60s was a fabulous time" for smallsats, said Janson.

However, as launch vehicles grew bigger, so did satellites, and the number of smallsats dropped off precipitously. For the 1970s and most of the 1980s, Janson noted, the smallsat realm was dominated by a class of Soviet microsatellites called Strela used for store-and-forward communications. (He used a common definition of microsatellite to refer to spacecraft weighing between 10 and 100 kilograms; "nanosatellite" refers to satellites weighing between 1 and 10 kilograms and "picosatellite" for satellites weighing between 0.1 and 1 kilograms.) A quarter-century ago, in 1986, 25 smallsats were launched: all but one (an amateur radio satellite) were Strela microsats.

Around that time, though, what Janson called the "small satellite doldrums" started to come to an end, thanks to two events. The first was the inception of the Utah State small satellite conference in 1987, which brought together a largely academic community to discuss smallsat development efforts. That conference has grown over the years to become the leading event in the global smallsat community, attracting hundreds of people from the commercial, government, and academic sectors for four days of presentations and networking. In recent years the conference grew so large it had to be moved from the campus's conference center to the more spacious student center.

The other event that year that helped stimulate the smallsat field was a conference titled "Meeting on Lightweight Satellite Systems", organized by the Defense Advanced Research Projects Agency (DARPA),

which was pursuing a program called “Lightsat” to examine the potential applications of smallsats. That effort led to several military smallsats, he said, as well as development of the Pegasus small launch vehicle to launch them.

“Twenty-five years ago the small satellite world was kind of stagnant,” Janson said. Those two events, and the projects that sprang from them over the years, revitalized and diversified the field. Today, he said, “small satellite missions are more diverse, and launch rates are up.”

Diverse missions and users

To demonstrate the diversity of the smallsat industry, Janson said that in 2010 there were 26 smallsats launched. While only one more than in 1986, the field is no longer dominated by a single class of satellites, as was the case with the Strela microsats a quarter century ago. Only 4 of the 26 smallsats launched in 2010 were classified as microsats, with 17 being smaller nanosats and the other 5 the yet-smaller picosats. The satellites launched in 2010 also served a wider range of applications than just communications, including technology development, scientific research, and even tracking of vessels in the ocean. Two of the picosatellites Janson included were camera platforms released from a Japanese solar sail experiment to monitor the sail’s deployment.

“The CubeSat was like the PC of this industry, because it took the knowledge that had been concentrated in a handful of organizations and spread it out globally to all kinds of organizations,” said Bille.

That diversity of spacecraft and missions has been enabled by a number of technological advancements that make it possible to put more capable payloads onto smaller satellites. Among the key technical advances Janson cited are improvements in microprocessors, solar cells, batteries, and microelectromechanical systems (MEMS) that give smallsats capabilities previously possible only with larger spacecraft. A less obvious innovation that has helped small satellite development has been the Internet, he said, allowing for improved collaboration on development efforts and even easier control of spacecraft through Internet-connected ground stations.

Another major innovation that has supported the growth of the smallsat field has been the CubeSat standard. Developed about a decade ago at California Polytechnic State University (Cal Poly) and Stanford University, a CubeSat is 10 centimeters on a side and weighs about 1 kilogram. CubeSats initially found interest among universities in part as a means to give students hand-on engineering experience with spacecraft for a tiny fraction of the cost of a larger spacecraft, particularly when coupled with secondary, or rideshare, payload launch opportunities.

The CubeSat form factor in recent years has attracted attention outside of academia, as both government agencies and companies have turned it into a de facto building block for nanosats and microsats. While a single CubeSat has limited utility, many organizations are putting multiple CubeSat units together into a single spacecraft. One common option is the “3U” CubeSat, where three CubeSats are put together into a spacecraft 10 by 10 by 30 centimeters long. Janson noted that 7 of the 17 nanosats launched in 2010 were 3U CubeSats, while 4 others were 1.5U CubeSats, half the size of a 3U satellite. And there are plans for 6U, 12U, and larger smallsats based on the CubeSat standard.

“The CubeSat was like the PC of this industry, because it took the knowledge that had been concentrated in a handful of organizations and spread it out globally to all kinds of organizations,” said Matt Bille of Booz Allen Hamilton in a separate presentation at the smallsat conference. “Microsatellites have passed their tipping point. They’re not a niche, they’re a global technology.”

One of the more unlikely organizations to express an interest in smallsats in recent years has been the National Reconnaissance Office (NRO). The NRO has typically been associated with so-called “exquisite” imagery and other satellite systems that are very big and capable, but also very expensive. In recent years, though, the NRO has funded some smallsat technology development work, using the CubeSat standard, through a program called Colony.

“Colony allows designers to focus on developing experiments and demonstrating concepts of operation,” said Bruce Carlson, director of the NRO, in a keynote address at the conference. “The NRO will continue to use small satellites to develop and demonstrate innovative technologies that solve our users’ most challenging problems, and to support university and industry outreach.”

For now the NRO’s use of smallsats is limited to technology development, but Carlson hinted that the agency

was studying ways to use them in more operational roles, perhaps by flying clusters of smallsats in formation to create large synthetic apertures for signals intelligence or radar imaging. “I’d like to be able to talk to you about the things we’re thinking about, but I can’t do that here,” he said.

Small satellites, big challenges

This growing interest in smallsats doesn’t mean that the future is entirely rosy for such spacecraft. Smallsats still face a number of issues blocking their greater adoption. The biggest challenge, most acknowledge, is the long-running concern about finding frequent, affordable access to space, a problem being addressed today through a combination of rideshare opportunities on larger launch vehicles and the development of smaller vehicles intended exclusively to serve the smallsat market (see “New opportunities for smallsat launches”, The Space Review, August 22, 2011).

“The real success in small satellite technology is in Earth imaging,” King said.

Another major challenge for the smallsat field is finding sustainable market niches. To date smallsats have found limited success, at best, in two commercial markets: communications and remote sensing, according to Jan King, who has worked on small satellites for over 40 years. In communications, ORBCOMM found some success with its constellation of satellites providing data services, and is in the midst of developing a replacement system for launch in the next few years. A related market, ship tracking, is also showing potential, he said. Remote sensing has been a bigger success, with a number of small satellites developed for government and commercial customers.

“The real success in small satellite technology is in Earth imaging,” he said in his conference presentation. “I would say we had marginal success in telecommunications and pretty darn good success in remote sensing. In the rest of the area, I would say we have not produced to date.”

Smallsat developers also face some technical and policy issues that could slow down adoption of smallsats. At a side meeting of last year’s smallsat conference at Utah State, some developers expressed concern when a representative of the commercial remote sensing office at the National Oceanic and Atmospheric Administration (NOAA) informed attendees that even CubeSats with low-resolution cameras needed a remote sensing license from that office if they planned on taking any images of the Earth.

In a paper accompanying his presentation, King identified another issue: access to the radio spectrum to allow for communications. Many smallsats have relied on the use of free amateur frequencies for communications, but that approach isn’t viable for commercial ventures. “Small satellite proponents have yet to deal squarely with this issue but, as the goal here is to discuss commercial missions, this issue becomes paramount and expensive,” he wrote. “Commercial users, nowadays, should even be prepared to have to pay for the use of the radio spectrum once a particular commercial application has shown itself to be commercially viable,” a process that can be time consuming and expensive, he adds.

Heightened concern about orbital debris also raises an obstacle for smallsats, many of which have either limited propulsion systems or none at all. Orbital debris guidelines by the Inter-Agency Space Debris Coordination Committee (IADC) recommend that satellites in low Earth orbits be able to deorbit no more than 25 years after the end of their missions. Many smallsats, though, are in orbits that will last more than 25 years, with no means of lowering orbits on their own, noted Dan Oltrogge of Analytical Graphics, Inc., in a conference presentation. “We’re not using best practices,” he said. “It reflects poorly on CubeSats if we don’t, and it’s something we need to be concerned about.”

In the last few years some smallsat developers have sought to find solutions to the orbital debris problem by proposing innovative means to deorbit satellites with expensive, heavy propulsion systems. In one example, Andrews Space and Technology presented a concept at the conference for a deorbit system that could fit into a 1U CubeSat volume and potentially also have the means of safely returning spacecraft all the way back to the ground.

“I think that the small space community is actually in a very good spot now,” said Klupar.

Some also worry that the CubeSat standard could, over time, fracture into several incompatible forms, particularly as developers try to accommodate their spacecraft on a growing array of launch vehicles. “That’s not

happening a lot yet, but it's something that I am concerned about," said Jordi Puig-Sauri of Cal Poly, one of the original developers of the CubeSat standard. "We need to move the standard forward. We can't just leave it as it is and let things fracture."

Even with those various technical, policy, and market concerns, the mood in the industry, at least at last month's conference, was one of optimism for the future of smallsats. While no one believes that smallsats will completely overtake the market—there are many missions that require the physical size, power, and other attributes found only on large spacecraft—there is plenty of opportunity for continued growth of smallsat systems in a variety of applications.

"I think that the small space community is actually in a very good spot now," said Pete Klupar, director of engineering at NASA Ames Research Center, which hosts much of NASA's interest in smallsats. "I think we're being very successful in our most recent missions and I think the future is also very bright."

"We're not saying that microsats can do everything," Bille said. "When we say large versus small is over, we're not saying that microsats won. We're saying that microsats are established in everybody's trade space. We've heard the age of microspacecraft predicted a few times before, but it's on solid ground now. We've got the applications, the technology, and the mission experience to say that microsatellites have a secure presence and a brilliant future."

CAARA Emergency Communication Group

The Cape Ann Amateur Radio Association's Emergency Communications Group meets on the second Wednesday of every month at 7 PM before the Board of Directors meeting.We discuss and plan for providing public service and emergency communications for the Cape Ann Region.If you are interested in the Amateur Radio Emergency Services please stop by on the meetings. For more information on emergency communications please go to the clubs website at www.caara.net and click on the Emergency Communications link

Call for volunteers-Ipswich Emergency Management

Hello members of CAARA and others who may be reading this newsletter. First let me take a moment to introduce myself. My name is Jonathan Hubbard, W1HUB and I am the Emergency Management Director for the Town of Ipswich. I am trying to rebuild our emergency management operation here in Ipswich back to the level we were at several years ago. One of my main goals is re-establishing our relationship with the amateur radio community. I have been a licensed operator since 2005 and just recently upgraded to my general this past spring. I realize the benefit of having amateur radio as an integral part of our emergency management plan. The Town of Ipswich also realizes this as well as they have budgeted $7,000.00 dollars for radio upgrades for Emergency Management. This money will go to developing two go kits to compliment our current operation center. We are also in the process of researching our best alternatives to create a state of the art EOC. My next step is to create a volunteer organization of amateur radio operators to reestablish Ipswich RACES. I will also be looking to members of the community to form a CERT team. I am looking forward to several grant opportunities through MEMA to help in establishing these local operations. I have scheduled an informational meeting for Monday October 17, 2011 at 1900 hours. The location will be at the Ipswich Town Hall meeting room B. The purpose of this meeting will be to discuss your role with Ipswich Emergency Management. If after the meeting you are interested, I will have applications available and if you are interested in becoming an official volunteer you will need to go through a background check. Once that is complete you will be issued Town of Ipswich Emergency Management Agency identification photo ID cards. We will also be coming out with uniforms once funding becomes available. This will be a slow process but we need to get the ball rolling. If this is something that is interesting to you please check out our web-site at www.ipswichpolice.org/em. Under the volunteers needed tab scroll down to the bottom and take our amateur radio survey. This is emailed directly to me and I will put you into our database. You do not need to do this to come to the meeting. If you have any questions or would like to talk to me in person or cannot make it to the meeting but you are interested please do not hesitate to call or email me. My email is jhubbard@ipswichpolice.org and my number is 978-356-4343, if I am not in leave me a voicemail or stop on by the Ipswich Police station. I work 1600 to midnight and I am usually here. I'd be happy to show you our shack! Oh and feel free to jump on the Ipswich 2 meter (145.490 pl 131.8) we'd love to start hearing more activity on

there. I monitor off and on during the day. After our meeting I look to reinstate our Monday night net. Well I suppose that's enough rag chewing for me. Hopefully I'll see some of you soon, 73's Jo

Pic one (on previous page) is our two computers both with echolink, our FT897, our Ft-1500 which runs echloink, and our two FT-7800's. Pic two (above) is our UHF, VHF, and 800mhz public safety band radio's.

Club Scholarship Breakfast on Sunday, September 24th....Stan- W4HIX did a great job cooking the pancakes,bacon, sausage, and eggs!