



SARA Newsletter

October 2006

Shreveport Amateur Radio Association

Meeting:

First Thursday of each month at 6:30 P.M. in the Bossier Main Library History Center

Local Amateur Information

Available at:

www.K5SAR.com

or

www.qsl.net/nw1arn/

SARA Repeaters:

145.050 - K5SAR
DX Packet Cluster
145.110 - N5FJ
146.700 - K5KDO
146.820 - K5SL
440.900 - N5FJ

SARA

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2006 Club Officers

President – [Richard Lee, N5PFZ](#)

Vice President – [Paul Blankenship, KD5RUI](#)

Treasurer – [John Stewart, AA5KV](#)

Secretary – [Ellen Dupuy, K5LND](#)

FCC – Public Safety – Homeland Security

The FCC has formally launched its new Public Safety and Homeland Security Bureau (PSHSB) <<http://www.fcc.gov/psbs/>>. The PSHSB will assume some functions that had been under the umbrella of the Wireless Telecommunications Bureau (WTB), where the Amateur Radio Service will remain. WTB Public Safety and Critical Infrastructure Division Chief Michael J. Wilhelm, WS6BR, has assumed a role within the new bureau, however.

"The events of September 11, 2001, and last year's hurricane season underscored America's dependence on an effective national telecommunications infrastructure," the Commission said. "The new bureau will build on the Commission's longstanding commitment to meet the needs of public safety by promoting robust, reliable and resilient communications services in times of emergency." Addressing interoperability issues will be a part of that process, Acting Bureau Chief Ken Moran told the Commission September 26.

The PSHSB is responsible for the combined public safety-related functions previously spread among other bureaus and offices. It will include Policy, Public Communications Outreach and Operations and Communications Systems Analysis divisions. Wilhelm will serve as deputy chief of the PSHSB's Policy Division. The Public Communications Outreach and Operations Division will operate the FCC's Communications Center and the High Frequency Direction Finding Center.

The FCC Order setting up the new bureau is on the FCC Web site <http://hraunfoss.fcc.gov/edocs_public/attachmatch/FCC-06-35A1.pdf>.

Foundation License Down Under

The Wireless Institute of Australia (WIA) <<http://www.wia.org.au/>> reports that the number of new radio amateurs "down under" has grown by upward of 500 licensees -- 3.4 percent -- in the 11-month period ending August 1. WIA credits the Foundation license with helping to reverse a trend of declining ham radio numbers. Following the UK model, the Australian Communications and Media Authority (ACMA) instituted the Foundation license in mid-October of 2005, and nearly 900 applicants have so far taken advantage of the new entry-level ticket.

"There now seems little doubt that the WIA examination service will process more than 1000 successful candidates in the first full year of assessing Foundation license candidates," the WIA said. "It is now also apparent that an increasing number of people are upgrading from Foundation to Standard and Advanced, and feedback from assessors and several clubs offering training confirms this trend will continue to accelerate over the coming months."

As of August 1 there were 14,204 radio amateurs in Australia, not counting repeater or beacon licenses.

ACMA adopted a distinctive four-letter suffix starting with "F" for all VK Foundation licensees. Holders enjoy limited access to 80, 40, 15 and 10 meters as well as the entire 2 meter and 70 cm bands using voice modes or "hand-keyed" CW only (ie, no keyboard or computer-generated code) at 10 W or less.

Japanese CubeSat

Hokkaido Institute of Technology's HIT-SAT satellite has joined several other CubeSats carrying Amateur Radio payloads in space. The tiny satellite launched successfully September 23 (Japan Standard Time) from the Uchinoura Space Center in Japan, and its CW telemetry was copied around the world on the satellite's initial orbits. Over the weekend, HIT-SAT's CW telemetry was halted as a power-saving measure during attitude control procedures, and it remained silent after attitude control should have ended. But on September 27, ground controllers were able to restore the CW telemetry.

Like other university-built CubeSats, HIT-SAT was constructed using mostly off-the-shelf parts. The 1200 bps FM packet downlink is on 437.425 MHz, while the CW telemetry downlink is on 437.275 with a transmitter power of 100 mW. The CubeSat uses a VHF uplink. The HIT-SAT team is seeking reception reports, including audio files. The satellite's call sign is JR8YJT.

Once it's fully operational, HIT-SAT will permit Earth station operators to request certain parameters by transmitting DTMF commands on the 145.980 MHz uplink. The satellite can report back time/date, temperature and power supply voltages and thank the Earth station by call sign. Only HIT-SAT ground station controllers can access the satellite at this point, however.

The diminutive satellite is a project of the Hokkaido Institute of Technology's ham radio club. HIT-SAT hitchhiked on the M-V-7 vehicle that carried the Solar-B satellite into orbit. The satellite is in a sun synchronous orbit with an orbital altitude of 250 km at perigee and 600 km at apogee and an inclination of 97.79 degrees. A 12-cm square cube, HIT-SAT weighs 2.2 kg.

AMSAT has not yet assigned HIT-SAT an OSCAR designation.

DX - DX - DX

DEMOCRATIC REPUBLIC OF CONGO, 9Q. SM5DIC, F5LTB and VE2EK are QRV as 9Q1D, 9Q1TB and 9Q1EK, respectively. Activity is on the HF bands using CW and SSB when conditions permit. QSL to home calls.

BOTSWANA, A2. Hardy is QRV as A25/DF3GY and has been active on 20, 17 and 15 meters using RTTY at various times. QSL to home call.

TAIWAN, BV. Juergen, DJ3KR will be QRV as BX3/homecall from September 30 to October 18. QSL to home call.

CAPE VERDE, D4. Angelo, D44BS has been active on 17 meters around 1700z. He will soon be active on 6 meters as well.

SOUTH SHETLAND ISLANDS. Station DT8A has been active on 20 meters using RTTY around 2300z.

ISLAND OF MAN, GD. Operators GD0BPS, MD/K8DD, MD/AC8W and MD/W4DU are QRV until October 4. Activity is on 80 to 12 meters using CW, SSB and digital modes using mostly QRP power. QSL to home calls.

HUNGARY, HA. Special event stations HA506NF and HA501DAE will be QRV from October 1 to December 31 to commemorate the Hungarian uprising of 50 years ago. QSL via HA6NF and HA1DAE, respectively.

DOMINICAN REPUBLIC, HI. Antonio, IW2OAZ will QRV as HI8/IW2AOZ from October 2 to 28. He will be active 20 and 17 meters using SSB and RTTY. He plans to operate from Catalina Island on October 26 and 27. QSL via the bureau.

JAPAN, JA. JJ4UEL/4 is QRV from Nino Island, IOTA AS-117. Activity is on all HF bands using SSB. QSL to home call.

SOUTH SHETLAND ISLANDS. Oleg is QRV as LU/R1ANF from the Argentine Jubany Base and has been active on 40, 30 and 20 meters using CW. QSL via RK1PWA.

ARUBA, P4. Larry, WO0Z will be QRV as P40LL from September 30 to October 6. Activity will be on 80 to 10 meters using CW, SSB and possibly RTTY. QSL to home call.

BONAIRE, CURACAO, PJ2. Peter, PA3CNX will be QRV as PJ4/PA3CNX from Bonaire, IOTA SA-006, from October 1 to November 3. Activity will be on 80 to 6 meters using CW and SSB, mostly between 2000 to 0200z. QSL to home call.

ANTARCTICA. Alex, UA1ZCK is QRV as R1ANC Vostok Base, IOTA AN-016. He is usually QRV on 20 meters around 0600 to 1000z. QSL via RU1ZC.

FRANZ JOSEF LAND, R1FJ. Station R1FJT has been QRV on 20 meters from around 1200 to 1500z. QSL via UA4RC.

SUDAN, ST. Jovica is QRV as ST2A and has been QRV on 30 meters between 1800 and 1930z. QSL via T93Y.

CORSICA, TK. Members of the Equipo de DX4DX are QRV as TK9Z until October 5. Activity is 160 to 10 meters using CW, SSB, RTTY and PSK. QSL via EA4BT.

NAMIBIA, V5. Operators V5/DJ8VC, V5/DF6QP and V5/DL8JS are QRV until October 13. Activity is on all bands, especially on 20 meters. QSL to home calls.

BRITISH VIRGIN ISLANDS, VP2V. Dave, AH6HY is QRV as VP2V/AH6HY until October 3 from Tortola, IOTA NA-023. Activity is on 20, 17 and 15 meters using SSB. QSL direct to home call.

The Z-Match Tuner: How to Get Rid of the Balun

John Stewart, AA5KV

Materials

If you're interested in building a Z match tuner, study the schematic provided by W6JJZ (6). Note that both variable capacitors, C1 and C2, are **not** grounded, that is, they are "floating". This has a tremendous impact on construction techniques for this tuner. Because the capacitors are "hot with RF", you must isolate the bodies of the capacitors, as well as the shafts, from ground and from the person operating the tuner. I instinctively used a metal enclosure to build my prototype. In fact, I used a relatively cheap TenTec enclosure, because I've used them in the past. But because the capacitors are "hot", using a wooden enclosure makes more sense and those of you with good wood-working skills (not me) can come up with something functional and aesthetically pleasing. I mounted my capacitors on a Plexiglas base and brought the capacitor shafts through the front panel using rubber grommets for insulation. I felt comfortable with this arrangement, because I never run more than 100 watts. If you're a "QRO kinda-guy" (and you know who you are), check eBay for a high-power Johnson Matchbox.

Speaking of capacitors

I had no good air-variable capacitors in my junk-box, so I search the Internet. I found an acceptable capacitor at Ocean State Electronics (www.oselectronics.com). It was a dual section air variable capacitor (BC13380), listed as 13 to 380 pf per section that could be used for both C1 and C2. The price was \$22.95 and I needed two. I would only use this capacitor if you're running 100 watts or less. If you're likely to push the power limit, get a more substantial capacitor, i.e. one with larger plate spacing. See below for additional advice on capacitor selection.

The Toroid



Figure 1: Forming a tap.

Winding the toroid is a piece of cake, even if you've never done one before. I bought my toroid (T-200-6) from Amidon. Use the powdered iron toroid made from #6 material (usually colored yellow) as specified by W6JJZ. I've seen other z-match builders use a #2 material (usually colored red). I'm not sure it makes a difference, but Charlie claims it does. If you have a #2 toroid lying around, use it, but you'll have to reduce the number of turns. See Charlie's article or use the formula on the Amidon website to calculate how many turns you need. I used #18 Thermalese wire for the primary winding (I got mine from The Wireman). In the process of winding the toroid you need to make several "taps". There are various ways to do this. Figure 1 shows the way I did it. It's harder to describe than to do. Basically,

John Stewart was first licensed in 1961 as WV2VUL. He retired from LSU Medical Center in 2005 after 28 years of teaching and research. John is currently treasurer of the Shreveport Amateur Radio Association (SARA) and secretary/treasurer of the Ark LaTex Chapter of the Quarter Century Wireless Association (QCWA). John enjoys working CW on the 40 and 80 meter bands, and PSK on 20 meters. His email address is aa5kv@yahoo.com.

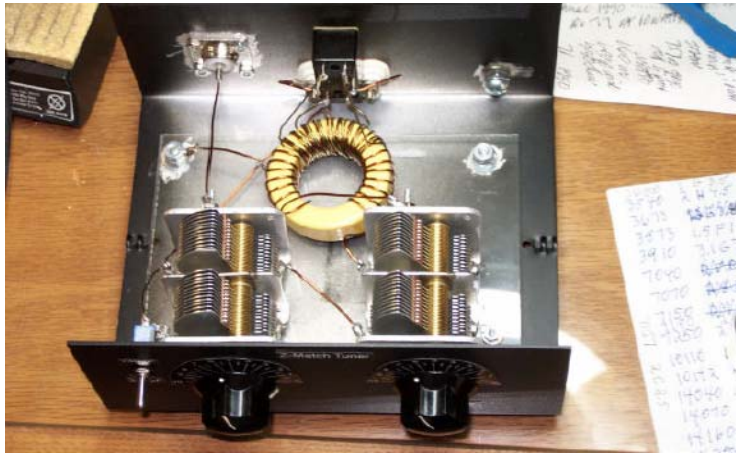


Figure 2: Inside of the Z-match.

when you come up on a turn that requires a tap, use a Dremel tool or some sandpaper to scrape off the coating for a centimeter or so, then form the uncoated segment into a loop. Using pliers, grab the loop and turn it 180 degrees, so that the free end of the loop naturally continues along the winding path of the coil (Fig. 1).

The “high” impedance and “low” impedance secondary windings are important. I used #20 wire and wound them both between the windings of the primary. The goal here is to achieve a good, tight coupling between the primary and secondary.

Miscellaneous

Try as much as possible to use straight, short connections. Keep the capacitors away from ground as much as possible. I used ceramic, feed-through insulators for my output connections. That is not necessary. Banana jacks from Radio Shack are just as good. I used a heavy-duty DPDT switch for the high and low impedance output links, but a small switch might suffice. See Figure 2.

Use marked dials for both capacitors if you can find them. I couldn't, so I made my own dial markings. I used Paint Shop Pro to make 20 markings per 180 degrees of dial. I decided to increment the numbers on my dial counterclockwise to show relative capacitance.

Because I used a black enclosure (dah!), I had to print white on black to get contrast. I used double-sided tape to affix labels to the enclosure. See Figure 3.



Figure 3: The dial markings.

Testing

I used the MFJ Antenna Analyzer (259B) to run initial tests of the z-match. I resisted the temptation to use my Jupiter (I had visions of a “smoked” Jupiter). I was amazingly lucky: my initial tests showed that the z-match tuned my antenna on all bands from 80 through 10 meters (both phone and CW segments). I was able to obtain a 1:1 SWR on all bands. I made extensive notes on the dial settings and output link used for each frequency. My tuner required no changes from the z-match described by W6JJZ.

I noticed immediately that C1 acted almost like a “band-switch” i.e. it remained pretty much constant while tuning a particular band. In addition, tuning C1 was not critical on most bands. Merely getting C1 “close” was sufficient. Not so with C2...C2 tuning was much more critical: in fact, on some bands C2 was “very” sensitive. This is a known characteristic of the z-match and you should be prepared for it. Still, as touchy as it was, I could re-tune a frequency pretty much using only my dial markings, along with peaking the noise on the receiver (see suggestions below). Noticed that I took W6JJZ's suggestion and used a SPST switch to connect both sections of C1 in parallel. I switch in both sections only when necessary. I labeled the switch 370 and 740 pf, because that's what my BK Precision LCR meter indicated. The lower the frequency band, the more capacitance you need for C1. I both sections of C1 (740 pf) for both 80 and 40 meters and only one section of C1 (370 pf) for 30 to 10 meters.

Editor's Note: In the final installment, John gives suggestions and provides additional resources for those intrepid and practical engineers among you.

LA Memorial Scholarship

College bound hams are encouraged to apply for the LA Memorial Scholarship, which is administered by the ARRL Foundation. The complete details on how to apply are available at <http://www.arrl.org/arrlf/scholgen.html>

BPL Marches On in Louisiana

Entergy will have a Broadband over Power Line (BPL) "demo" in Baton Rouge starting around October 1. Fortunately, Entergy has been discussing this situation with club officers in the Baton Rouge ARC for several weeks and promises to maintain a dialogue with the hams as things develop further. In addition, Entergy is planning to hire an independent firm to make measurements both before and after the BPL activation. Hams from the BRARC are also planning to gather field data to share with Entergy officials.

Based on my conversations with two Entergy engineers, I am cautiously optimistic that no long-term harmful interference will be generated by BPL anywhere on Entergy's system. To check on BPL in your local area, type in your zip code (such as 70809) at <http://www.bpldatabase.org/>

FCC Enforcement

The FCC has notified several entities regarding the alleged use of Amateur Radio frequencies by unlicensed individuals. Special Counsel in the FCC Spectrum Enforcement Division Riley Hollingsworth advised all of the parties that unlicensed use of radio equipment not only can interfere with licensed users but violates federal law and could lead to fines of up to \$10,000.

"Information before the Commission indicates that at the 2005 International Balloon Fiesta held in Albuquerque, there were numerous balloonists using Amateur Radio Service and General Mobile Radio Service (GMRS) radio transmitting equipment without licenses," Hollingsworth wrote Paul Smith, the event's executive director on August 23. "Both services require a license from the Commission."

Hollingsworth told Smith that while the FCC encourages all balloonists to use communication equipment of some kind, he'd like the Balloon Fiesta to advise those participating in this year's event October 6-15 that unlicensed operation is illegal. He invited Smith to post the Advisory Notice on the event's Web site.

The Commission also contacted two trucking firms regarding alleged unlicensed transmissions from tractor-trailer rigs on 10 meters earlier this year. Hollingsworth sent a Warning Notice to Cardinal Express of Concord, North Carolina, on August 28, and Melton Truck Lines of Tulsa, Oklahoma, on August 30. Hollingsworth warned the trucking firms that, in addition to fines and other enforcement sanctions, operating transmitting equipment without a license could land drivers in jail and lead to seizure of radio equipment. He indicated this week that both trucking firms and their drivers have contacted him in response to the warning notices and are cooperating with the FCC.

The FCC sent a third Warning Notice to Parker Contracting of Panama City, Florida, on August 21 citing allegations that the contractor's employees have been operating unlicensed radio transmitting equipment on 145.020 MHz and interfering with licensed users. Hollingsworth said the contractor promptly contacted the Commission to report it had collected the Amateur Radio transceivers and was applying for a business license.

On August 18, the FCC wrote Neva Poovey of Newton, North Carolina, citing information indicating that she or someone in her residence had been operating radio equipment that caused interference on 10 and 12 meters. Hollingsworth noted that FCC records did not indicate a license authorizing transmissions on those bands had been granted to anyone at Poovey's address.

Poovey's husband Michael responded to tell Hollingsworth he was testing "a huge mobile linear" with another individual in his driveway. A nearby radio amateur complained to the Commission after hearing the transmissions on the two amateur bands.

A Technician class licensee in Puerto Rico -- Joaquin Diaz Fontanel, WP3BH, of Humaco -- was the target of a Warning Notice sent August 28 regarding alleged operation on 7.080 MHz, a frequency not available to Technician class operators.

"Such operation may reflect adversely on your qualifications to retain and Amateur Radio license," Hollingsworth warned.

Digital Modes Used in Emergency Drill

The Georgia Amateur Radio Emergency Service Mutual Assistance Team (ARES MAT) made use of both digital modes -- in the form of Winlink 2000 -- and voice modes during a drill conducted with the Air National Guard earlier this month. Georgia ARES MAT District Emergency Coordinator Scott Royle, KK4Z, says the September 20 exercise simulated a large Category 3 hurricane hitting the Georgia coast at Savannah.

"The drill included evacuation of civilians via C-130 aircraft," he explained. ARES MAT was responsible for providing "reach-back" communication between Savannah, Tift Henry Airport in Tift County and Dobbins Air Reserve Base in Marietta. Royle said Georgia ARES MAT deployed five Winlink stations and six team members to handle digital and voice nets for the exercise. The Winlink net accepted checkins from stations outside those directly involved in the operation.

Savannah and Chatham and Tift counties also established local nets to test emergency circuits in those areas, and communication was established between Dobbins Joint Operations Center and Georgia Emergency Management's State Operations Center.

Royle says Georgia ARES MAT used various antennas including an inverted V dipole, a Buddipole, a J-pole and a whip.

"The training ARES MAT gained from this exercise will be invaluable as the team continues to prepare to operate under these conditions," Royle said, expressing his appreciation for all who participated.

A complement to the normal ARES function, the ARES MAT concept recognizes that a neighboring section's ARES resources can be quickly overwhelmed in a large-scale disaster, necessitating communication support from ARES personnel outside the affected area.

Space Tourist and Ham Radio

Students at three schools participated in a bit of ham radio history Friday, September 22, when they spoke with the International Space Station's first female civilian space visitor and two astronauts. The Amateur Radio on the International Space Station (ARISS) program sponsored the separate, direct VHF contacts with US civilian space traveler Anousheh Ansari, European Space Agency (ESA) astronaut Thomas Reiter, DF4TR, and US astronaut Jeff Williams, KD5TVQ. Ansari told students gathered at George Washington University, her alma mater, that everything looks "so beautiful" from the ISS.

"It's great up here," Ansari said, "The weightlessness feels fantastic. It's like floating like a feather."

Goddard Amateur Radio Club (GARC) members set up and operated the necessary station equipment for the contact between NA1SS and GWU Earth station KE4GDU.

In addition to the GWU event, Ansari, using the Russian RS0ISS call sign, made random Amateur Radio contacts during her ISS stay with a number of hams around the world. At one point she was seeking stations in her native Iran.

Space Adventures Ltd arranged with the Russian Space Agency for Ansari to join the Expedition 14 team of Commander Michael Lopez-Alegria, KE5GTK, and cosmonaut Mikhail Tyurin, RZ3FT, on the Soyuz "taxi flight" to the ISS last week.

Earlier on that same orbit, during a contact arranged by the ESA in cooperation with ARISS, Reiter chatted via HB4FR with students at the Gymnase Intercantonal de la Broye, in Payerne, Switzerland, using the German DP0ISS call sign. The contact was conducted in English.

The Expedition 13 of Vinogradov and Williams returned to Earth September 29 (UTC) in the steppes of Kazakhstan. The Soyuz TMA-8 spacecraft landed some 50 miles northeast of Arkalyk, and Russian recovery forces and NASA officials arrived at the site shortly after touchdown.

ARISS <<http://www.rac.ca/ariss>> is an international educational outreach with US participation by ARRL, AMSAT and NASA.