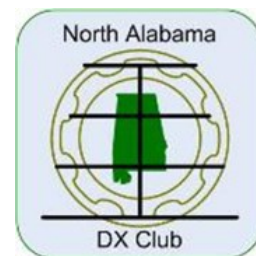


The LongPath

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From the President

By Bob DePierre, K8KI

Excellent propagation is still with us, but as you know it comes in transient spurts. Turns out I had worked Indonesia only once in my life. Then one day last week I worked 11 stations on the island! I didn't know how that could ever happen, so I asked our propagation expert, Dr. Rob Suggs/NN4NT, and he told me I didn't even work the best days of that week. Propagation was, by then, well on the way down. I should have known the answer is out there for all of us: keep tabs on the A, K, and SFI values constantly. Graph them daily if you can. You don't care after the fact, when it's too late. Those numbers will tell the story. I learned my lesson. Thanks, Rob.

For those of you who missed the Hamvention, you missed a whale of a great party! The last two years were cancelled due to the pandemic, and there was concern regarding how quickly the Hamvention would come back. Maybe the attendance was off a bit, but when you're trying to describe how much an elephant weighs, those are all relative terms. It was huge. A few major OEMs and distributors were missing, but the ones I wanted to see were all there. I drove up with a group of five of us. Larry/K4AB actually went to his very first Hamvention. He wrote an article,

which you'll find below. I don't think he'll miss another for the rest of his life.

This time I decided to go to the Flex Dinner on Friday. That was an excellent choice because they stationed one of their engineers at each dinner table. The one at my table was a young firmware engineer, ten years out of grad school. Of course, he was looking for customer comments, and he got a ton of them from me. I just love to critique radios, even good ones, but this was red meat served up. I've been a Flex owner for ten years and ought to know the pros and cons by now. Flex Radio's founder, Gerald Youngblood, took the occasion to formally retire.

Our Huntsville group sat at one table at the Contest Dinner on Saturday night. But Lee Finkel/KY7M sat next to me. Well, Lee just happens to be the editor of ARRL's National Contest Journal, which I get. Lee grew up in Chicago, like me, and got his ham license on the very same day in 1962! His assigned call was WN9EBT while mine was WN9EBS, so I was licensed about a microsecond ahead of him. I couldn't stop talking to him until I noticed our next banquet speaker, Ward Silver/NOAX, at the next table. That conversation ended far too soon as well. The speaker was Joe Rudi, who hit a ton of

From the President (continued)

home runs as well as fielding awards, and won some World Series, while playing for the Oakland Athletics around the early '70s. I remembered him very well. He used to take his ham radio with him while playing on the road!

We've gotten funding requests for a few DXpeditions: VU4/Andaman & Nicobar, J28/Djibouti, and 3Y0/Bouvet. I appointed a committee to discuss and make recommendation on what to do about those requests. The committee consisted of Bruce Smith/AC4G, Rob Suggs/NN4NT, Chuck Lewis/N4NM, and me. Bruce is on the DXCC Honor Roll, and Chuck is one short of it. Bouvet will put Chuck on the Honor Roll, so this is important to him. Chuck will brief the committee results at the meeting on Tuesday.

I couldn't find any volunteers to do the presentation this month, so I got volunteered again. The subject will be Superhets Versus SDRs. It will be historical as well as technical. I had done a program like it at the hamfest, but most of this



The Museum of Information Explosion

is new.

The museum is undergoing construction/renovation this week, and it may not be safe to have our meeting there. In all likelihood, it will be ok, but I'll let you know if we'll have to meet elsewhere. So, let's tentatively plan to have the next NADXC club meeting on Tuesday, June 14, at the Museum of Information Explosion at 1806 University. The Zoom sign-on will be exactly the same as in the past. I'll send members the Zoom invitation on Sunday just before the meeting. Again, remember to pick up your dinner on the way over. I'll get a few of you to help set up the tables and we'll just eat here. I'll open the doors by 5:45. The meeting will start at 6:30, and the program by 7:00.

Enthusiasm

By Barry Barton, WA4HR

I received my amateur radio license in March 1977. On that day I was tickled pink. I can still recall the excitement and enthusiasm displayed opening the mailbox and seeing the envelope lying there. I had fun on and off over the next few years. I went off to the Navy in January 1982. The fun was gone until I moved to Portsmouth, Virginia from the summer of 1986 through the summer of 1989, where I got heavily involved with Navy Mars. I was very excited during that period, but nothing like what was coming up.

In late summer 2019, the world renowned

dx'er, AC4G Bruce Smith, introduced me to FT8. The first thing I said to him was, "I will not remember all that stuff." Bruce became my digital mentor and got me up and running.

Currently, my Moseley beam is off the tower for maintenance and for the addition of a 30-meter rotary dipole. I also have a Moseley 40-meter rotary dipole; this antenna is downed for maintenance as well. With everything being off the tower, I resorted to the internet for some type of antenna that would cover at least 10 through 40. I decided to try what is called a "center fed

Enthusiasm (continued)

zepp". The length of mine is 67.5 feet of wire per leg (14 AWG stranded wire from Home Depot) connected to 41.5 feet of 450-ohm balanced feed line to a 1:1 current balun, then coax into the shack (coax length is not critical). This antenna will allow me to run 80 meters.

As solar cycle 25 started, I have been logging QSOs like mad. Fortunately, I can stay up all hours of the night as my shack is detached from my house and I'm retired. On some of the QSOs I've logged I act like a little boy in a five and dime getting some candy. I gave K8KI/Bob DePierre a

call each time I logged a rare new one, unless it was 2:00am. For example, during the last week of May I had Bob, who happens to have a 3-element quad and Expert amplifier at his disposal, pinned down 7 to 0 on working 3D2RRR. Well, as of Tuesday May 31, 2022, the gap is closing. The score is now 7 to 1.

I was blown away by a 10 meter contact I made to Perth, Australia, at 11,100 miles from Taft, using the Home Depot wire and the funky looking ladder line coming down from the sky. I bragged about that contact as well. I called Bob again to let him know how well this antenna was performing. He said, "Barry, I have never seen you this happy, I want you to write an article for the Long Path about enthusiasm." Here it is.

My First Two Years as a Ham

By Jim Perillat, K2LAT

I must thank my son Ryan, W2LAT, who lives in Florence, AL, who told me about his new interest in ham radio in the summer of 2020. I was curious so I investigated what would it take to get a license and get on the air so I could communicate with him. I searched the internet and found many resources on getting an amateur radio technician license so I bought several books and watched YouTube videos that would help me in getting a license. Fortunately, my background in science and engineering allowed me to easily study the materials and pass the technician exam in September, and the General exam in October 2020. My son said it would be neat if we both had vanity callsign ending in LAT, the last three letters of our last name – so he applied for W2LAT, and I applied for K2LAT, and we both got them soon after we applied in the fall of 2020. I tell my amateur astronomy friends that they can remember my call sign by imagining a large amateur telescope (LAT) on the 2nd highest mountain

in the world, K2, hence K2LAT.

Like most technician class hams, I started off getting a hand-held UHF/VHF radio, a Yaesu FT-70DR, a "Handy Talkie", or HT, and took to the airwaves. My first month was spent learning how to use the radio and periodically listening to voice conversations over VHF/UHF in Huntsville and the surrounding area. My next step was getting more familiar with digital modes since my radio was C4FM capable. I was able to connect to a local repeater, W4FMX, that allowed me to connect digitally via C4FM to numerous Wires-X chat rooms. It seems that America Link was one of the most popular rooms that is widely linked to other digital modes and had a large following of folks online so I spent several weeks listening before I got the courage to have my first conversation. I also learned about other digital mode chat groups that have different names: DSTAR has reflectors, DMR has talk groups, and Yaesu System Fusion has chat rooms. Why each digital mode has a different

My First Two Years as a Ham (continued)

name for the same thing still confuses me.

I then purchased a J-Pole UHF/VHF antenna from Ed Fong and put it outside my shack - well, it isn't really a shack but that is what amateur radio operators call the room where they operate from and set up their equipment. I was learning the lingo but was a long way from being considered a seasoned ham. I was able to connect to the local 145.133, W4HSV repeater and participate in weekly Nets such as the Alabama Friends Net on Wednesday nights.

Like most "Hams," I wasn't satisfied with one radio, so I bought another radio, a Kenwood TH-74A, that was a dual-mode, tri-band radio with DSTAR capability. Then came an Anytone 878UV DMR radio. I started investigating Hot Spots, where I could use my internet connection to connect to other users around the world digitally with my radios. I purchased a ZumSpot hotspot and was soon participating in numerous daily and weekly nets using DMR, YSF, and DSTAR digital models. I then gave my ZumSpot to my son so he could explore the world of digital modes and I purchased an OpenSpot 3 hotspot. The OpenSpot 3 was easy to set up and allowed me to connect instantly to other digital modes whereas my other hotspot did not. It seems I was infected with the Ham Bug since the world opened up with possibilities for new equipment and with new capabilities. I also downloaded an app called EchoLink on my Windows PC and iPhone that provides another means to communicate digitally over the internet to other hams.

OK, so I got fully engaged in UHF/VHF operations and was "looking for more," as Anthony Bourdain would say, so I then investigated getting into HF. I purchased an ICOM 7100 that gave me

both UHF/VHF and HF and erected a G5RV HF (6 - 80m) antenna in my backyard using a portable fiberglass antenna. The inverted V antenna is at 34' and the ends are raised 8' off the ground so I have roughly 132' of antenna wire oriented in a North-South configuration. I tested the SWR of the antenna using a NanoVNA and found the SWR was acceptable on most bands (6-80m) when using my Z-100Plus tuner.

I then erected a Diamond X200A UHF/VHF antenna at a height of 32' using aluminum chair rail and attached it to the eve of my roof to get better UHF/VHF signal coverage. With my 7100 and new antenna I was able to communicate with most of the local area repeaters and others on simplex within 50 miles of me. I started using the HF mode of the 7100 and was soon making QSOs with 100 watts to many folks in the Southeast. I also purchased a Yaesu FTM-400 UHF/VHF radio and Comet SBB-5 Dual Band magnetic mount antenna for my car so I could participate in UHF/VHF mobile operations. I then upgraded my HF radio to an ICOM 7300 since the 7100 was lacking in some areas and one always knows that a ham never has enough radios (or keys for Morse Code).

Safety was foremost on my mind when I erected my antennas and connected them to my radios. I read chapter 28 on Safety in the 2020 ARRL Handbook for Radio Communications quite carefully and made sure my antenna, radio, amplifier, and other ancillary equipment were grounded and bonded correctly. I learned so much from the chapter and read the ARRL book on grounding and bonding. With my newfound knowledge I remedied several questionable electrical connections contractors had made to my house over the years. I even communicated with my local building inspector to make sure the grounding rods I put in were adequately installed and bonded to my electrical panel. I told my wife that my Ham Radio hobby was paying dividends by increasing safety

My First Two Years as a Ham (continued)

in our home - I don't think she bought it however.

Next, I got interested in FT8 digital communications since it required low power and had tremendous capability to make HF contacts around the world. I started making contacts and started receiving QSO cards from faraway places. I made single side band voice contacts to some places that I never heard from such as Curacao Island in the Caribbean, or New Caledonia in the South Pacific. I had to do some googling to learn where some of these places were. I started participating in contests, such as the CQ WWW contest and state QSO parties and now look forward to participating in many more. So far, my QRZ logger shows 1168 contacts, of which 919 are confirmed to 75 countries - I hope I get to 100 countries soon and start getting some CW contacts.

Since the covid pandemic was in full swing in the fall of 2020, I wasn't able to enjoy the camaraderie of meeting other Ham enthusiasts at local meetings or hamfests, but I was able to participate in weekly Zoom meetings sponsored by the Huntsville Amateur Radio Club (HARC). This gave me the opportunity to see what other folks were doing with Ham Radio in the Huntsville area. I joined HARC and the North Alabama Repeater Association (NARA) and signed up for an ARRL membership. The number of clubs you can join are endless so one has to limit oneself so they don't overwhelm their ability to absorb all the great information available.

In the fall of 2021, I passed the Extra class exam so I could communicate on all the bands and frequencies available. My next goal was to learn Morse code

so I bought a straight key and then a paddle and downloaded software on my PC to help me get proficient with my new devices. I recently joined the North Alabama DX Club (NADXC) and the Long Island CW club that provide great resources for learning CW and expanding my HF skills. I also purchased a Morserino morse code trainer and learned to solder a circuit board for the first time - it worked!

I still consider myself a newcomer to ham radio and find that there are endless possibilities for growth in this hobby. I wish I would have gotten my license much sooner than waiting for my retirement years - but better late and never as the saying goes. Compared to having a boat, this hobby is dirt cheap - unless of course I start going on DX expeditions or erect a gigantic tower, or ... The hobby is what you make it. Invest in it and it will reap endless rewards.

I hope that more young folk pick up the hobby, like my son Ryan, and carry it on to new heights that we never dreamed or thought of. I wonder what the hobby will be like in 10 or 20 years and I hope I will still be around to enjoy it.



K2LAT works the world from his station.

My Dayton Observations

By Kim Hensley, WG8S

The week leading up to the Hamvention indicated good weather. Well, it's Dayton, and Mother Nature was having none of it! That Thursday night and Friday morning, for the opening of Hamvention, there were storms and rain. The rain quit on the ride into the fairgrounds. The infield was wet, and there were some muddy spots. With a good breeze most of the day, this did dry out.

These are some of my overall observations. The tailgate area was pretty full, but nowhere near 100%. Inside the exhibit areas, there were some flea market operations! Some major players were missing, and some folks shared booth space. It was revealed later that costs for vendors went up as the fairgrounds required vendors to have liability insurance. This did play into

the decision for some folks not to attend.

The rumor mill was hot-and-heavy about Kenwood's absence. Kenwood is doing well. They're conservative, and did not see that there was anything to gain by being there, and bearing increased expenses.

If you were in need of accessories, cables, connectors, etc., this was the place to be. As for radios and antennas, not so much.

Prizes were down 60%.

This is Hamvention's first year of a 3-year contract. What may happen after that? Well, the Montgomery County Fairgrounds will have new facilities. Will they be a contender? Time will tell.

Dayton Travelogue from a First Timer

By Larry Crim, K4AB

It might come as a surprise to some, but even though I've been licensed for 49 years, I have never made the sacred pilgrimage to the Dayton Hamvention. I really had no plans to attend this year but was encouraged at a recent NADXC meeting by Bob K8KI and Steve AG4W. I decided to give it a whirl. There were a few things I wanted to do. For starters, I wanted to attend the Contest University, held on the Thursday preceding the Hamvention. And I wanted to hang out at the Contest Supersuite, held each night at the Hope Hotel. Sometimes, guys hang out in the Supersuite until the wee hours of the morning. Contesters never sleep. Also, attending Paul K9PG's annual party at Hooters was a must.

DAY ONE

Luckily, a few rooms were still available at

the Hope Hotel, so I booked my room and flights and was ready to go. The flight to Dayton from Atlanta also included ARRL President Rick K5UR and former League President Joel W5ZN. I joked that I was taking Presidential Airlines to Dayton. More on this later.

As the Uber driver pulled into the Hope Hotel at Wright-Patterson Air Force Base, I was reminded of the historical importance of this place. Many of you will remember that this was where the agreement to end the Bosnian War was hammered out (The Dayton Agreement or The Dayton Accords). In his book *To End A War*, Richard Holbrooke, then the U.S. Assistant Secretary of State, describes why he chose this location for the peace talks. He described it as an island in the heart of America with very few distractions. He

Dayton Travelogue from a First Timer (continued)



The Hope Hotel

Upon arriving in the hotel lobby, I was immediately greeted by an entourage featuring Paul K9PG, Gerry W1VE, Adrian K08SCA and others. After checking in and dumping my luggage into the room, I quickly adjourned to the hotel bar

wanted a secure location to keep the participants focused on the job at hand. And a place where noted playboy Serbian President Slobodan Milosevic couldn't do much partying. Oddly, the only memorabilia of this event in the hotel was a photo of the negotiations hanging near one of the men's restrooms.

Upon arriving in the hotel lobby, I was immediately greeted by an entourage featuring Paul K9PG, Gerry W1VE, Adrian K08SCA and others. After checking in and dumping my luggage into the room, I quickly adjourned to the hotel bar



Front Row: Lee VK3GK, Carsten DM9EE, David VK3BDX, Paul K9PG, Charlie NF4A, Larry K4AB, David WD5COV, Chris VK3FY, 9M2-Margaret (N2AJ/XYL) Back Row: Sandy DL1QQ, Steve N2AJ, Tim K3LR. Location: Hope Hotel, Dayton, Ohio. (photo: N2AJ)

where the pre-Hamvention partying had just begun. Numerous famous testers and DX'ers were there, including Joe Rudi NK7U who would be the featured speaker at the Contest dinner Saturday night. Many of us decided to have dinner at the hotel and were treated to a surprisingly delicious ribeye dinner. Needless to say, many hours of "contest speak" followed.

Carsten DM9EE updated us on his efforts to assist Ukrainian hams by personally delivering supplies to the war-torn area, and by housing displaced families at his hotel in Germany. He truly is a hero. David WD5COV filled me in the upcoming 3Y0J to Bouvet in January.

Later in the evening conversations ensued with Patrick N9RV who was one of Tom N4KG's early proteges while both were at the University of Michigan. We shared many memories and belly laughs together. It was great to meet up again with Kirk K4RO from Nashville, and also Scott W4PA who was coming to Huntsville the following week to attend a concert at our new Orion Amphitheater. John K4BAI was there, and we discussed WRTC plans and equipment. John will be my partner at the competition in Bologna, Italy in July 2023.

DAY TWO

After a long night, morning came early for Contest University which was scheduled to start at 8 A.M. Breakfast began at 7 A.M. and I was joined by Patrick N9RV and we continued our N4KG reminiscences. He also filled me in on one of his CTU presentations he was giving later in the day. Doug K1DG joined us later and was quick to remind me of the great 2014 CQWW SSB contest. In that contest both Doug and I

Dayton Travelogue from a First Timer (continued)

achieved the highest rates from the U.S.A. in CQWW history up to that point. K1DG had a 295 hour and I followed with a 288 hour. When I remarked that he, in fact, had beaten me, he retorted “Yeah, but I was on an island in Maine...you were in ALABAMA!” He was further dismayed when I told him at the time I was using a TH-7 antenna at 60 feet and a TL-922a. To this day, Doug still holds that highest SSB rate. I have fallen to third behind N5DX who in 2017 operated from superstation N2QV in New York.

295	K1DG	2014
290	N5DX (N5DX @N2QV)	2017
288	K4AB	2014
282	KQ2M/1	2011
279	K3WW	2011

(chart: cqww.com)

It turns out, both K1DG and I were running guys on 10 meters during the 2014 contest, and we were both very high in the band in order to escape QRM and to hear weak Europeans. He was at 28.813 MHz and I was at 28.650 MHz. This dispels the notion that you have to run low in the band to achieve high rates. Doug later mentioned our efforts during one of his presentations at CTU. In every CTU attendee's bag was included a copy of K1DG's book Amateur Radio Contesting for Beginners. In retrospect, I should have gotten him to sign a copy and used it as a prize for the Alabama Contest Group.

The day was filled with many presentations from the elites of radiosport. One important thing I learned was one of Dan N6MJ's weapons he uses in 2BSIQ. 2BSIQ is 2 Band Synchronized Interleaved QSOs. It's an extremely difficult operating

technique which enables one individual to RUN QSOs on 2 separate bands at the same time. When done correctly, it can effectively double QSO rates. It's also very different from SO2R which many of us do already. In SO2R, one operator is RUNNING QSOs on one band while tuning other bands looking for new multipliers. I've tried 2BSIQ and failed to make it a success. Having a pileup in your left ear, and another pileup in your right ear, plus only transmitting on one band at time and at the same time managing both pileups to achieve high rates with accuracy is very, very hard. Tough to do on CW, virtually impossible on SSB. 2BSIQ seems reserved to only the mutant superops. There are only a handful of operators in the world who can master this technique. At Tim N6WIN's presentation, he alluded to one of the “sekret skunkworx” black boxes designed and built for N6MJ by K6AM. N6MJ has often credited these little boxes for his 2BSIQ successes. The boxes are used to control headphones and lockouts seamlessly. Later that evening, over beers and pizza at the Contest Supersuite, I was able to get some inside information from an undisclosed source who shall remain nameless. I was told the “sekret” boxes switch the headphone audio between the two radios, but the operator only “hears” the audio of one radio in both ears. Typically, an operator “hears” the left radio in the left ear, and the right radio in the right ear. This magic box allows the op to only listen to the radio not transmitting. This eliminates the brain confusion caused by competing signals in each ear. There is much more involved, however this just goes to prove that the best information is often exchanged at a personal level, not necessarily in a formal presentation.

It was great seeing NADXC members such as Kim WG8S and Charlie NF4A at Contest University. Kim has provided immeasurable assistance at my station. Also, it was wonderful seeing Dr.

Dayton Travelogue from a First Timer (continued)

Billy AA4NU whom I hadn't seen in over 30 years. We both have gray hair now. Wow.

After a full day of presentations, concluding



**Ken AG2K and his XYL Sandy
with K4AB (photo: K9PG)**



**Some of The Hooter's gang.
(photo: K9PG)**

DAY THREE

On Friday morning I met Charlie NF4A and Lark KA4A for breakfast at the hotel. It was good to meet Lark, who is the FCC Regional Director for enforcement. He would later conduct the joint ARRL/FCC forum at Hamvention along with Riley K4ZDH and give the invocation at the Contest Dinner Saturday night. Charlie drove the three of us

to the Hamvention location at the fairgrounds in Xenia. Many of you will remember the April 1974 tornado which destroyed a large portion of Xenia. That's the same day we experienced tornadoes in Huntsville along with much of the east during a super outbreak.

I was immediately struck by the sheer scope and size of the Dayton Hamvention. There were long lines of people waiting to buy tickets but luckily, I purchased mine online and just walked in. Charlie had done the same, but unfortunately had forgotten his ticket when he left home.

The Hamvention site was a hodgepodge of buildings with vendors throughout each and a large flea market scattered across the area and in an adjacent fairground racetrack. A map was needed to properly navigate the hamfest, but me, being a newbie, just wanted to wander around and take in the sights. It was hot and humid, and I thought how lucky we are at the Huntsville Hamfest to have a completely enclosed air-conditioned facility such as the Von Braun Center. Where else do you see an indoor flea market with carpeting and chandeliers? Numerous food trucks lined the courtyard area and the constant odor of frying food wafted through the Hamvention. The restrooms provided were simple "porta-johns". Not very appealing. There were some interior restrooms in some of the buildings, but you had to know where to look.

Upon my immediate arrival, I happened to go into one of the main buildings and to my right was the ARRL exhibit area. One of the first people I saw was ARRL President Rick K5UR whom I met on the flight from Atlanta. He was emphatic in telling me that the League did NOT pay for his and W5ZN's first class airfare. They had paid for it personally. I laughed and told him not to worry.

Just going through the vendor areas could be an all-day affair. There were many, and some

Dayton Travelogue from a First Timer (continued)

were quite large. I saw the new Icom solid-state linear amplifier which promises a complete S02R amp with an internal automatic antenna tuner. It's not in production yet, and no price has been set. In my wanderings, I came across the GigaParts booth and said hello to Steve KI4KWR. He appeared quite busy, and every time I passed their booth for the weekend, he was always ringing something up on the cash register. I sure hope they had a successful Hamvention. The Huntsville Hamfest booth was staffed by Mark N4BCD and Kelly W4VPZ. It was wonderful to see them there spreading the news about our hamfest and area. While I was at the booth, Chris NV4B stopped by to say hello. I thought to myself that people like N4BCD, W4VPZ and KI4KWR are the genuine heroes of Hamvention. Folks like us go there to have fun, but they attend to work. Impressive.

I decided, like any good ham, to take a stroll through the substantial flea market. It was typical of the equipment you see at any hamfest. Old Collins, Drake, and Heathkit gear. Test equipment and stuff that I, after almost a half-century in this hobby, couldn't describe. After a single lap through the flea market, we decided to call it a day to go back to the Hope Hotel and get ready for the evening's dinners.

There were two main dinners planned for Friday night. Many guys left the hotel to attend the DX dinner, and many of us stayed at the hotel for the Top Band dinner. I joined fellow NADXC members Steve AG4W, John N5DF, Chris AI4U, and Billy KM4BGF. Before dinner, we all stood up to indicate how many countries we have confirmed on 160 meters. The last man standing was Jon AA1K who has worked an astounding

341 countries. Following the dinner, John VE3EJ gave a presentation on his 3-element vertical transmitting antenna utilizing a single tower driven element and wire parasitic reflectors and directors. The entire array takes up several acres of real estate.

After the Top Band dinner, it was back to the bar to get ready for The Spurious Emissions Band at 10 P.M. In case you don't know about "The Spurs" it's a band of testers who take classic rock songs and re-word them with ham radio lyrics. They are talented musicians, and many videos are available on YouTube. Scott W4PA and Kirk K4RO are frequent Huntsville Hamfest visitors. Ward NOAX will be giving the presentation at the NADXC banquet this year. W4PA is also the owner of Vibroplex. Nancy N9CNY is a new addition to the band as a vocalist and wow, is she good. She did a version of Janis Joplin "Piece of My Heart" and blew me away. Easily the best Janis I've ever heard. The Spurious Emissions Band appears for one night - and one night only - at the Dayton Hamvention. It is a highlight of the hamfest.



Left-to-right: Scott W4PA, Nancy N9CNY, Sean KX9X,
Ward NOAX, Kirk K4RO
(photo: The Spurious Emissions Band)

Dayton Travelogue from a First Timer (continued)

DAY FOUR

Again, I met NF4A and KA4A for breakfast and then went back to the Hamvention site. It had rained some overnight, and the area was muddy in some spots, but Lark's exhibitors pass got us access to a prime parking location near the facility. I did another lap or two through the vendor's booth and flea market. I was hesitant to make any purchases, but the keys at Bengali, N3ZN, and Vibroplex sure were tempting. We attended Lark KA4A's FCC presentation where he spoke of the FCC's volunteer monitor system. Then after prodding from Riley K4ZDH, Lark took off his FCC badge and gave a very personal recounting of his early childhood, detailing how his father had died after an electrocution and local hams became his father figures. It was quite moving and inspirational.

Next on the agenda was the Contest Forum, hosted by Doug K1DG. Unfortunately, a storm was headed our way and we decided to beat the exiting crowd and head back to the hotel.

Another dinner followed that evening - the Contest dinner. Joining us at our table were the NADXC members from the previous night's Top Band dinner plus Bob K8KI. Also at our table were fellow CWOps member Mark K5GQ and National Contest Journal editor Lee KY7M. K8KI has a very interesting story about Lee and how their lives have intersected over the years. During the pre-dinner discussions at our table, we compared receiving antennas and AG4W and I remarked how pleased we were with our vertical receiving arrays. Off-handedly I said I'll never put up a beverage antenna again. Former major league baseball star Joe Rudi NK7U gave a speech after dinner detailing his baseball and ham radio career. It

was funny to hear him describe how he took ham radio equipment with him while visiting other major league cities. He would sit in his hotel rooms, trying to work DX. Also, Craig K9CT and Dave KM3T were inducted into the CQ Contest Hall of Fame. In the prize drawings, K8KI won a nice new set of headphones, and I was lucky enough to win a, you guessed it, beverage antenna system. Karma.

I had an early flight Sunday morning. Wheels-up at 6 A.M., I didn't spend much time hanging out after dinner. It was back to the room to pack and get a few hours sleep.

DAY FIVE

I met NF4A in the lobby at 3:15 A.M. Then it was off to the airport in the pre-dawn morning. Joining us on the flight to Atlanta was Joel W5ZN again.

I looked throughout the airport and it was impossible to find a cup of coffee at such an early hour. Other early-bird travelers were Dan N6MJ, Tim N6WIN and Bill W9KKN. I asked Bill about his "KKN" callsign. It was his grandfather's old call and wasn't connected to Trey N5KO's old callsign of WN4KKN. Bill made light of the "KKN" situation throughout Contest University by changing his name tag to "Fake Trey".

Surprisingly, I didn't feel fatigued by the early hour in any way. Us contesters have a lot of practice operating at odd hours with a lack of sleep. And arriving in Huntsville at 9:30 Sunday morning was great.

The Dayton Hamvention is special. It's very well organized, and very well attended. The final count placed attendance at over 31,000. But it wasn't the actual hamfest at the fairgrounds that was the most impressive. The off-site events, not officially related to Hamvention, are really where the action is. Every subgenre within amateur ra-

Dayton Travelogue from a First Timer (continued)

dio has something going on. If you are a DXer, QRPer, county hunter, traffic handler, VHFer, pub-

lic service, storm chaser, et cetera, there is a party or dinner for you to attend, sometimes several. Some of my friends never actually went to the fairgrounds. They just attended some of the events and parties around town. This is really what makes Dayton such a destination each year.

Resonant Circuits By Bob DePierre, K8KI

I'm spending a lot of my retired time playing in my "sandbox" at the museum. I mostly work on old radios, very old ones. As I do it, the investigator in me is always trying to escape. I wonder "What did they know, and when did they know it?"

I've been working on spark transmitters lately. These are just ignition coils from pre-1910 Model A Fords with a ... resonant circuit ... hung on the back end. That resonant circuit is just a parallel capacitor and inductor. Two parts. That's all. But I'm scratching my head wondering when they figured out what resonance even was, and that a parallel LC goes high impedance at resonance.

I took trigonometry as a junior in high school. Of course, I had no idea then why I was taking such a course. I thought it was for egg-heads with a fetish for right triangles. Then the concept of sine and cosine functions came up. I saw graphs of them. It didn't dawn on me, then a ham for a couple of years, that this is what radio waves looked like. I had to take more math classes first, a lot more of them.

It came up on my first day of Circuits I class. I was taught that everything a capacitor did was explained in its definition:

$$v(t) = \frac{1}{C} \int i(t) dt$$

Similarly, for an inductor:

$$v(t) = L \frac{di(t)}{dt}$$

And, of course, a resistor followed Ohm's Law:

$$v(t) = R i(t)$$

I heard this "matter-of-factly" in class, as if everyone has known it ... forever. But did radio engineers know this 110 years ago? Maybe they did, but how?

On the second day of class, I heard about Kirchhoff's Laws, especially the one that said the sum of the voltages around a closed loop was equal to zero. I guess that's pretty obvious, and the equation isn't that hard to write. For the two component LC loop the equation is just :

$$\frac{1}{C} \int i(t) dt + L \frac{di(t)}{dt} = 0$$

This has a simple solution:

$$i(t) = \sin\left(\frac{1}{\sqrt{LC}} \cdot t\right)$$

Earthquake!

Now this is a giant leap from right triangles. Somehow you have to know how to describe an inductor and capacitor, then you have to know how to put the concept in an equation, then you have to know how to solve this sort of differential equation, and the result is a sinewave. It's not any old sinewave; it has a frequency that is related to the values of the two components.

So, I'm still wondering what did those engineers know 110 years ago, and when did they know it?

Resonant Circuits (continued)

The museum has three spark transmitters, all built before 1910. One is just a spark coil – which generates pretty flat noise out to 100MHz. The other two have resonant LC circuits. They don't oscillate, as the above equation might suggest, but they do limit the noise to some band-

width around the resonant frequency. This is a very strong indication that they did indeed understand what they were building. These were no accident. It was just two years later that Armstrong invented the regenerative receiver, nine years until the superhet, and five years until the Hartley oscillator.

So, yes, they did know how much of this worked 'way back then'.

Find Out What That Radio Will Really Do

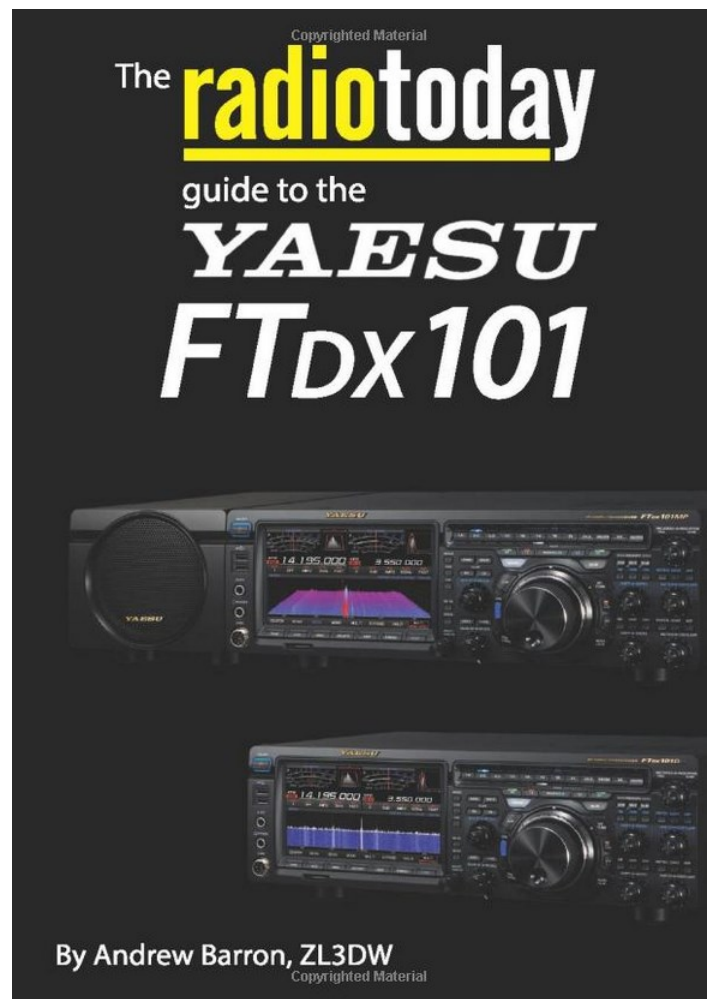
By Steve Werner, AG4W

Most people buy a piece of electronics and never read the manual. Apple knew this so they made iPhones so simple you didn't need one. The best example of never reading the manual is the VCR. It had a lot of different functions that most people never used or wanted and so they didn't read the manual. Unfortunately most ham transceivers now have many functions that require you to read the manual. In many cases this is because of complex menus. Some manuals do a poor job of describing the menus and functions. Most of that is due to poor translations from Japanese or Chinese and that the manuals are not functionally oriented.

At Dayton I purchased the Radio Today Guide to the Yaesu FTDX-101. Andrew Barron, ZL3DW also has guides for the new FTDX-10, IC-7300, IC-705, IC-9700 and the IC-7610. They are all published by the Radio Society of Great Britain and are available on Amazon. Andrew does not try to duplicate the 122 page Yaesu manual which describes each button, function and control. His guide is more functionally oriented. He does a great job of explaining how to configure the radio for each mode such as SSB, CW, RTTY, and FT8.

One of the tougher things to understand in the FTDX-101 is the operation of the AMC

(Automatic Microphone Control), Speech Processor and Mic Gain control. This guide gives suggest-



The Radio Society of Great Britain publishes the Radio Today series of guides, covering many of today's popular radios.

Find Out What That Radio Will Really Do (continued)

ed settings and a better approach to adjusting them. An example is the default setting is AMC instead of COMP. The AMC is always on so if you are not in COMP mode you can't adjust compression. He recommends setting compression at 15 dB instead of Yaesu's recommendation of 10dB. The book is full of tips on how to better operate the radio. The Yaesu manual will tell you the potential settings of each of the menus. The guide tells you the effects of those settings and makes recommendations. In some cases it tells you not to adjust the default setting and a reason why.

The guide also tells how to interface the radio with various software programs such as Ham Radio Deluxe, FLDigi, MMTTY and WSJT-X. This can save hours of trial and error. It also gives the optimum settings versus some that might work intermittently. There are also some great

suggestions on setup of the display which has many options.

If you don't read the manual you will never understand what the ZIN/Spot or C.S. button does. If you read the guide it suggests how best to use them. ZIN/SPOT is an auto-tune feature for CW that tunes the receiver frequency onto a CW signal to match the CW note selected with the CW pitch control. I have mine set to 720. C.S.(Custom Select) allows you to choose one of twelve different functions for the outside large tuning ring when it is not being used for the sub-receiver or VC (variable capacitor) tune.

The FTDX-101 is number one on Sherwood Engineering's performance table. I expect many that own the radio would benefit by reading the guide to achieve maximum performance from the radio. It could be the difference of making that contact with an all time new one or not hearing him.

AC4G HF Amplifier Saga Continues

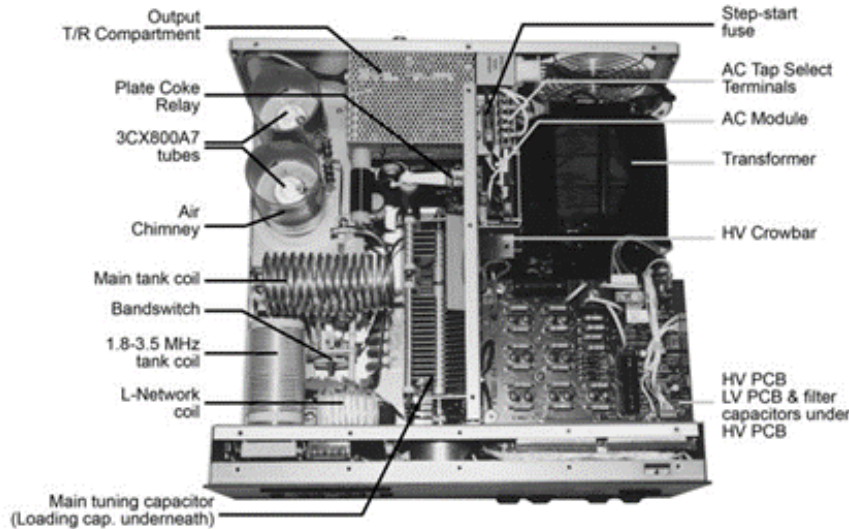
By Bruce Smith, AC4G

If you have not heard, my current HF amplifier went on the "blink" during the 2022 ARRL CW Contest. Since early-February 2022, I have been without an HF amplifier, only to run either QRP or low power in recent contests and to work recent DX & DXpeditions. Even with this handicap of not having an operational HF amp, I have made many good QSOs via short and long path to some long distant DX stations without an HF amplifier and operated QRP in the 2022 ARRL Phone (SSB) Contest. I have to admit, I have another amplifier, but it has been out of commission for a while. Since my current amp recently bit the dust, I decided to utilize my other HF amp, an Alpha 87a, but first, I have to repair it- it's dead. So, the AC4G HF amplifier saga continues.... here goes.

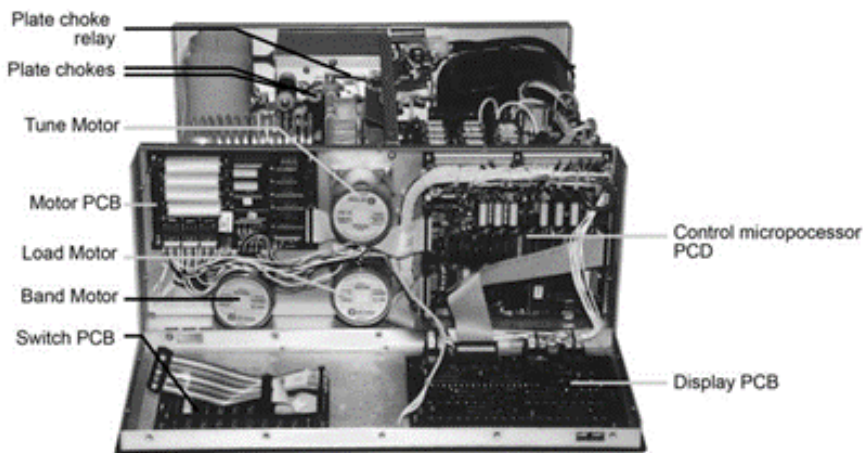
In 2019, I had bought a used Alpha 87a HF amplifier at the Huntsville Hamfest only to hear and realize it had been through some lightning storms while the old, demented ham operator unknowingly was allowing their Alpha to become prone to many component failures while still being connect to an outside antenna they had long forgot about as lightning surges and induced energy from nearby electrical storms played havoc with the components in the amp. At the 2019 Huntsville Hamfest, the ham's XYL was selling ham equipment from her OM's estate. I purchased the amp at a very good price not knowing that I would have issues but took the risk even though I was told it had been repaired. I knew the Alpha 87a legacy and reputation, so I took it home and

AC4G HF Amplifier Saga Continues (continued)

placed it in line with my ham radio equipment. It worked fine for a short while, but I began getting faults and eventually the 87a would not power-up. Pictures 1 and 2 show the 87a internal components.



Picture 1: Alpha 87a Internal Top View [Photo courtesy Alpha Power]



Picture 2: Alpha 87a Internal Front View [Photo courtesy Alpha Power]

More specifically, in 2020, during the height of the COVID-19 pandemic, one morning I went to power up the 87a, only to realize it was dead. I had been attempting to work a DX station

on 160m. The amplifier simply would not power up, so I replaced it with my other amp, but was not fortunate enough to change it out in time to work the DX station I had been chasing that morning on top band.

I mentioned to one of the local North Alabama DX Club (NADXC) members that my 87a would not power-up [names not mentioned to protect the innocent!]. After some discussion, it sure seemed like it could be a simple component, perhaps on the high voltage supply. This ham wanted to investigate further, so he downloaded the amp's schematics from an online source, and I delivered the amp to him. For the past year or so, this member took the schematics and collaborated with several "brainiac" NADXC hams studying the schematics, trying to figure out the issue with this amp and why it would never power up. There were several Zoom sessions with different local "smart" hams to discuss the 87a. I was glad to be a part of this investigation, hoping to either learn something new or shed some sound technical, electronic advice. These were some great sessions discussing digital logic and basic component function. Further analysis and some measurements revealed that the high voltage board appeared to be okay leading to the team beginning to scrutinize the low voltage board and even the logic on the microprocessor board. One day our forward progress was suddenly halted.

All of a sudden, our progress was slowed when this NADXC member, the team's leader for repairing this amp, had a medical condition that

AC4G HF Amplifier Saga Continues (continued)

delayed further analysis. The amp analysis was on hold as the days, weeks, and months passed by. It was at that time that my XYL told me to take the stress off this person, in order that they could heal. No, my spouse demanded that I go and pickup this amplifier and remove it from their house. Soon thereafter, I contacted this amp repair lead and requested all work on this amplifier cease. Needless to say, I got the amplifier back. I believe this helped this person to make a faster recovery. I have to say, by going through this exercise, it helped me to become more familiar with the 87a and its basic function.

Since I was battling within myself whether the amp would ever be back online, I really wanted to get the amp operational, so I solicited the help of an Alpha Amplifier repairman. Now for the BLUF – Bottom Line Up Front! I have my 87a back on the air. Reference Picture 3 below showing my 87a in operation and putting out RF energy. The following discussion is intended to explain the issues with my amplifier. Pictures 4 through 6 will show the schematics of PC boards with faulty components.

My amp had several issues preventing it



Picture 3: AC4G's Fully Operational Alpha 87a HF Amplifier

from powering-up and even operating nominally. First, I must tell you that the Alpha 87a is a phenomenal HF amplifier designed with many protective circuits to prevent tube and component damage but allows for full legal output power from 160m to 10m amateur bands and rapid band change. It does indeed improve the performance of one's amateur radio station. The amp employs protective circuitry (soft faults) to prevent damage caused by overdriving the amp with excessive power from a modern transceiver, excessive SWR, excessive loads, excessive plate current, excessive grid current, T/R sequencing, gain (severe mistune or RF arc), open heater, over temperature, etc. The 87a can soft "fault-out" when unsafe operating conditions occur if one of the above conditions are met. When a soft fault occurs, segments of the LED readout indicating a BCD fault number can be referenced in the manual to figure out the issue. However, in my case, the amp would not power-up to allow me to visually see any fault codes. My issue was considered to be a hard fault.

The factory and 87a design mandates that an Alpha 87a will not power-up when an 87a goes into a Fault 99 condition (hard fault state) meaning, that the firmware must be reloaded before it will ever power-up again. At the factory or via field

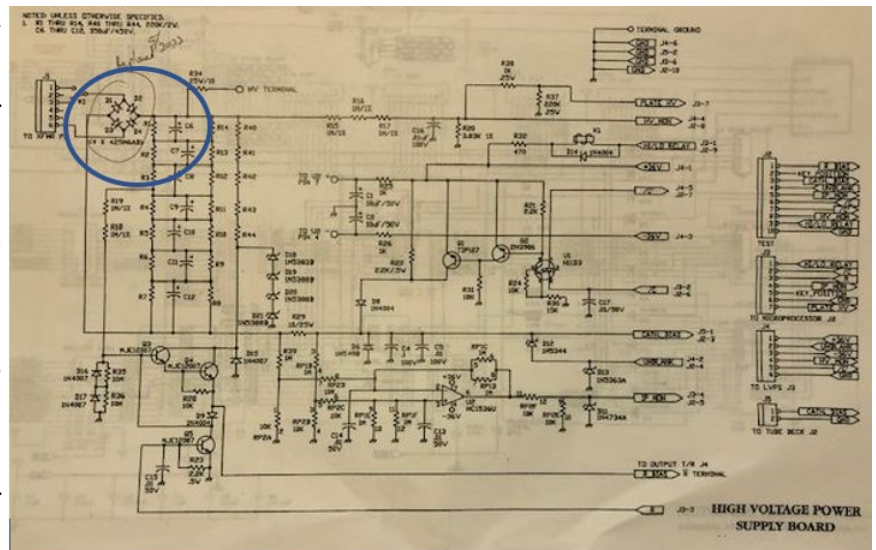
technician, Alpha either uploads firmware via the communications port or manually re-enters the firmware hexadecimal code so that the microprocessor can "come alive" when a Fault 99 condition occurs, clearing a Fault 99 hard fault condition. You might ask, "Why does Alpha

AC4G HF Amplifier Saga Continues (continued)

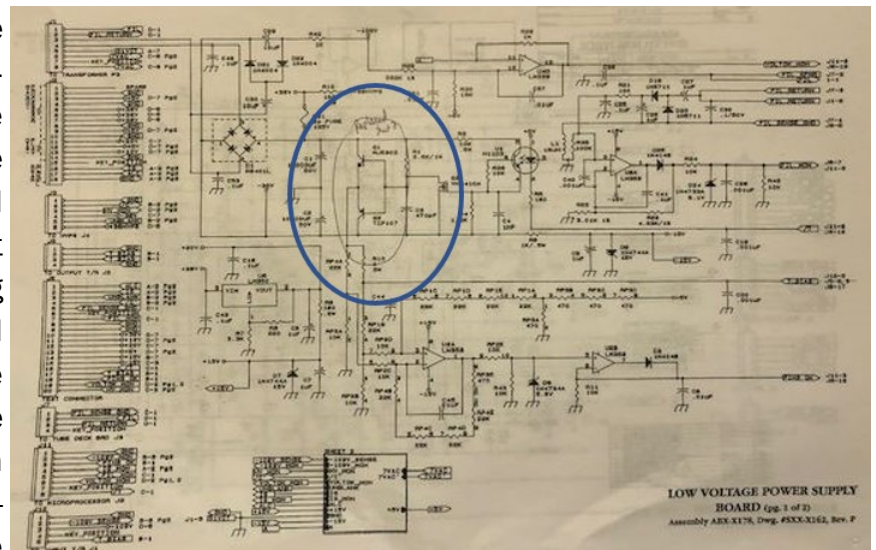
do this?” This is to prevent additional damage from occurring if major issues exist elsewhere. It keeps an operator from doing more damage to the amplifier if the operator forces a power-up and “pops” components or high-power output tubes that are expensive and difficult to find these days. Hard faults such as shorts (extremely high plate current) or bias and/or control system failures result in the immediate shutdown of amplifier AC power to avoid damage (Fault 99 state). If the “reset” is not cleared after six (6) shutdowns (multiple attempts to power-up the 87a), then the 87a locks up the amplifier in a Fault 99 state; this is what happened to my 87a. In my case, since my 87a was in a Fault 99 condition or locked “off”, whatever I could have done to repair any and all PC boards, the amp still would not have powered-up until new hexadecimal code was re-entered or uploaded via the communications port, clearing the Fault 99 state.

Specific repairs made to various boards are listed below after clearing the Fault 99 condition. Reference Pictures 4 through 6 with suspect components are shown on the schematic(s) by the blue circle. Issues with my amplifier included blown fuses on a couple PC Boards that had to be replaced with very fast blowing fuses. Next, my amp had faulty and questionable component issues with the High Voltage board, the Low Voltage board, and Input Wattmeter board. On the High Voltage board, four (4) High Voltage Rectifiers were replaced (see Picture 4) even though only one was faulty. This replacement made sure that all four were

rectifying as required. On the Low Voltage board, a couple of faulty components were replaced. These were one MJE802 Darlington transistor and one TIP 107 transistor (see Picture 5). On the Input Wattmeter Board, four (4) 1N5711 Schottky Barrier signal diodes [D1, D2, D3, and D4] were replaced (see Picture 6). The wattmeter did not function after repairs were made and the amplifier was back operational; therefore, these had to be replaced. Additional adjustments included reducing the screen voltage from 380 to 327 Volts as

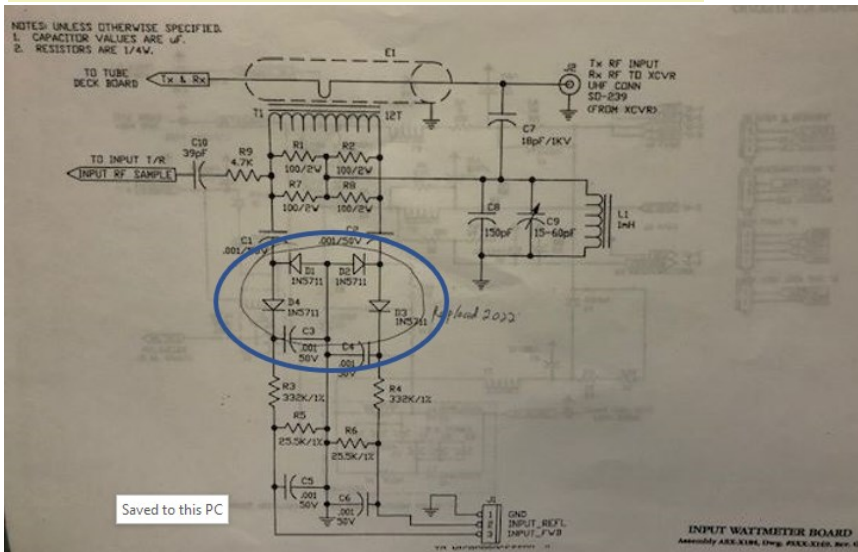


Picture 4: Alpha 87a High Voltage Power Supply Board
(Schematic Copyrighted by Alpha Power)



Picture 5: Alpha 87a Low Voltage Power Supply Board
(Schematic Copyrighted by Alpha Power)

AC4G HF Amplifier Saga Continues (continued)



Picture 6: Alpha 87a Input Wattmeter Board (Schematic
Copyrighted by Alpha Power)

with later production amps were made and adjusting the electronic bias levels. All of the above repairs and adjustments to be made allowing my amp to “come alive.”

I am so enthused and elated to have my Alpha 87a HF Amplifier back online. The amplifier has factory tuned segments or user-specific tuning that allow for rapid band change and operation. Since the 87a is susceptible to power surges and induced electrical currents, my routine is to unplug my amplifier when potential hazardous weather or thunderstorms are in the area to prevent stray electrical currents from destroying sensitive components in the amplifier circuitry. I want to be sure to extend the life of this amp and have it ready when I need it. Recent operation on the amateur radio bands has resulted in verifying the repair of my fully functional Alpha 87a HF amplifier; I will be able to use it in upcoming contests and Dxpeditons. Recent QSOs on 23 May 2022 include longpath and shortpath QSOs made on amateur bands from 10m thru 17m. Stations

worked via CW, SSB, and a few FT8 contacts include DX entities in Southeast Asia (very difficult from my QTH) such as 9M2 (West Malaysia); HS (Thailand); V8 (Brunei); Indonesia (YB/YD/YC); 3W (Vietnam); BY/BD/BG/BH (China); VR (Hong Kong); BV (Taiwan); DS (Rep of Korea); and a lot of JAs (Japan). I am finally glad that my HF Amplifier saga has come to an end and that I was able to share it with you. Many, many thanks to the team of NADXC club members that studied these schematics and exhausted hours attempting to find a resolution to repair my dead amp. I hope it was as much fun for the NADXC team and repairman as it was for me. I feel like I better know my amp and how it operates. I must conclude by saying that my Alpha 87a amp is back operational, thanks to the efforts of so many. Best 73 and good DX! CU in the pileups!

Editor’s note: The hero in this sad saga was Dick Byrd. The goat was K8KI, who didn’t realize that Alpha had booby-trapped the firmware by requiring a re-load after six fault 99’s. GGrrrr!

Upcoming NADXC meeting:

Tuesday, June 14th, 2022

5:45 PM Doors Open / 6:30 PM
Meeting

Location: Museum of Information Explo-
sion and via Zoom

(NOTE: Construction at the museum may require the meeting to move to another location. If so, a notice will be distributed via email.)

Did You Know FET Amps Become More Efficient at Lower Supply Voltages?

By Bob DePierre, K8KI

A short time ago, I read that the new LDMOSFET amplifiers ran more efficient at lower voltages. I was surprised and a bit skeptical. Needless to say, I was spurred to investigate.

I have an SPE Expert 1.3KFA amp. It has a switch on the front panel to set the supply voltage to Low, Medium, or Max. I had thought that was to limit the output power. Now this amp is a different animal than I'd become used to using over the years. It had about 10dB of gain, so I ran my exciter at full power (100W) in order to get a KW out. This amp has 22dB of gain, so you must be extremely careful about the drive power. Overdrive can kill it in an instant. But it's the ultimate "summer amp." Its single power transistor can get smoking hot, but the chassis never even feels warm.

Making the efficiency measurements was quick and easy...and surprising. My results are shown below. These were spot measurements and not timed.

The efficiency does indeed run substantially higher at lower power supply settings. Still not quite believing, I decided to run it at 350 watts making ft8 contacts for a while. I'm very sensitive



K8KI used his 1.3KFA amp to measure efficiency at varying voltages

to the temperature of my FET, and its safety was my overwhelming concern. I ran it at high duty cycle to make sure I got a good steady state temperature. When in MAX, the temp would quickly run over 130F; in MID it would go to 115F, and in LOW it would run to just over 100F. In LOW it reached my body temperature and went no higher! What an easy lesson to learn.

A year ago, I upgraded the firmware in the amp. The new firmware added a contest mode where the fans stay on high full time. A lot of hams have been complaining about the noise the fans make. But the fan noise is music to my ears. It means my dear little LDMOSFET is safe.

SPE 1.3KFA amplifier characteristics.

5.1 watts drive on 15m into dummy load

PWR set	Pout (W)	Volts in	Amps In	Pwr in (W)	efficiency %
LOW	629	36.0	25.0	900.0	69.9
MID	734	43.9	27.1	1189.7	61.7
MAX	781	51.4	28.7	1475.2	52.9

Experimental Comparison of Various Loop Antennas, Different Designs of Hexbeams, and Other Antennas

By R. Barry Johnson, D.Sc., W4WB

A wonderful pastime for many hams is discussing which antenna is better for their QTH. Often, computer programs such as EZNEC, MININEC Pro, and others are used to model antennas to gain an analytical understanding of how well an antenna “may” work at the planned installed location. There are numerous vagaries that can make the results of the model computations rather uncertain or even misleading. Once an antenna is selected, constructed, and installed, how do you know if it is working as expected? SWR may look good, and is what was anticipated. Is that proof all is well with the installation? The SWR of a dummy load is very good, but radiates quite poorly to say the least. Perhaps an experimental method to comprehensively evaluate the transmit and receive behavior of an antenna at your QTH would be welcomed. In this article, a method to accomplish experimental comparisons of various antennas is presented.

A few years ago, Joe Taylor (K1JT) developed a protocol called Weak Signal Propagation Reporter (WSPR and pronounced “whisper”) and was implemented in a computer program used for weak-signal communications between hams to test propagation paths. There are a large number of WSPR beacons and receivers worldwide. When a WSPR receiver detects a signal, it decodes the message and uploads it to the WSPR Spots Database for users to access. To learn more about WSPR, view (i) “WSPR – An Introduction for Beginners – WSJT-X Ham Radio” (<https://www.youtube.com/watch?v=KYlaLT5HLkM>) and (ii) “WSPR Primer and W2ZQ Experiment” (<https://www.w2zq.com/wp-content/uploads/2018/11/20170501-WSPR-primer-and->

[W2ZQ-experiment.pdf](#)).

The basic experimental method I plan to follow is to have a reference antenna and the antenna under test separately transmitting as beacons at the same time to mitigate differences in spatial and temporal propagation paths between these two beacons and the myriad of receiving stations. Those WSPR receiving stations around the world receiving my beacons’ signals will upload data to the WSPR Spots Database including their callsign, frequency, grid location, time, date, distance, azimuth, and received SNR. A transmission takes almost two minutes for a standard callsign (e.g., W4WB), or

closer to five minutes if an augmented callsign is used (e.g., W4WB/A, W4WB/D). The reason it takes a long time is that the channel bandwidth is just 5 Hz. In a like manner, a pair of WSPR receivers will be used with the antennas to receive signals at the same time from numerous beacons from around the world.

The WSPR transmitters and receivers to be



Figure 1. Zach Tek WSPR transmitter.



Figure 2. Zach Tek WSPR receiver.

Experimental Comparison of Various Loop Antennas, Different Designs of Hexbeams, and Other Antennas (continued)

used are from Harry Zachrisson's (SM7PNV) Zach Tek (<https://www.zachtek.com/>) in Sweden. Figure 1 shows the WSPR Desktop 10m-80m transmitter and Figure 2 depicts the receiver. This transmitter is ready-to-put-on-the-air and is contained in a black aluminum box with a block diagram printed on its top to show the different input/output ports. It has a very good temperature-compensated crystal oscillator that provides precise and low-drift output frequency, and it comes with an external GPS antenna with 3m cable. The RF output power is about 200 mW. The receivers are set to the fixed WSPR receive frequencies. Just attach an antenna at one end, connect the Audio Out port to the computer sound card, and then power it on. It has a narrow band-pass filter at its front end that provides good rejection of strong signals so that it is quite possible to copy weak WSPR signals even if the band is full of strong signals, such as when a contest's going on.

However, a brief digression from antenna testing to a remarkable recent application of WSPR data may interest you. Back in 2014, Flight MH370 from Kuala Lumpur to Beijing disappeared with 239 passengers on board, creating an aviation mystery that rivals perhaps the 1937 disappearance of Amelia Earhart. In November 2021, an engineer named Richard Godfrey wrote that by using [WSPRnet](https://www.wsprnet.org/), he is able to track all aircrafts going back as far as 2009. Godfrey said the plane was put into a holding pattern for around 22 minutes near the coastline of Sumatra, an Indonesian island, before it vanished. He claims he will provide the crash site location soon. See "Engineer says doomed MH370 plane flew in

circles for 20 mins before vanishing" (<https://nypost.com/2021/11/10/engineer-says-doomed-mh370-plane-flew-in-circles-for-20-mins-before-vanishing/>) and "Simple Guide to Revolutionary MH370 Tracking Technology" (<https://www.airlinerratings.com/news/simple-guide-revolutionary-mh370-tracking-technology/>).

The first experiment I plan to perform is to compare the two hexbeam designs to "definitely" answer the question "Is the Mike Traffie (N1HXA) "M-W" design superior or inferior to the Steve Hunt (G3TXQ (SK)) "M-U" design?" The HEX-BEAM® is a compact two-element beam that is available in mono-band and multiband versions. The turn radius for a 20m band is about 10 feet. Traffie developed his M-W version, shown in Figure 3, in the early 1990s and a stack of three five-band HEX-BEAMs at Traffie's QTH is shown in Figure 5. In 2007, Steve Hunt, G3TXQ (SK), developed the design for a

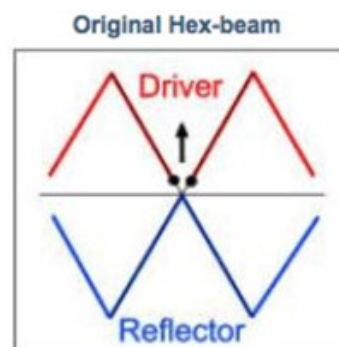


Figure 3. Traffie HEX-BEAM. ¹

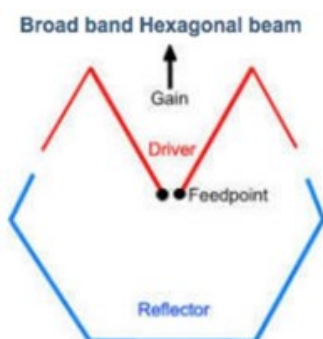


Figure 4. Broadband Hexagonal Beam. ¹

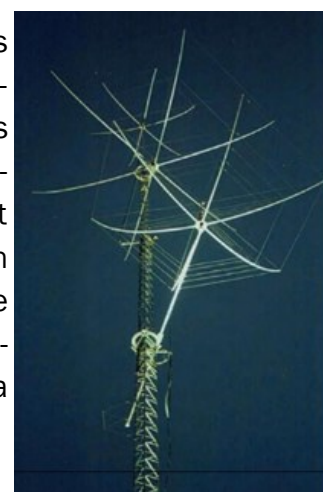


Figure 5. N1HXA Hex-Beams at 42', 70' and 90'. CQ Magazine (Oct. 2020)

¹ Leo Shoemaker, "History of the Hexbeam," K1O Technology, Hex Ed. K4K1O (May 28, 2020) (<https://www.k4kio.com/history-of-the-hexbeam/>).

Experimental Comparison of Various Loop Antennas, Different Designs of Hexbeams, and Other Antennas (continued)

slightly different configuration of the hexbeam (<https://www.k4kio.com/history-of-the-hexbeam/>) that is illustrated in Figure 4 and is sometimes called the M-U form. As I recall, Steve used EZ-NEC to model both the Traffie HEX-BEAM and his M-U hexbeam version which he claimed has better broadband performance, i.e., the SWR is lower across a given band than for the Traffie design. L.B. Cebik (W4RNL (SK)) also modeled the Traffie HEX-BEAM and published his results. Cebik and Hunt got similar results. I had several conversations with L.B. about his model and told him that my practical experience using my Traffie HEX-BEAM was inconsistent with his model. Without going into the details, I explained my reasoning why EZNEC doesn't model an antenna like the HEX-BEAM properly. He concurred but refused to add a comment to his modeling results. I also offered to take a Traffie HEX-BEAM to his home so that he could take real measurements himself. Nope, he wouldn't do it. It is rather interesting that, to my knowledge, all of the proponents of the Hunt design have never operated a Hunt design antenna and a Traffie design antenna side-by-side. As far as I know, Mike Traffie is the only one to have made this comparison. Interestingly, for years there has been an ongoing "debate" about which antenna version is better. I note that there have been several businesses and a number of homebrewers that built, with varying results, their version of either the Traffie design antenna or the Hunt design antenna.

In 2009, John S. Huggins wrote a brief article entitled "Hexagonal (Hex) Beam Battle" in Ham Radio . Magnum Experimentum (<https://>

www.hamradio.me/antennas/hexagonal-hex-beam-battle.html). In this article, he comments (in short) that if an antenna is modeled correctly and built correctly, then the model will agree with measured values. He also comments that a modeling program needs to have adequate complexity and capability for this to be true. The following year, he published a simulation of the Traffie and Hunt 10m hexbeam designs using a Finite-Difference Time Domain (FDTD) method. He generated simulation movies that reveal the magnetic fields in the first 50 seconds of the movie and the electric fields in the second 50 seconds of the movie ([Simulations of Classic & Broadband Hexbeam – The Movie](#)). As he noted, the E and H fields occur at the same time to yield electromagnetic fields, but he didn't know how to show both together in a meaningful way. Also, it appears that he didn't reach any conclusion which design is the better.

Around 2000, Traffie did an on-the-air comparison of his HEX-BEAM to a well-designed and fabricated 17m three-element Yagi. He never published the results until October 2020, in a CQ *Amateur Radio Magazine* article entitled "The HEX-BEAM Revisited". In this article, Traffie wrote the following:

In our own field tests, and those of many others, it was observed that the HEX-BEAM consistently compared well with a 3-4 element Yagi-Uda in actual operation even though it is much smaller and has only two elements. About 20 years ago, we built a 3-element, 17-meter Yagi-Uda whose design was verified by a professional antenna designer for a major manufacturer. The HEX-BEAM and the 17-meter Yagi-Uda were mounted on towers at the same height and at nearby locations. The same length of feed line from each antenna

Experimental Comparison of Various Loop Antennas, Different Designs of Hexbeams, and Other Antennas (continued)

was used to attach to an antenna switch to allow an "AB" comparison. Over a period of some weeks, numerous QSOs were made in Europe, the West Coast of the U.S., and some other DX locations. During the QSOs, the DX operator was asked to compare the two antennas and answer if A or B was the better or about the same, with the Yagi-Uda and HEX-BEAM randomly changing designations between QSOs. Independent analysis of the log data indicated that about 30% of the time the antennas were determined to be about the same, about 30% of the time the Yagi-Uda was considered to be better, and about 40% of the time the HEX-BEAM was thought to be better. How can this be?

He answered his question within the article. You might find it interesting to read his article sometime as well as his second paper on the subject that was entitled "Miniaturized Antennas" in the Spring 1995 issue of Communications Quarterly, and his first paper entitled "The HEX-BEAM" in the September 1994 issue of Electric Radio Magazine. Can you guess who did the independent analysis about 20 years ago? Yes, I did. Traffie sent me a copy of his logbook with all of the entries stating which was A and B, and the signal reports with any comments the other stations may have made. There were well over a hundred QSOs recorded. Were the statistical results of Traffie's experiment definitive? No, but highly suggestive. His approach was rather a rudimentary attempt to gather antenna comparison data in contrast to the experimental method I plan to implement using

WSPR. Others have used WSPR to perform some interesting antenna comparisons such as by Roland (HB9VQQ) who compared a Sandpiper MV6+3 vertical and an end-fed half-wave antenna.

A few years ago, a friend of Traffie's was changing antennas and no longer needed his K4KIO Hexbeam. He gave it to Traffie to experiment with. Traffie installed this antenna on one of his towers and then did an AB comparison for a couple of weeks as I understand. He told me that the DX stations essential all picked his HEX-BEAM. Here again, the results are only suggestive. Traffie sent me the K4KIO Hexbeam to use in comparative experiments if I desired.

It should be evident that the WSPR method to compare the relative performance of the M-W and M-U hexbeam designs should settle the debate of which design construct is the better. The antennas to be used in the experiment will be a Traffie HEX-BEAM and a BuddiHEX™ by Buddi-Pole, who is the latest M-U hexbeam provider. The antenna base of each antenna is anticipated to be a bit over 10m above ground level. The experiment plan is yet to be fully worked out, but it will be something like the following.

- Bands: 15m, 17m, and 20m in order of priority.
- Determine band opening period for each band and select a band.
- Gather data for an hour during each the early opening period, mid period, and late period.
- Use call signs W4WB and W4RT² so that transmission cycle is a bit less than 2 minutes.

² I am trustee of W4RT which is the call sign of the Tornado Amateur Radio Club. Using the forms W4WB/A and W4WB/B in the WSPR messages result in a message time of about five minutes. Using W4WB and W4RT will allow the transmission of three times the number of messages in the same six-minute transmission period.

Experimental Comparison of Various Loop Antennas, Different Designs of Hexbeams, and Other Antennas (continued)

- Operational protocol for each hour of data gathering is as follows. Time for each transmission starts one second after the beginning of each even-number minute.
 - Aim beams to Europe within 2 minutes.
 - Transmit for 6 minutes (3 messages).
 - Rotate beams 180 degrees within 2 minutes.
 - Transmit for 6 minutes (3 messages).
 - Receive for 6 minutes (3 messages).
 - Rotate beams 180 degrees within 2 minutes.
 - Receive for 6 minutes (3 messages).

- Aim beams to west within 2 minutes.
- Transmit for 6 minutes (3 messages).
- Rotate beams 180 degrees within 2 minutes.
- Transmit for 6 minutes (3 messages).
- Receive for 6 minutes (3 messages).
- Rotate beams 180 degrees within 2 minutes.
- Receive for 6 minutes (3 messages).

- Analyze data downloaded from WSPRnet.org.

Of course, there will be practice sessions with a single antenna to be sure everything is working correctly. Antenna modeling is very useful to gain insight, antenna range measurements are helpful, but I believe that over-the-air (OTA) performance measurements using the antennas as they are expected to be used is the most meaningful approach.

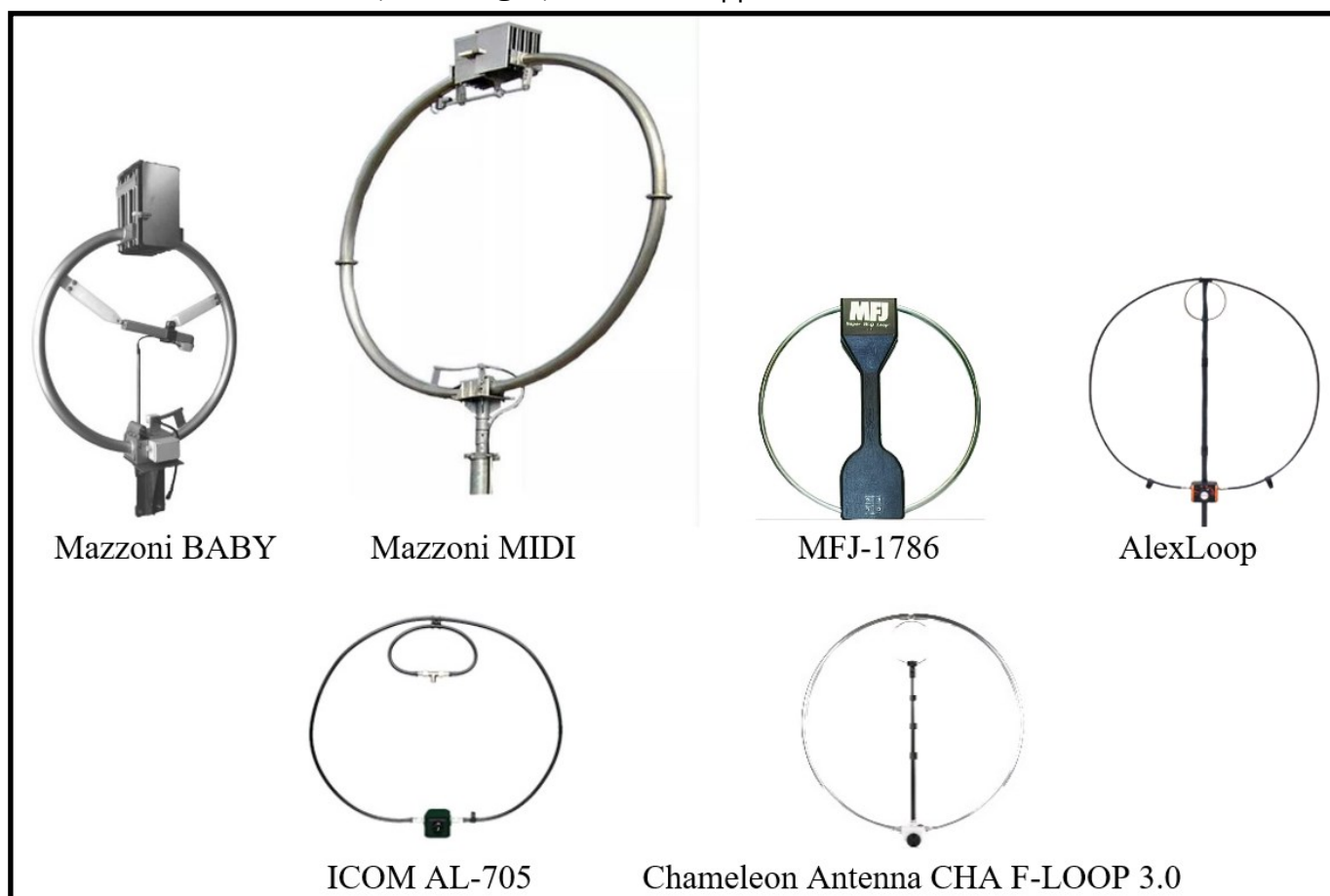


Figure 6. Loop antennas to be compared.

Experimental Comparison of Various Loop Antennas, Different Designs of Hexbeams, and Other Antennas (continued)

After the hexbeams are tested, I plan to compare at least the six “magnetic” loop antennas shown in Figure 6. If you are not familiar with loop antennas, you might enjoy reading several excellent papers on loop antennas that Kai Siwiak (KE4PT) has published in QEX and in the LongPath. My collection of loop antennas includes a Ciro Mazzoni BABY Loop (10m–40m), Ciro Mazzoni MIDI Loop (20m–80m), MFJ-1786 Super Hi-Q Loop (10m–30m), and AlexLoop (10m–40m). With appreciation, GigaParts has made available the ICOM AL-705 loop antenna and the Chameleon Antenna CHA F-LOOP 3.0 loop antenna for the loop antenna comparison experiment. All of these loop antennas are 1m diameter except the MIDI which is 2m diameter. The AlexLoop, AL-705, and CHA F-LOOP 3.0 are limited to about 20W SSB (10W CW/digital) while the MFJ can handle 150W. The BABY handles 450W from 40m–15m and 1kW on 12m and 10m. The MIDI can take up to 300W from 80m to 40m and 800W on 30m (FCC limit is 200W) and 20m. Computer modeling the Ciro Mazzoni antennas is

challenging; as I understand, Ciro Mazzoni basically designed his antennas experimentally. The Mazzoni Team recently wrote me that “Our antennas have been designed by Ciro’s (approaching the mid 80s now and still daily in the company from morning till evening !!!) decades of experience and tests for years.” Unlike the MFJ and AlexLoop antennas, the Mazzoni loop antennas reportedly have a front-to-back ratio of 4 dB to 6 dB. All of the loop antennas have a significant front-to-side ratio. If anyone has another transmit/receive loop antenna and is willing to loan it to me for the comparative tests, kindly contact me.

In addition, I plan to compare the MIDI and the Traffie HEX-BEAM on 20m, and the BABY and the Traffie HEX-BEAM on 15m. These pairings of antennas are selected because the efficiency of the Mazzoni antennas will be about at their maximums. So, when will I attempt to perform the comparisons? Most likely in the early fall and after I install the MIDI antenna.

— GET PREPARED. GET OUT THERE. —



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How to Join

Come to a club meeting or send in an application by mail (form on www.NADXC.org)

Club Business and Announcements

Meeting Minutes - May 10, 2022 - provided by Chris Reed, AI4U

- The meeting of the North Alabama DX Club took place May 10 at 600pm. Bob, K8KI called the meeting to order and welcomed everyone.
- Discussion was held on DX and the rise with the latest solar cycle. Chris, AI4U provided an update on the finances outlining the monthly expenditures and final balance at the end of May.
- Bob, K8KI adjourned the meeting and provided a program on the Theremin made by Tom Duncan KG4CUY (SK) and donated by Janet Duncan KI4WLX.
- A video was shown of the Beach Boys, "Good Vibrations" and the Theremin instrument was used on the record.
- Marc Bendickson demonstrated a 1910 Spark gap transmitter. Those in attendance were allowed to key the transmitter at their leisure.



Janet Duncan, KI4WLX donated a theremin built by Tom Duncan, KG4CUY (SK). Marc Bendickson accepted the theremin on behalf of the Museum of Innovation Explosion.

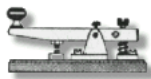
Budget Forecast			
Budget Category	2022 Targets	May Activity	Year to Date
Dues In	\$720.00		945 (61 members)
Recurring Expenses	-\$668.00		-\$550.00
Sales	\$300.00		\$300.00
Discretionary Exp	-\$1,000.00		
DX Banquet	\$650.00	\$540.00	\$540.00
Misc.		\$31.79	
Bank Delta	\$2.00	\$571.79	\$1,235.00
Bank Account Summary - May 2022			
Beginning Balance	\$8,562.50		
May Activity	\$571.79		
Ending Balance	\$9,134.29		



This edition of The
LongPath published
by Fred Kepner,
K3FRK

Upcoming DX Contests

By Chuck Lewis, N4NM



GACW WWSA CW DX Contest, (CW), 80-10 meters

June 11, 1500Z to June 12, 1500Z

Exchange: RST, CQ zone

See page 85, June QST and http://gacw.ar/wp-content/uploads/2022/04/WWSA_2022_Ingles.pdf

Asia-Pacific Sprint, (SSB), 20-15 meters



June 11, 1100Z to June 11, 1300Z

Exchange: RS, Serial #

See page 85, June QST and www.jsfc.org/apsprint/aprule.txt

Portugal Day Contest, (SSB/CW), 80-10 meters



June 11, 1200Z to June 12, 1200Z

Exchange: RS(T) and Serial or district code

See page 85, June QST, and <https://www.portugaldaycontest.rep.pt/rules.php>

All Asian DX Contest (CW), 160-10M



June 18, 0000Z to June 19, 2359Z

Exchange: RST plus age

See page 85, June QST and www.jarl.org/English

Stew Perry Topband Challenge (CW), 160 meters



June 18, 1500Z to June 19, 1500Z

Exchange: 4-character grid square

See page 85, June QST and <http://www.kkn.net/stew/>

IARU HF World Championships (SSB/CW), 160-10M



July 9, 1200Z to July 10, 1200Z

Exchange: RS(T) plus ITU zone; IARU HQ stns send HQ abbrev.

See <http://arrrl.org/iaru-hf-world-championship>

OTHERS:



DRCG WW RTTY Contest, 1100Z June 11 to 1559, June 12



His Maj. King of Spain Contest, SSB, 1200Z, Jun 25 to 1200Z, Jun 26



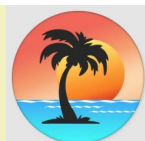
Marconi Memorial HF Contest (CW), 1400Z July 4 – 1400Z, July 5

Dates & times often change or are misprinted in the journals; beware.



DXpeditions in June 2022

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Start Date	End Date	DX Entity	Call Sign	QSL via	Info
2022 Jun01	2022 Jun22	Rwanda	9X2AW	LoTW	By DF2WO fm Kigali; 160-10m; CW SSB + digital; QSL via M00XO OQRS
2022 Jun01	2022 Jul31	Gabon	TR8CR	F6AJA (B/d)	By F8EN; 40 30 20m; CW
2022 Jun04	2022 Jun24	St Lucia	J68	LoTW	By K9HZ as J68HZ and WA2LLN as J68AG; HF; CW SSB RTTY FT8 FT4; 1500w; SteppIRs, inverted vee; QSL via Club Log OQRS or direct
2022 Jun05	2022 Jun15	Cyprus SBA	ZC4RH	LoTW	By G4WXJ; also 5B4/G4WXJ; 40-10m; SSB CW + some FT8; 100w; Buddistick, end-fed wire;
2022 Jun09	2022 Jun12	Svalbard	JW5E	DL5FF (B/d)	By DL5FF; HF; CW
2022 Jun11	2022 Jun14	Ogasawara	JD1BLY	LoTW	By JI5RPT fm Chichijima I (AS-031); 40-6m; FT8 CW SSB; QSL via Club Log OQRS
2022 Jun14	2022 Jun19	Sao Tome & Principe	S9EFW	LoTW	By K9EFW fm Sao Tome; 40 20 15 10m; SSB; QSL via K9EFW
2022 Jun17	2022 Jun29	Zimbabwe	Z21RU	LoTW	By R7AL RA1ZZ RW9JZ R9LR fm KH50am; 160-10m; CW SSB + digital; QSL via R7AL (B/d)
2022 Jun18	2022 Jun26	Ogasawara	JD1BMH	JD1BMH Buro	By JG7PSJ fm Chichijima I (IOTA AS-031); 40-10m; CW SSB RTTY; QSL OK via JG7PSJ direct
2022 Jun22	2022 Jun27	Jan Mayen	JX		By LB5SH as JX/LB5SH; SSB FT8
2022 Jun24	2022 Jul02	Ogasawara	JD1AJD	LoTW	By JA1ADT; 20-6m; CW FT8 FT4; focus on 6m for EU/NA
2022 Jun26	2022 Jul06	Market Reef	OJ0	LoTW	By OH3JR as OJ0JR and OG2M as OH0MR; focus on 6m; FT8 CW SSB; looking for NA, SA, Asia;
2022 Jun27	2022 Jul11	Greenland	OX3LX	OZ0J	By OZ1DJJ fm Upernavik I (IOTA NA-134, GQ12ws); HF + focus on 6 4m); spare time
2022 Jun28	2022 Jul05	Liechtenstein	HB0	LoTW	By OZ0J as HB0/OZ0J; HF; SSB CW + digital (incl FT8); QSL via Club Log OQRS, eQSL, OZ0J (B/d)
2022 Jun28	2022 Jul12	St Pierre & Miquelon	FP	LoTW	By KV1J as FP/KV1J fm Miquelon I (IOTA NA-032); QSL via KV1J
2022 Jun30	2022 Jul08	Ogasawara	JD		By JD1BQI and JR3DVL as JD1/JR3DVL fm QL17cb; 6m; 50323 FT8; 200w; yagi; looking for
July					
2022 Jul01	2022 Jul05	Fernando de Noronha	ZY0FUN	LoTW	By PY2RN; 40-6m; CW FT8; also satellites; holiday style operation; QSL via Club Log OQRS
2022 Jul01	2022 Jul12	Namibia	V5	LoTW	By HB9BFM as V5/HB9BFM fm Luderitz (JG73ni) and Simplon/Sandverhaar (JG83qe); 80-15m;
2022 Jul04	2022 Aug04	Nicaragua	YN2RP	LoTW	By NN3RP; 40-10m; CW SSB + digital; QSL via NN3RP
2022 Jul12	2022 Jul28	St Kitts & Nevis	V47JA	LoTW	By W5JON fm Calypso Bay; 160-6m, incl 60m; SSB FT8; yagi, verticals; QSL also OK via W5JON
2022 Jul13	2022 Jul20	St Martin	FS	eQSL	By W7NZJ as FS/W7NZJ; 20-10m; ditigal; 100w; Buddistick