The LongPath

April 2021 — Volume 45 Issue 4 A North Alabama DX Club Publication

Contents:

From the President

By Bob DePierre, K8KI

Oh, how much has happened over the past month. The pandemic was starting to subside in March, and I was on the better side of being "age challenged," so I had my shots by then. Now vaccines have ramped up to the point where over half the US population has gotten theirs, and 4 million shots were distributed yesterday. At that rate we can do a third of the country in a month. That tells me a) we're going to have a hamfest and b) we can think of meetings in person soon. Let's talk about the wisdom of b) on Tuesday. We've been on Zoom for so long that I'm afraid some of us have gotten addicted to Zoom. When we get back to restaurant meetings, I'll try to continue the Zoom connection. I hope the WiFi connection will be available there. We may need an extra laptop to do the presentation and Zoom simultaneously. And it may be a problem when the presenter is distant from the mic.

Now if we're going to have a hamfest, then we're going to have a DX Banquet as well. As of today, we're in negotiation with three venues, but the preferred one is the Spring Hill (where we had it the last two times). We should have a signed contract very shortly. I've worked on the banquet numerous times over the years, but at times like this I get to realize just how important it is to our community. If you are like me, then you are quite starved for a hamfest, and meeting all the folks who come here to enjoy it with us. The banquet is sponsored by our small club; we are solely responsible for it. The attendance at the banquet has soared by 50% over the past 5 years. If you haven't attended one in the past, you should certainly try it this year.

I've been trying to aim our Long Path toward particular subjects each month. This is our HF Amplifiers issue. If there is any piece of equipment that hams get emotional about, it's their amp, whether it's good or bad. Enjoy the reading! Next month let's try SWR/Power meters. I know everyone has one of those. Can you write an article about what you like/dislike about yours?

We've had a contest column in the Long Path for years, but Bruce/AC4G recently reminded me that we're called the DX Club, so why didn't we have a DX Column. He was right, so I have added a DX Column for the first time, many thanks to Bill/NG3K. I hope we have good reason for many new DX conversations. The DXpeditions are starting again, and Cycle 25 has begun. Good thing!

At the last meeting we voted to place a brick on the terrace at Newing-

Upcoming Zoom meeting:

Tuesday April 13, 2021

6:30 PM open chat

7 PM meeting start

From the President (continued)

ton in memory of Tom Duncan, KG4CUY. ARRL sent a replica, which I was able to present to his XYL, Janet. AI4U and AG4W accompanied me. This is an honor bestowed on a very few Silent Keys. We will never be able to replace Tom.

Bob K8KI and Janet Duncan

At our next meeting Steve Molo/KI4KWR will show us a new coax product available at Gigaparts. I really don't know why it's better than any other brand, but maybe Steve can convince me. I do know that AG4W actually melted the coax to his EME station, and replaced it with this product. He has tried, but hasn't melted it yet. Maybe it really is better.

So, come join us for another COVID-free virtual meeting of the NADXC on Tuesday, April 13. We'll use Zoom again. I'll send you another invitation, but the sign-on will be exactly the same as in the past. I'll open Zoom for informal discussion at 6:30, and start the meeting at 7pm.

Treasurer's Report

By Chris Reed, AI4U

Main account balance	$8324.91
PayPal balance	$919.32
Total funds	**$9244.23**

Editorial

By Bob DePierre, K8KI

For those of you who read CQ Magazine (and who doesn't), you may have noticed a 4-page spread (April, pp. 76-79) written by our Steve Werner/AG4W. For those who have never seen him operate DX or contests, watching him is a real learning experience. Over the past 60 years he has won more than a few awards. This article is about what mark you may make in ham radio, if you start now.

April 2021 CQ Magazine

My First CW Contest

By Jon Benignus, KK9W

About a month ago Bob, K8KI, sent out a survey asking for input. My combined responses triggered some good conversation and an invitation to his shack. The goal was to share his knowledge and operating practices, so I could comfortably take what I leaned and apply it in my shack to participate in the ongoing ARRL International DX – CW contest. Several weeks passed and Bob made good on his invite. For the sake of disclosure, I'm not a long time or very skilled CW operator. I'm a light shade of green, if you will. So, forgive me if I was slightly skeptical when Bob told me he would have me running 40 WPM contest exchanges by the time I left. It was in fact true!

In this CW contest the tools of the trade didn't include a CW key at all. We would be using CW Skimmer for decoding purposes, N1MM contest software for both logging and computer CW keying and the Flex 6500's beautiful display. I was a bit shaky my first couple of contacts, but with a bit of coaching the timing, exchange and the use of cut numbers all fell into place and I was able to run things unassisted to the point I was confident that I could go home and accomplish the goal I had set my sights on.

I got to my shack, opened the requisite software, edited my contest exchange macros in N1MM and found a DX station in the bottom of the band. When I thought I was ready came a glorious moment of.....NOTHING. No decoding of signals, even though the sound card was configured correctly. The computer would not key the transmitter at all. After tinkering with the software for a few moments I concluded it had to be the radio settings. I was tasking it with doing something new that I had not done before, which was computer keyed CW. I discovered two issues and corrected them. I needed to go into the CONNECTORS/USB SEND/KEYING menu and set-up USB KEYING (CW) and set it to DTR in my Icom IC-7300 and that solved the transmit issue. The second issue was my CW filters were set to the same widths as they were in SSB. That certainly isn't going to work a in a contest! After reigning in two of the available filters to 500 Hz and 250 Hz, I was finally ready.

My first contact was S57Q in Slovenia followed by D4Z in Cape Verde. My contact with needed DXCC entity 9G5FI in Ghana came as a complete and total surprise. On the second attempt I recognized the rhythm of my own call being returned followed by 599 1TT. I sent my reply and he acknowledged me and moved on. Holy cow that was exciting! We had attempted to work him through the pile-up while I was at K8KI's shack but weren't able to bust through with higher power on demand and a quality antenna system. Somehow through the oddities of timing and propagation I was able to bust through with only 100 watts and a 160-10 M folded dipole. What a thrill! I didn't have but a couple of hours to play on the radio and burned up much of it setting up my station and troubleshooting. I made a total of only 35 contacts on three bands during the contest. Certainly not many, but I was also being picky. I was just trying to work new ones and countries that I had worked before and lacked a confirmation in LoTW from. Doing so resulted in my DXCC confirmations getting a sudden bump from 119 to 124.

In closing, this was a total success. I had a lot of fun trying something new while learning a good bit in just a short period of time and achieved what I had set out to. And while I won't be placing a winning contest score, I certainly scored higher than those who didn't venture to try or learn how. Next year I will compete against myself and try to beat my own score from this year and improve my skill set. Thanks for reading!

SAVE THE DATE!

NADXC Banquet

Saturday, August 21st, 2021

We're finally in a position to sign the hamfest banquet contract with the Springhill Suites!! So get ready to buy your tickets!

A Reminiscence

By Barry Johnson , W4WB

Our outstanding NADXC president, Bob K8KI, asked that I shared one of my experiences as a young ham a long, long, long time ago. When I, K5FLY, was attending high school in Baton Rouge, I started working at WBRZ-TV at age 16 as an audio engineer and then as a video engineer. It was a wonderful job and the people were great once the "kid" proved himself. Mr. Weathersby, the Chief Engineer, gave me lots of opportunity to learn new stuff. I helped install the first video tape recorders (a pair of AMPEX 4" wide tape machines), the local color chain at the station, and the equipment in the huge remote TV van (house on wheels!). WBRZ-TV started broadcasting the very few network shows that were in color about 1959 as I recall (a colorful peacock started each show's broadcast) and we went live with local color shows in late 1963.

You see, WBRZ-TV broadcasted on Channel 2 with full audio and video power, 50,000 watts. The broadcast antenna was an RCA 12-bay Superturnstille that was almost 300-feet tall sitting on a 1000-foot tower overlooking the Mississippi River which was a mile wide at this point along the river. The soil there was wonderful for antennas too! Since Channel 2 covered 54-60 MHz and the antenna could work nicely even down to 50 MHz, this seemed to be that young ham's dream come true. Since I worked the late shift four nights each week and often turned the station off at midnight, I was there alone with access to that wonderful antenna and transmitter. My Dad (K5ZQZ and later W4TCD) had declared his old International Crystal Company Executive CB Radio to be "surplus." I took it and converted it into a 10W, 6 m rig with a VFO. So now I had to figure out how to clandestinely hook my rig to that beautiful antenna. I learned how I could change the phasing of the antenna to get directivity and a lot of gain (ERP) in that direction. The transmitter was arranged with a driver and two stages of amplification to the final amplifier to generate the 50,000 watts. After snooping around the equipment, it became clear that the only "clandestine" access I could have was at the input of the amplifier chain, i.e. disconnect the driver and connect my little radio. It took a while, but I found a "spare" connector so I could make a cable to attach my rig to the amplifier chain. I was hoping to achieve 1 KW, but it seems that I was hitting over 20 KW! Oh well, I gave it a try and I could not believe the signals I heard and then starting working many States, Cuba, and Mexico. Seemed that WAS might be a reasonable goal, until some fellow in Missouri asked what kind of antenna I was using since he could hear no one else on the band but me. Oops, I happily told him which was a big mistake. He didn't believe me and called the TV station and asked the guard if a young man named Barry was there. The guard logged the call into the book and, you guessed it, the next afternoon when I came to work I was taken to the station owner's office along with Mr. Weathersby. To say the owner wasn't amused would be rather an understatement. It was indeed all Mr. Weathersby could do to keep me from being fired! On the way back to the Engineering Section, he asked me what it was like using that beautiful antenna on 6 m because he had always wanted to try it himself, but then he liked his job too much!

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Congratulations

to

Susan Seaford, AI4VV

Susan has completed her ARRL WAS Digital and DXCC Digital Awards!

From Trash to Treasure

By Mark Brown, N4BCD

This tale begins in the summer of 2010. I was President of HARC and was always throwing out ideas for club activities. My daily commute took me past an empty home on Slaughter Rd and I couldn't help noticing a 20m mono-bander mounted on a telephone pole in the backyard. One day I noticed a dumpster in the front yard – clearly someone was cleaning out the home.

I stopped to find the adult sons clearing out the home of their deceased parents and inquired about the ham radio contents of their father (I since lost the callsign). Not knowing or caring about the individual pieces, they were interested in selling it all as a lot. They let me snap a few photos.

The lot as discovered by Mark

At the next Club meeting I showed the pictures and suggested it might be worthwhile activity to purchase the lot and sell it at the upcoming Hamfest. Crickets. There was simply no interest in taking on the project of transporting, cleaning, cataloging, and marketing the equipment.

A few weeks later one of the sons called me to ask if there was any interest. Knowing I was on my own to do this, I low-balled a figure that I knew would keep me from losing money - $1000. Two pick-up truck loads later, my two car garage floor was converted to a storage locker where I sorted items into trash, treasure, and the stuff in-between. It seemed obvious that clean stuff would fetch a higher price so I used brushes, paper towels, and water to make things a little more presentable.

The lot cleaned and organized

I had already moved this stuff once and put out the word of what was being offered. People showed up, working radios and test equipment went to happy customers, and the pile destined for the Hamfest grew more manageable. Still, there was a lot of stuff.

At Friday move-in I dutifully started moving equipment to a borrowed table. Clearly I should have bought my own because it overwhelmed the table. As the weekend progressed I resolved that anyone picking up or showing any interest in an item was destined to take it home. With no emotional attachment to any of it, the price I got was whatever the seller was willing to part with.

My $1000 and time investment netted me

From Trash to Treasure (continued)

$2300 – exactly the price of a used Alpha 91β on the GigaParts website. It turns out the amp was owned by Dan Whitsett (SK) a long-time NADXC member. I did have some trouble with the amp faulting which a trip to Colorado fixed. Molly at Alpha informed me it was an early production unit and had an incorrect resistor value in a bias monitor circuit. The amp has been perfect since. Not many amps will do 1.5kW on 30m – this one does. The Omega Engineering thermocouple atop the amp was held back from the SK estate sale.

I'm forever grateful (and apologetic) to Bob K8KI for hijacking his 2010 Flea Market table.

Mark's prize—an Alpha 91β

W-51 Recovery

By Mark Morgida, AA2MA

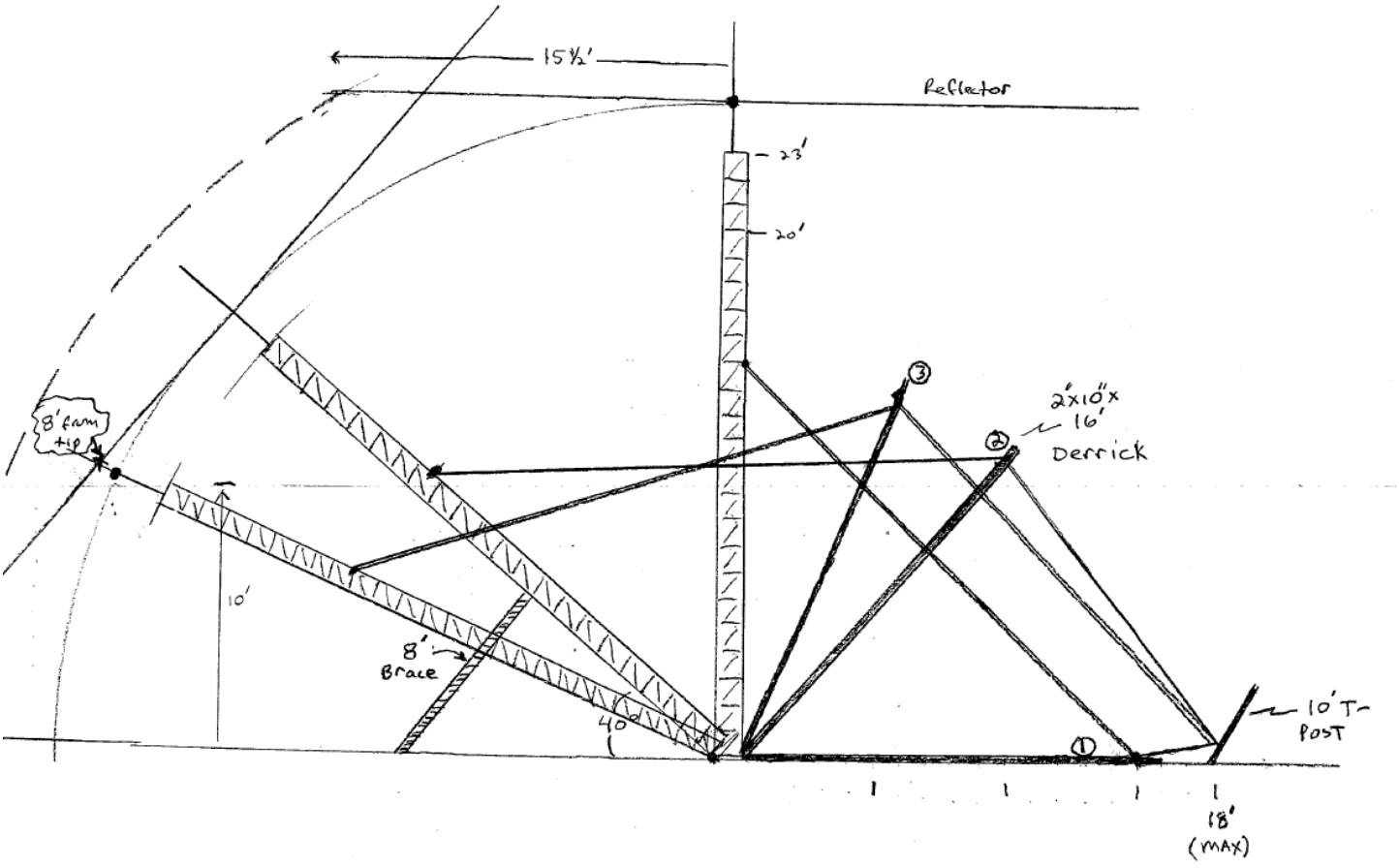
I had a TA-33-JR with CDE rotator mounted on a pole at 30 feet when I was a novice in 1974 – 1975. But I've always wanted to have a 'real tower' with a serious antenna. Since moving into my QTH in September 2018, I've talked to ham friends and studied a number of ads to determine the best tower for me. I have a healthy 'respect' for heights and enough medical issues that I quickly realized I'd like to have something that allows me to keep both feet on the ground or as near to the ground as possible while practicing my hobby. So when Billy forwarded an announcement of an estate sale for Don Williams, K4HUO who became an SK some time ago I immediately took notice when I saw a Tri-X W-51 crank-up tower with a tilt-over base. This seemed to be a good compromise of capabilities, features to allow me to keep my feet on the ground, and cost. I reached out to the POC and set up a visit to scope out the situation. Meanwhile, I looked up as much information as I could find on both the W-51 and the Hygain TH6DXX tri-bander perched at the top to make sure manuals and parts were available.

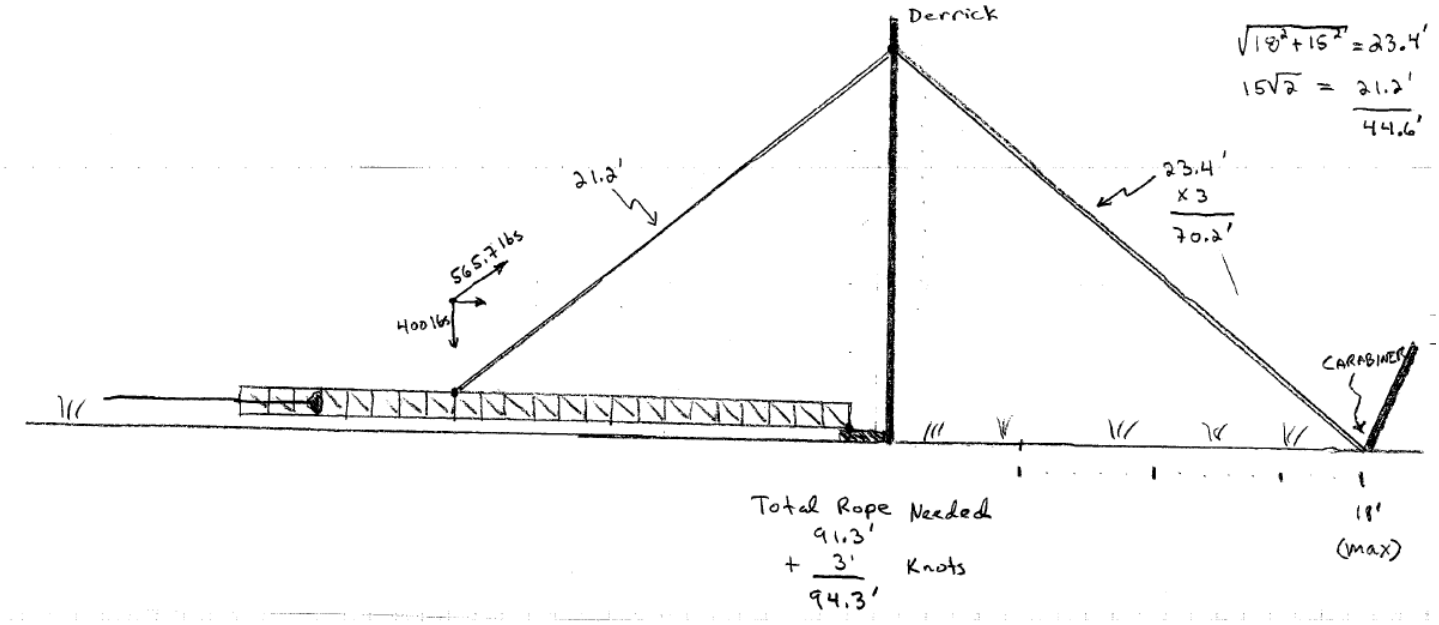
I visited the Williams family home in late November and met Mrs. Williams and family friend Larry, WA4PJP who was helping the family sell the ham equipment. Larry proved to be a tremendous help. I was pleased with what I found.

There was very little corrosion on the structural components of the tower, even though the winch appeared heavily rusted it worked just fine, and finally, Larry attested that he'd seen his friend Don tilt the tower down and re-erect it by himself a few years back. The only problem was that the tower could not be completely collapsed – about 4 or 5 feet of the top sections could not be lowered. We spent some time erecting and collapsing the tower several times trying to understand why it would not nest. Laying on the ground with a pair of binoculars to study the situation pointed to the possibility that the upper section was hung up on the rotor cable. Not a show stopper, but I knew from literature on the W-51 that a non-collapsed tower should not

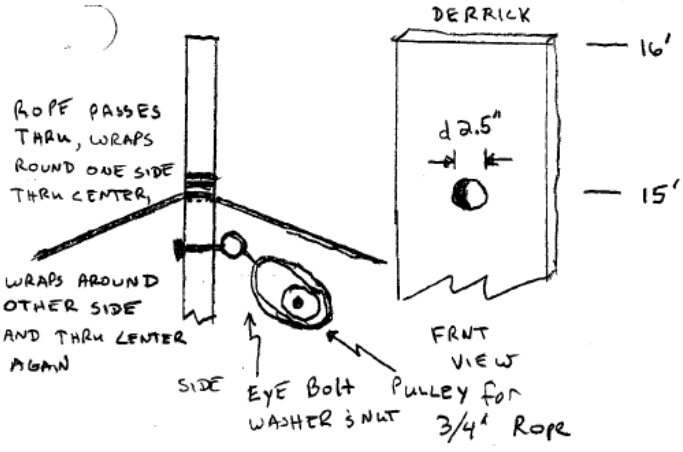
be climbed as it presents a grave safety risk – if it were to slip while someone were on it, it could easily result in traumatic amputation of fingers and toes! I knew I needed to come up with a way to lay the tower down and disassemble the antenna without climbing it. I took some measurements and made mental notes of the layout in the yard and location of some T-posts downhill from the tower. I also verified that the antenna was oriented so that the boom was perpendicular to the tilt direction of the tower – meaning the elements would be pointing at the ground as it was lowered. We sprayed the mounting bolts with WD-40 and made sure we could break them loose. I returned home late that day with a bunch of pictures to study and made note of the drive time – 3 hrs. each way!

After talking to friends who had towers and trolling through YouTube, I stumbled across a particularly intriguing video that showed how W5JGV raised a 72 foot tower in a single lift, by himself without a crane. Here's the link if you want to check it out. https://www.youtube.com/watch?v=rmdqvQk5aV8. This approach seemed like a winner and should easily allow a couple of people to control the tower and stop its descent to disassemble the antenna, and then lower it some more until the boom could finally be removed from the mast and the tower laid flat on the ground. I knew the tower weighed in at 355 lbs. from the tower literature I found. I allowed another 45 lbs. for the antenna, mast and rotor. I drew up some sketches to scale and made some calculations of the static loads using a derrick height of about 14 feet .





My calculations helped me select appropriately rated hardware, rope working load, rope length, where to place the anchor I'd need to lower the tower, and estimate at what point I'd need to stop it to begin dis-assembly of the antenna elements. I knew that my ladder has load limits much less than the 400 lbs. so substituted a 2 x 12 x 16 for the derrick on the suggestion of Bob, K8KI.



I also shared my plan with my good friend and crack aerospace engineer, Steve. Steve cautioned me about the potential dynamic forces – but said the statics looked about right and it should work as long as I could control the lift and do it slowly. With a viable plan in hand, I set about trying to find a crew, a date with good weather, and a 20 foot trailer suitable to transport the tower. The trailer proved the most difficult part. I needed an equipment trailer however local equipment rental outfits either wouldn't rent their trailers without a piece of equipment, or wouldn't allow them to be taken out of state. My friend John who has a farm in Winchester came to the rescue and volunteered both his tractor and an equipment trailer he arranged to rent from a local tractor dealer.

The winter cold and rain finally broke in March and we set our sights on Saturday, March 20th. I built a time table and had a contingency plan in case we ran into problems and ran out of daylight. My crew consisted of Farmer John, John Reynolds – N5AYD and myself. Additionally, Larry would be there with his friend Josh who could help some. I packed my tools and tackle the day before and set out before daylight to arrive by 9:30 AM (EST). We arrived on site, surveyed the antenna, did a walk through of the plan with everybody,

drove the primary T-post anchor, prepared the 2 x 12 x 16 derrick and began to set up all the rigging. We were completely rigged in about an hour at which point we did another walk through of everybody's role, when we would stop the tower to allow antenna dis-assembly, and safety points. We positioned the tractor to catch and hold the tower at about the 45 degree tilt point as a safety precaution. We attached a pull rope half way up the tower then disconnected the two base bolts on the mount and started to pull the tower to get it moving while John, N5AYD began to control the descent. All worked according to plan.

Once the elements were close to the ground, we used step ladders to disassemble sections of the elements, and then incrementally lowered the tower and continued element disassembly until the elements could be removed from the boom. The antenna components were numbered and marked as they were disassembled and collected in a safe place. We were careful not to apply too much pressure to the traps. Some of the tubing seemed to be seized together forcing us to find joints further along the element that could be dismantled. Once the tower could be laid down, the remaining portions of the elements were detached from the boom and the boom was removed from the mast. Finally, the thrust bearing was detached from the top of the tower and the mast and bearing were removed from the rotator. The hinge base detached and then the tractor was used to load the tower onto the trailer. It was about noon. Everything was as we'd planned it.

Our transport plan was to load the tower down the center of the trailer and then pull the tractor over the tower so both could be transported together. We quickly found that our estimate of the tractor clearance didn't take into account the mounts for the lifting forks – we were about 3 inches short of clearance. We spent the next 2 hours attempting various methods to load the tractor, pulling it onto boards to gain clearance and then re-position the tower, all to no avail. Finally the call was made that we'd have to make two trips – tower first, and collect the tractor the next day. We'd also have to unload the tower by hand upon arrival in Huntsville. We had plenty of time to throw around ideas during the three hour return trip.

Once we arrived at mt QTH, I used some scrap 2" PVC pipe I had as rollers under the tower legs – it practically unloaded itself. We were able to man-handle it onto some 4x4 blocks in the driveway using a 2x4 for a 2-man lift. I then made the trip to Winchester with Farmer John to get my truck and returned home. Altogether, a successful but 16 hour long day – with another 6 hours required the following day to get the tractor back.

I think there were several valuable lessons:

(1) Have a plan. The sketches, time tables, tool and equipment lists all proved helpful to make sure we knew what we were doing and had all the necessary tools and hard ware. They were also helpful getting every one oriented to the plan.

W-51 Recovery (continued)

(2) The derrick idea worked well – it provided leverage allowing one person to very carefully and precisely lower the tower. With the addition of another pulley block, I think it could also be used to erect the tower.

(3) Test the load plan. We failed to measure the actual tractor clearance and also didn't take into account the reduced clearance as the tractor came up the loading ramps

This cost us dearly and required another 6 hour round trip to retrieve the tractor.

I want to thank my good friends Farmer John and John Reynolds who helped with this recovery project. My work to replace tower hardware and restore the antenna has just started. I'm estimating it'll probably take about 6 months before I can schedule my antenna raising party. Any volunteers?!

Print Your LOTW VUCC Credits on a World Map

By Steve Werner, AG4W

FG8OJ , Burt came up with a quick script to print your LOTW VUCC credits on a world map

1.Bring up your VUCC award on LoTW and select "All Credits".

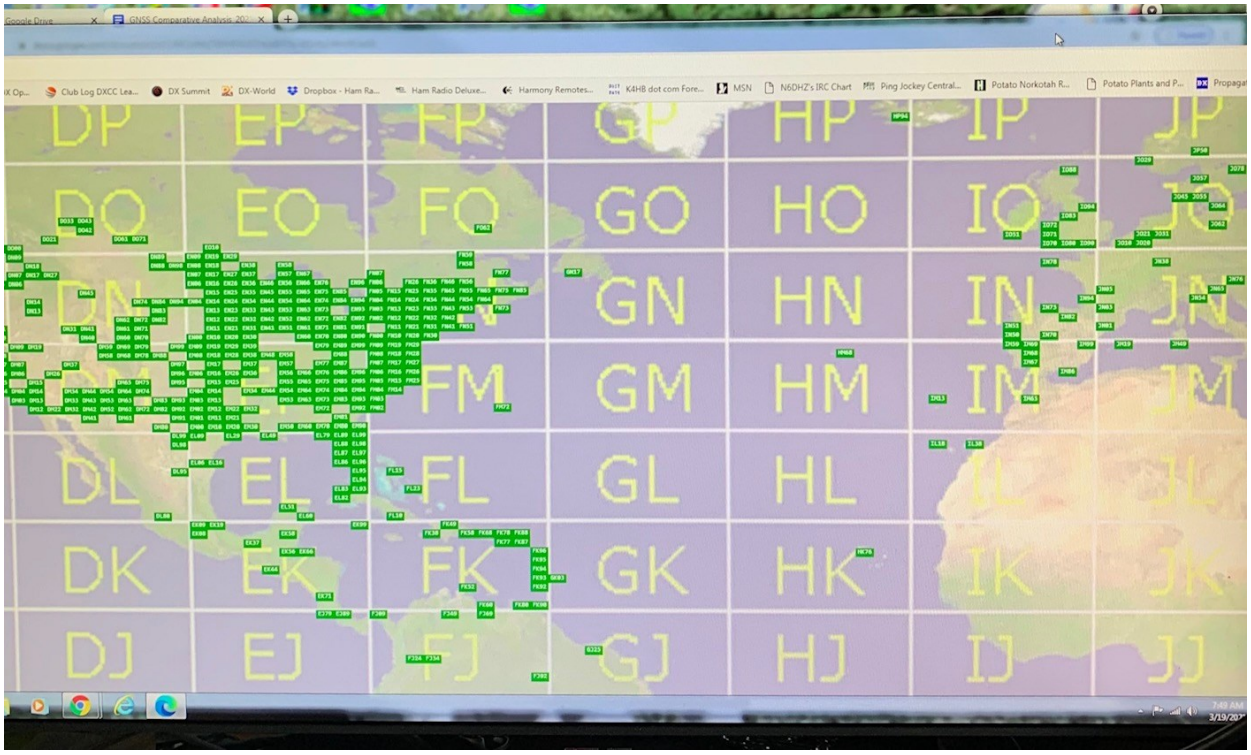
2. Copy the page with CTRL+A and CTRL+C

3 Go to fg8oj.com/lotwgrid2map/

4. Paste in the form's text area using CTRL+V

5. Enjoy!

I have worked FG8OJ, Burt on 6 meters using E skip and on 2 meters on EME.



My Favorite Piece of Equipment In My Shack

By Jon Benignus, KK9W

In every shack around the world there is a single item that the station owner favors above all others. It's not necessarily the shiniest, newest, or even the best performing item in their possession. I am certainly no different. My favorite item was a surprise gift in 2007 for helping fellow DX-er, Bill Verebely, W4WV, of the Virginia DX Century Club in Virginia Beach, Virginia. Bill was about to embark on a DX-pedition to Guantanamo Bay, Cuba and I had agreed to perform a modification to add 60 meters capability to his transceiver free of charge.

After Bill's return he contacted me over the local repeater one afternoon as I was leaving work to meet up close by, so I obliged his request. Upon arrival I was presented with box- shaped item wrapped in a towel with a brown file folder with some documents resting on top. Bill thanked me again for the modification and presented me with the mystery item. He explained that the item had belonged to a friend, Merrill Steward, W1JRO, who had recently become a Silent Key. I still had no idea what I was holding so I removed the covering to discover that what I held in my hands was a near mint condition Kenwood TS-430S! The folder contained the original paperwork and correspondence between its previous owner and the Trio-Kenwood, Corp. to have the rig's final output transistors replaced. It was so well maintained that it had the factory plastic around the buttons, and it still does! This was my very first HF transceiver and something I couldn't afford to buy otherwise. With it I was soon to truly discover the “magic of radio” I had read so much about in my ARRL license manuals.

I hold my TS-430S in high regard just like many do their first car because of the memories and the places traveled. Not to mention what I would endure to do so. Now equipped with my HF rig, a manual tuner and a donated trap dipole that just barely fit on my property, I was able to get on the air from my chicken shack. Yes, a chicken shack. You see, my shack had been turned into a work shop some time in the 1960s, but prior to that, it was a miniature version of the commercial chicken houses you see today with the vent fans in the roof and gable from 1942 until its conversion. Although it had been re-purposed, it still retained it's roof fans and chicken house clapboard construction without any insulation or wind blocking properties at all. So, whatever the temperature and wind speed it was outside it was the very same inside. Imagine bundling up in layers just to go work DX in temperatures in the teens like we are having in this February Arctic blast. That's exactly what I had done. Summers were just as brutal. I would sit in there dripping sweat on my desk and pour sweat out of a cheap pair of headphones. None of it mattered. I had been bitten by “The Bug” and had an immense love of all things radio. Every contact was to a new and exciting place and I couldn't wait to see who I could work next. It was all because of this radio that had been given to me unexpectedly.

My very first SSB contact on HF was on 40m with our very own North Alabama DX Club member, Will Robertson, AI4QT using his IC-746 Pro and G5RV. Small world, right? My first DX contact came shorty after and was a call I will never forget. The sheer excitement of having busted that pile up and hear Zve, 4X4BL (SK) in Israel answer back with a report of 56 got me hooked on DXing. I ripped my headphones off and did a little victory dance that I imagine looked something like what Snoopy did in the Peanuts cartoons. Soon after I was working many stations on every continent. You see, we had these things called sun spots back then. Maybe you have heard of them before? I was racking up some interesting contacts with USS Batfish, USS LST 325, Battleship Wisconsin and several others during Museum Ships weekend. I logged ITU Headquarters and islands like Guinea-Bissau, Martinique, Anguilla, Isle of Man, Jersey, New Zealand, Australia, Grenada, Saint Kitts & Nevis and the Ducie Island Expedition of 2008. I was having a blast! Through working all of these stations and the excitement came some lessons and experience. It didn't come so easily. With much frustration also came great joy. My rig had zero filters installed so I had to learn how to use

My Favorite Piece of Equipment In My Shack (continued)

what few tools I had available like, IF shift, the notch filter and how to tweak the RF/AF gain to get the best out of weakest of signals. I also learned to listen more and to not just keep throwing my call sign into a pile-up over and over, but when to do so. I learned that timing and just 100 watts could out-do someone with a better station with poor timing that didn't listen. All these lessons still serve me well to this day, but the journey and memories of learning them in the extreme temperatures in an ex-chicken shack in South-East Virginia just 40 miles from the coast is something that no other piece of equipment I have can top. Thanks for reading!

DXpeditions in April 2021

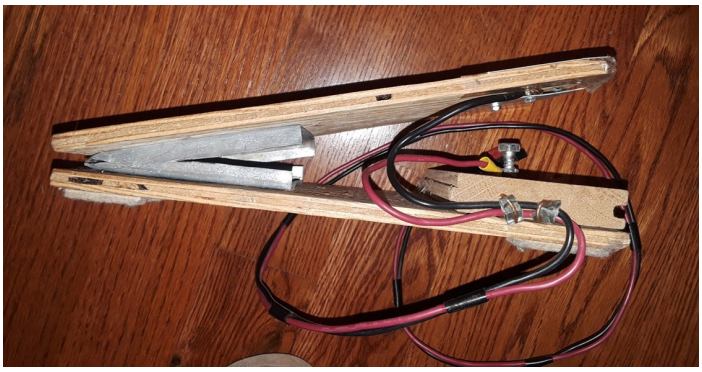
Reprinted by permission of Bill Feidt, NG3K

April 2021					
2021 Apr05	2021 Apr06	**Bahamas**	**C6AGU**	LoTW	By KN4EEI AA7JV fm Deucy Rocks
2021 Apr05	2021 Apr13	**Mozambique**	**C92RU**	LoTW	By R7AL UI8J R8LR RU3UR fm nr Maputo; 160-10m; CW SSB FT8 (f/h); 4 positions; QSL via Club Log OQRS
2021 Apr08	2021 May01	**Greenland**	**OX3LX**	LoTW	By OZ1DJJ fm IOTA NA-018 (GP47ta and GP44de), NA-151 (HP15eo); HF; spare time operation; QSL also OK via OZ0J and Club Log OQRS
2021 Apr17	2021 Apr18	**Armenia**	**EK6RL**	EK6RL Direct	By EK6RL; QRV for CQMM DX Contest
2021 Apr17	2021 Apr18	**Bolivia**	**CP6UA**	LoTW	By CP6UA; QRV for CQMM DX Contest; QSL via CP6UA direct
2021 Apr17	2021 Apr18	**Eswatini**	**3DA0AQ**	LoTW	By 3DA0AQ; QRV for CQMM DX Contest; QSL via EA5GL
2021 Apr17	2021 Apr18	**Guatemala**	**TG9ADM**	LoTW	By TG9ADM; QRV for CQMM DX Contest; QSL via EA5GL
2021 Apr17	2021 Apr18	**Kenya**	**5Z4PA**	LoTW	By 5Z4PA; QRV for CQMM DX Contest; QSL via M0URX OQRS
2021 Apr17	2021 Apr18	**Paraguay**	**ZP4KFX**	LoTW	By ZP4KFX fm GG15lv; QRV for CQMM DX Contest; QSL via IK2DUW direct
2021 Apr17	2021 Apr18	**Peru**	**OA1F**	LoTW	By OA1F; QRV for CQMM DX Contest; QSL: Elena P. Moran, Rua do Codesal, 5-3 Dcha., 15405 Ferrol, Spain
2021 Apr17	2021 Apr18	**Surinam**	**PZ5JW**	LoTW	By PZ5JW; QRV for CQMM DX Contest; QSL via EA5GL
2021 Apr23	2021 Apr30	**Ogasawara**	**JD1BQA**	JH3QFL Direct	By JH3QFL fm Komagari, Chichijima I (IOTA AS-031); 160 80 40, 6m; FT8 FT4 + satellite (RS-44, CW); 200w; QSL: Takio Hata, 921-25 Rokujio Yasu, Shiga 520-2412, Japan
2021 Apr26	2021 May09	**Svalbard**	**JW6VDA**	LoTW	By LA6VDA fm IOTA EU-026 (JQ78tf); HF; SSB; QSL via Club Log OQRS, eQSL

The Story of the N4KG Footswitch

By Warren Alford, K4MMW

It was the Sunday afternoon right after I received a new (to me) Collins 30L1 amplifier. I was very excited to own the amp, but I couldn't use it because I didn't have a switch or any mechanism to activate the relay. Giga Parts was closed because it was Sunday. I didn't know of any other place to buy a footswitch. So, I decided to make one. It only needed to last for one day as I would buy a new one Monday, the next day. I had a piece of ¼ inch plywood in the garage that had been used for other projects and was in a large L shape. Cutting off the long side of the "L" and cutting that in half, I now had 2 pieces of 6 x 11 inch plywood, excellent size for my foot. The original plan was to use 2 screws for connectors, but that didn't work because the contact surface of the screw heads was way too small. Using small contact surfaces also required precision alignment, which was not an acceptable parameter for this one hour project. Brian, my son, had some scrap steel studs in his van. It is the material they make steel 2x4's for construction. He cut a 2 x 4 inch piece of steel which we used for one contact surface. We used the head of a 2 inch lag screw for the other contact surface. These contacts will handle any switching power needed for the relay. We used another section of the steel 2x4 to make a mounting bracket and spring for the footswitch. A steel 2x4 stud is actually a long "U" shaped piece of steel. It is not a square tube. Steel 2x4's are flimsy until they are properly assembled into a structure where they become extremely rigid.



We found some red and black 16 gauge stranded copper wire, attached them to the steel plate and the lag screw. Done! Footswitch constructed in less than an hour. Remember now, it only has to last for a few hours. I'm going to buy a new footswitch on Monday.

I connected the wires from the footswitch to an RCA connector on the amplifier. This is the port that activates the relay. It worked. I am transmitting with 600 watts. That is a BIG improvement over 100 watts. It's such a big improvement that I did not go buy a new footswitch on Monday. I came home from work and played on the radio. This is FUN!!! I keep playing on the radio. Another Monday passes, then another Monday and another Monday. It seems Mondays are flying by, and the radio is amazing. This is fun. I am excited about operating the radio with 600 watts; it is a different experience. The footswitch is working quite well. I am not having any problems with it. So, I keep putting off buying another switch. Also, this foot switch is beginning to develop its own personality.

A few weeks later, Bill Bathgate and I were at my house working on something when I showed him the footswitch. I can still hear his laugh. I thought he was going to fall to the floor he laughed so hard. I do not believe he had ever seen anything like it. Especially something that actually worked! After we laughed and chatted for a while, he decided the footswitch needed a name. During our discussions about a name, Tom Russell came to mind. N4KG seemed like a good name for this footswitch. I bought some lettering and put Tom's callsign on the footswitch. A few days later I invited Tom over and showed him the N4KG footswitch. He was a little surprised. I don't remember exactly what he said, but I think that he kind of liked it. The picture was taken in February of 2014. Tom actually used the N4KG footswitch during one or two of our Field Day events.

The Story of the N4KG Footswitch (continued)

The N4KG footswitch does have its own unique personality and peculiarities. It has served as the primary footswitch for the 20/80 meter K4BFT Field Day station at least 2 times, perhaps 3. It was during one of these events when a mandatory upgrade became necessary. The ground wire electrical connection was formed by placing the wire into a predrilled hole and screwing the lag screw into the hole, which provided a physical connection from the metal screw to the connecting wire. A peculiarity of the N4KG switch is that it moves around during use, probably because of the felt pads on the bottom of the switch. This movement proved to be too much stress for the connection, which failed during a "hot run" during Field Day. That connection was upgraded to an actual crimped on wire connection, AND 2 strain reliefs were added to the connecting wires so that no stress is applied to the electrical connections. There have been no connection failures since that modification. I don't believe the slight modifications had any degradation on the character of the N4KG footswitch.

It's hard to believe the N4KG footswitch is 7 years old this year. It has served at several Field Days. I used it in the Mobile Bay Lighthouse during the Alabama Lighthouse special event weekend. I believe I used it during the second trip to the battleship USS Alabama in Mobile, for Museum Ships Weekend. I've used it during several road trips and portable operations. It has been to California at least once, and it's been used in my shack for several years. Anywhere the Collins 30L1 amplifier was used, the N4KG footswitch was on duty. My Tarheel antenna does so much better with 600 watts.

It looks like the N4KG footswitch is holding up well and may have several more years of useful service. Not bad for a 1 hour project with the primary goal of lasting 1 day. If you have any memories of using the N4KG footswitch, send me an email. I didn't keep many records, and while I often talked about having operators sign the device, that has never happened. I would love to have a list of the hams who have used the device. The N4KG footswitch is a little like Tom Russell himself. It has its own unique personality, and it makes friends easily.

Amplifier Special Edition: Member Reviews

Introduction

By Fred Kepner, K3FRK

This month the LongPath features articles about the HF amps our members have used or currently own. Whether you are in the market for a new or used amplifier, or are just interested in reading about the experiences of our members, I hope you find this section both interesting and useful.

Alpha 91β

By Bruce Smith, AC4G

Several years ago I had acquired and was using a used, prebuilt Heathkit SB-1000 HF amplifier on the HF bands. This amplifier was great in that I could quickly power-up the amplifier, tune the amp, and work a DX station as fast as you could say "Geronimo". The 3-500 tube took a lot of abuse from this style of operating. Once I began operating on top band (160m), I found I needed more power to push my signal thorough the ionosphere in order to work long distant DX. I began looking and found a more expensive amp that would handle top band DX.

After a long search of most "ham radio" classified add web sites, in August 2013, I found my Alpha 91β. Making a deal via e-mail and telephone, I drove several hundred miles to Mt. Pleasant, Texas to the QTH of W5UN. After arriving and making our formal greetings, I presented Dave Blauschke (W5UN) with a few of my V73CW QSL cards in person for QSOs we had made during my stint on Kwajalein Island/Marshall Islands. Needless to say, he got a kick out of this gesture. Many know of Dave (W5UN) because he has one of the

AC4G's Alpha 91β HF Amplifier

Alpha 91β (continued)

largest 2m arrays in the world for working EME and holds #1 DXCC 2m. We even worked a station in Europe at 12:00 p.m. (local Texas time) noon via EME, while in his shack. The moon was almost 45 degrees overhead and could be seen at high noon. He also gave my wife and I a tour of his antenna farm which consisted of 160m and 80m 4-square transmit/receive antennas. In Dave's earlier life he operated HF contests and had this Alpha 91β as a backup. He had or was upgrading to an Alpha 9500 and was selling because his wife had dementia and he was downsizing. So, I gave Dave $2,200.00 for the amp, which I thought was a "Cadillac" amplifier in late-summer 2013. See below.

This amp is a work horse and can put out full legal power on all HF bands (10m thru 160m including the WARC bands). This amp allowed me to meet my goals by increasing my output power level needed on top band (160m). I operated this amp for a few years, before I had to replace the transformer (Hypersil) and final tubes. Bob (K8KI) exchanged transformers to find my transformer had indeed shorted/opened internally. Later, I had a shorted GU-74B tube and replaced both tubes last year. I am currently experiencing a drop in power that is visible while working a station. My first thought is that it is one of the tubes, but could be a component that allows the amp to reach full output through a network of components utilizing low power instead of higher power to reach full output. Typically, I can reach 1500 watts output with 30 watts drive. Sometimes I find myself having to increase the input power (power out of HF Transceiver) to the amp to 50-60 watts to reach full output. I keep pushing the amplifier rather than opening the top to figure out the real cause of this issue. Does it make sense to fix it? Absolutely! One of these days I will miss some DX and will get flustered and will be driven to take action and repair this issue if not even sooner.

Would I recommend my 91β amplifier to other hams? You bet!! I have had good experience with this amp, and have worked lots of DX on the HF bands including top band and the WARC bands (12m & 17m). It is physically heavy and larger than many amplifiers, but this is expected with the heavy transformer and ruggedized amplifier frame. One drawback I quickly saw after operating is the elimination of my ability to quickly power-on the amp, tune, and work a station like I could with the old Heathkit SB1000. The 91β requires about a minute and half warm-up time to warm the GU-74B tubes before one can transmit. I have missed some rare DX that I found CQing on a band before being spotted that I was unable to work due to the warm-up time. The station got no responses, quit calling CQ, and moved to another band.

What features would an amp have to make me happy? It would be Auto-tune, have a built-in antenna tuner; solid states finals; and able to endure a 48-hour RTTY contest without crapping-out due to heat or part/component failures. My 91β lacks two of these features, but I make do with its current design. Many times in a RTTY contest, so much heat is generated due to the 100% duty cycle of the mode that my amp fills the room with so much heat and I am afraid the amp will cease to function or burnout electrical components. I have to run the air conditioner even in the winter months just to cool the amplifier and room. Perhaps adding another "muffin" fan is in order for the 91β. A built-in antenna tuner would be nice allowing any antenna to be tuned with the amplifier making it handy and quick during a weekend HF contest. Also, solid state finals would allow for instant operation after power-up instead of the 90 second delay of the current amp's warm-up cycle.

I guess we get spoiled by the many new modern features on modern equipment that we tend to bad-mouth our old equipment. Perhaps the solution is to splurge and purchase new equipment. Nada! I am happy with the performance of my amplifier, so new equipment will probably not happen due to the expense. I believe I can do without some features to get the power output I needed to work top band DX. Remember, that's why I bought this amp in the first place. Within the past two years, I have purchased another amplifier that I could discuss, but that is for another time. This 91β continues to be a major part of my current ham radio station. Good DX!

Dentron GLA-1000, Heathkit SB-220, and Ameritron AL-1200

By Steve Werner, AG4W

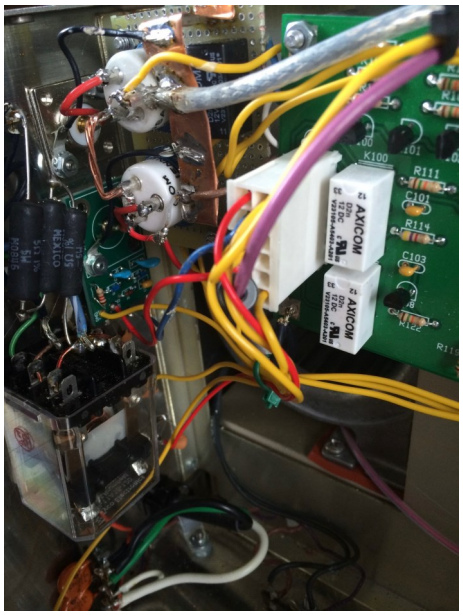
My first amplifier was a Dentron GLA-1000 that I purchased new in 1980. Back then I used it with my Heathkit HW-100. It was a compact amplifier weighing only 24 pounds and used 4 6LQ6 sweep tubes. It worked on 80-15 meters. It did not have a tuned input so I used an MFJ tuner between it and my TS-430S when I upgraded my radio. The amplifier ran on 120VAC and had 1000 watts input. I typically got 450 to 500 watts output. It would not tolerate bad SWR or long key down periods. The tubes each had a plate dissipation of 30 watts. I did replace the tubes once.

Dentron GLA-1000

When I was visiting my parents in Florida in 1987, I saw an ad at the local radio club in Sun City, Florida for a Heathkit SB-220 at an estate sale. I bought it for $350. It was built in 1975 and already had several modifications in it. I think this is the most popular amplifier ever made. It was probably the most economical kilowatt made with two 3-500Z tubes. I ran my amplifier between 650 -1000 watts depending on mode. Over the years I replaced my tubes twice. I made many modifications to the amplifier most of which came from Harbach Electronics. It included new filter capacitors, meters, rectifier board, soft start, and soft keying. More recently I converted the amplifier to a 6 meters only amplifier and gave it a new life.

Heathkit SB-220

My SB-220 was replaced in 2010 when I wanted an amplifier that would work on 160M. I was looking at MFJ's new solid-state amplifiers but was concerned about their reliability and the fact they were near impossible to buy when they first came out. After trading off various alternatives I chose the Ameritron AL-1200. It uses an Eimac 3CX1200Z7 tube which has a 50 watt grid dissipation, 1200 watt plate dissipation and is instant on. This amplifier will take a lot of abuse. I have had the antenna relays fail and installed vacuum relays as replacements with a QSK circuit. I like the instant on feature. I love beating all the 3 minute turn on amplifier hams to a pileup. The 3-500Z is also instant on and I did not want to give up that feature.



Modified AL-1200 with vacuum relays

Dentron GLA-1000, Heathkit SB-220, and Ameritron AL-1200 (continued)

The new LDMOS solid state amplifiers like my homebrew 2 meter amplifier are sure to replace all the tube amplifiers in the near future. The parts are economical and they will take a lot of abuse unless they are overloaded at the input. I have melted coax and a wattmeter with mine.

Ameritron AL-1200

Palstar LA-1K

By Fred Kepner, K3FRK

The Palstar LA-1K is the second amp that I have owned. My first amp was a used Heathkit SB-1000. The SB-1000 served me well, but I do a lot of band hopping and I wanted something that doesn't require tuning with each band change. I also wanted the ability to power up quickly and start transmitting (no warm-up). I purchased the LA-1K in January 2019 from Ham Radio Outlet. I selected the LA-1K based on positive user reviews, an article in QST magazine, and the determination that it would accommodate instant power up and band changes as well as handle digital modes with ease. The LA-1K does not support QSK, which may be very important to some users. For me, the LA-1K matched my operating style, provided the capabilities that I wanted, and balanced cost with performance.

Palstar LA-1K

Below are some of the important specs:

Power: 1000 Watts SSB PEP, 1000 Watts CW ICAS, 500 Watts FM
Bands: 6m to 160m, MARS capable
Drive: 40-55 Watts
AC Power: 110 Volt or 220 Volt (plug and play cable swap)
Antenna connections: 3
Weight: 27 lbs.
Dimensions: 12.75" W x 6.25" H x 16.5" D
Warranty: 2 years
Street price: $3,500

The amp contains a cooling fan that will run at 3 different speeds. When running normally and at lower temperatures, the fan is quiet, producing a low hum. When the temperature reaches about 45°C, it switches to medium speed. As the temperature approaches 65°C, the fan kicks into high speed, which is noticeably louder but not a distraction to me. As soon as the temperature falls, the fan speed is reduced.

The amp will detect the operating band automatically when the transceiver transmits. Connection to the rig is very simple, requiring just a PTT line and the coax jumper. An optional band data cable can be purchased. This cable sends the band info to the amplifier and also acts as the PTT cable. The LA-1K uses the same band data cable as the Ameritron 1306, which runs about

Palstar LA-1K (continued)

$28 at GigaParts. The band data cable reduces the transmit delay from 20ms to 10ms. I have run the amp with and without the band data cable. I feel it is unnecessary for most users.

The LA-1K uses a standard USB cable for firmware updates. Palstar has issued several updates since I purchased the amp. The current version is displayed on startup. When released, new versions can be found on the LA-1K page of the Palstar website. The update procedure is extremely quick and easy.

Although I have been very happy with the performance of this amp, it has been returned twice for warranty service. Palstar was quick to do the repair and covered shipping both ways. The first failure was a result of a burnt resistor on the diplexer filter unit. The rig was being operated at the top of the drive range when the failure occurred. The failure occurred while operating on the 17m band, which tended to produce higher power levels than other bands. Palstar upgraded the diplexer filter so that 17m would operate at a level closer to the other bands.

The second failure was similar to the first, the same resistor failed. In addition to repairing the diplexer filter again, Palstar added an overdrive protection circuit. I was informed that this circuit is now included in all new production units. The circuit bypasses the amplifier circuit if drive exceeds 55 Watts (the amp was originally listed as safe to operate with 60 Watts drive). I have not experienced any more issues in the six months since the protection circuit was added.

Overall, I am happy with the LA-1K. The amp is quick to turn on, requires no tuning, handles my SSB and digital operating with ease, and the technical support/repair staff has been excellent. Heck, the owner of the company even called me about my repairs (nice guy). How often does that happen? That being said, if I were shopping for an amp today, I would consider the other options available. I am planning to learn CW operation soon. I would take the time to research its CW performance from owner reviews. In summary, this is a very fine amp that meets and exceeds the needs of my current operating practices. Anyone interested in giving it a test drive is welcome to come by my shack.

Alpha 9500 and SPE Expert 1.3K-FA

By Bob, K8KI

Feeling I was outgrowing my perfectly wonderful Alpha 91β amplifier, I was on the hunt for a bigger, more automated unit, an Alpha 9500 in particular. Mine arrived in October, 2014. I had closely read comments from W8JI, a famous amp designer, regarding problems with the 8877 tube, but passed them off as being not pertinent any more. Was I wrong! The 8877 is a very old design, and I thought its problems had all been solved. Its biggest problem is that it sometimes spits huge current slugs for a microsecond or so. Well, that's enough to cause severe damage to other circuit components. Over the years, this happened to me 5 times! The first time occurred at its advanced age of 3 weeks, just prior to the CQWW CW contest. OH NO! So, it got a ride back to the factory and returned 2 months later, with a non-production fuse in one of the board stacks. The second failure occurred a week later, but that non-production fuse paid off. I replaced it (no other damage done) and was back on the air in minutes. A year and a half later, I failed to disconnect it during a lightning storm. The XYL and I were sitting in front of it when it got hit. Sparks bounced off the opposite wall. Not one station component survived, and certainly not the 9500. Our home insurance policy saved the day, but I was fixing equipment for 6 months. I did call Alpha for some tech help, which really paid off. But 5 minutes later, their CEO called me back with the bad news that lightning strikes cancel warranties. Luckily, I was able to find replacements for all of the blackened components at Digikey or RF Parts. The 9500 was back on the air, but the wind had fallen from my sails. A few months later, the 8877 suffered yet another current spike. I fixed the burnt com-

Alpha 9500 and SPE Expert 1.3K-FA (continued)

ponents, but a few months later, the same thing happened all over again. By that time, it was late 2017, and the 9500 was in my doghouse. I offered several giveaways but was turned down – the reliability wasn't worth the trouble – even for free.

Alpha 9500

I was on the hunt for a new amp. I had been going to the Hamvention for over ten years, and was looking carefully at the competition. I was interested in solid state amps, but was totally unimpressed with the classic FET amps. Then the LDMOS FETs were introduced. These were a new sort of animal with characteristics I hadn't seen before. Most impressive was the RDS_{on} which had been maybe 100Ω in earlier FETs, but dropped to tenths of an ohm with the LDMOS. The resulting heat dissipation would drop precipitously, and it did. The market leader at the time was SPE Expert, which had 3 models for sale. Their middle amp (the 1.3K-FA) was far different from the other two. It was physically smaller, and weighed only 22 pounds. The price was $5k, including the integral antenna tuner. I tried it out at the Hamvention: when the SPE staff wasn't looking, I ran the drive up until the output power ran to 1500 watts, and left it there until the staff came back, about a minute later. I didn't know the amp would go up that high, and stay there. But it did. I was sold. I ordered one right there. I had to wait for the backlog to clear, so mine arrived just before Christmas in 2017.

SPE Expert 1.3K-FA

The SPE Expert 1.3K-FA takes some getting used to. It had a temperature gauge, which tube amps don't have (for a reason), and you have to watch that gauge – or you'll be sorry – and soon. It has a CAT cable, so you don't really ever have to touch it. It changes bands when your rig changes, and it has an internal 4-port antenna switch. And it comes wired for SO2R. Pretty cool. But it can't tune SWR as high as the 9500 could (I now use only resonant antennas). Eventually I found that running in a RTTY contest just puts too much load on it – it gets too hot since the carrier is up for most of the time. But for any other contest, or for chasing DX, it's just perfect.

About the time I found what the Expert could/couldn't do, I was offered two new tubes for my 9500! That was a new lease on life for it. Since late 2018, I have used the 9500 as my "winter amp" and for most of the contest season. It hasn't suffered another problem in over 3 years – probably 25 contests. But its filament takes 3 minutes to turn on, so it isn't the best bet during DX season. The Expert turns on immediately.

A year ago, I did a firmware upgrade to the Expert. It now has a "contest mode" where you can force the fan to HIGH all the time. Of course, the high fan is loud, but to me Louder = Safer, and I use headphones all the time. I have also found out that it can be set to 3 levels of power output (40VDC, 45V, and 50V) for a reason. The highest power is not achieved at the highest efficiency. Actually higher efficiencies are achieved at lower power supply voltages. The higher efficiency means less heat dissipated. That's important to know. So you can make the decision to either

Alpha 9500 and SPE Expert 1.3K-FA (continued)

maximize efficiency or maximize power out by hitting a button.

I had never anticipated the series of events that would lead me to these two amps. For the first time, the 9500 is working reliably, and it's a killer in the contest. I leave it on-line from late September to mid-February. I wish it had a CAT connection and better than a 3-minute turn on, and I wish I didn't need the XYL to help me move it. I have a lot more space on my ham desk when the Expert is on-line, and my air conditioner has a smaller load when it's out.

Heathkit SB-221

By Chris Reed, AI4U

Sometime in the early 2000s, I purchased a whole ham shack at an estate sale. It was offered for sale all or nothing. He set the price and the deal was complete. I loaded everything in my little black Mazda truck and headed home.

One of the items that was in great shape was a Heathkit SB-221. Most of the items including the SB-221 were comfortably tucked away on several garage shelves. And now for the rest of the story....

Heathkit SB-221

Some 12 years later and a move to our current residence took place. At that time, I had upgraded to General. HF was an interest of mine.

I decided to go thru the various boxes and items.

All the items had been stowed neatly into some garage cabinets. Most of the gear set there until one night before a HARC meeting sometime around 2010. The topic was amplifiers and the SB-221 came up in conversation. I had never heard of this amp or knew what it looked like. Tom Duncan, KG4CUY SK described it to me as this big green box with adjustment knobs on the front.

Next meeting, I happily reported to Tom that I had a SB-221 in storage. He got excited and started asking about a transformer. He wanted to know did I have tubes. After another trip home digging through the items, I found a big transformer, and in a bag wrapped in a t-shirt were the tubes. Eimac? What company was that? I knew of RCA but not Eimac.

The next meeting I was prepared. I loaded the SB221, tubes and transformer to show Tom. He couldn't believe it was in such great shape. He asked if he could take it home and give it a look. And so he did.

At the DX Club meeting, he told me to come to his car, while telling me about the amp. Again, he was almost giddy that it was in such great shape. There it was cleaned up with knobs shining and with transformer and tubes it was much much heavier.

Tom described to me how he checked the various circuits, caps and tubes. The tube burn in was explained: He brought the tubes to full voltage with his variac. He added a small circuit to key the Amp for modern radios and the appropriate plug for my 220 outlet. This was like Christmas morning excitement for both of us. Santa had came.

He handed me something else. Instructions on how to hook it up, load, then dip the plate current. He even made an overlay for the knobs to show the positions for each as he had tuned it up in his shack. He went on to say that these

SB-221 (continued)

"Starting" settings and careful adjustments would have to be made in the proper order.

I unloaded the SB-221 and set it on my shack table. I hooked it up carefully checking each connection. RG213 jumpers check. 220 cord check. I used the Heathkit 2040 tuner to adjust between the radio and the amp. Followed the instructions to the letter while slowly bringing up the output power of the radio. It has served me well and continues to do so. At max, about 1000 watts out with 90 in does the trick. New discovery. RF interference to TV during wife's favorite program not so good.

The tubes in this story are the original Eimacs and original cap set. There are mods to make it better, but why? It is working just fine. It was a pleasure to write this article and take the trip back. Thank you for coming along for the ride. Once again, Tom was teaching and helping this young man get on the air QRO. I know why many still use these amps. Nothing fancy, but solid and reliable. That is unless you are N4KG. I have one of the remnants of his SB-221 that had been smoked for parts. It comes complete with his homemade 220 extension wiring.

Elecraft KPA-500

By Susan Seaford, AI4VV

The 2015 Dayton Hamvention was the first time I had been to Dayton. My station at that time was O.K. but it needed an amplifier. Because the doublet was my antenna for 10-80 meters, I would need a tuner for a high impedance. A friend took me over to the Elecraft booth and introduced me to David Shoaf. David showed me to what they now call their PowerCombo: 500 watts linear amp on either 110 or 220 volts and extended impedance matching tuner. After walking around the convention for a while, I ordered them.

So at first there were cabling problems. At the next Huntsville Hamfest, David had me bring the cables for inspection. He recognized the problem and went to other vendors for parts to at least get me on the air for my next net. Then when the new cables arrived I was able to get set up with their “enhanced mode”. This is where “keying and frequency data from the radio select the amplifier band and ATU frequency prior to TX”. This is available for Icom transceivers and enables one to change bands instantly.

In its use over the past 6 years, it has not had any problem after the cabling was fixed. Its 26 pound weight is under the maximum of my lifting capability and the fan noise does not bother me. It currently has a backlog of 4-6 weeks on the website.

The only negative thing about this report is that David KG6IRW is now a silent key, succumbing to colon cancer shortly after the last Huntsville Hamfest.

This amp has definitely worked out for me.

Elecraft KPA-500

Elecraft KPA-1500 (in-waiting)

By Walt Miller, AJ6T

Ever since I moved to Alabama (and now Tennessee) my operation has been limited to just 100 watts with my K3s and FT857D. Plans for an amplifier were put aside while my XYL and I moved into our new house and I put up some wire antennas in the trees (by the way, the W8JI 80 meter OCF dipole is an *extremely* effective multiband antenna). My desire for a legal limit amplifier is driven by several factors: 1) Quest for DX Challenge 3000; 2) Attaining DXCC on 6 meters; 3) Having more fun in VHF contests. I really enjoy

Elecraft KPA-1500 (continued)

full QSK CW operation, so an amp with smooth no-thumping operation in that mode was a firm requirement. I also wanted a full 1500 watts output with no strain, so all the 1000-1300 watt amps were not in the running. HF plus 6 meters was another absolute requirement. I decided to consult with my California friend "TV Bob," N6TV. Bob is an outstanding contester and technical expert who I used to see every year at the Visalia DX convention. He is a long-time K3s user and now K4 tester. His recommendation was that I order an Elecraft KPA-1500 because of its very effective interface with my K3s. Elecraft sells a special interface cable between a K3s/K4 and the amplifier to send frequency data and PTT to the amp. This allows band selection and ATU setting prior to application of RF to the amp. The quiet PIN diode switching is also appealing to me. I took Bob's suggestion and placed an order with Elecraft. Before I can use the new amp though I have to run 230 VAC wiring to the bedroom that now serves as a shack. I'll have a better report on this amplifier after I finish that project and get the amp on the air.

Elecraft KPA-1500

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* Come to a club meeting

* or send in an application by mail (form on www.NADXC.org)

This edition of The LongPath published by: Fred Kepner, K3FRK

Elecraft KPA-500 and Other Solid-State Amplifiers

(reprinted from The LongPath—January 2021)

By Jim Spikes, N4KH

Recently, I've been making some changes to my shack and equipment line up. One such change was downsizing from a larger tube linear amplifier to a Elecraft KPA-500, no tune, solid-state amplifier. This 500-watt amplifier was certainly more affordable than a legal limit/near legal limit solid-state amp. After looking at the capabilities of the matching KAT-500 automatic antenna tuner (ATU), I opted to get that as well. This seemed like a good combination for operating convenience and my current needs and setup. I purchased the kit versions at a slightly lower cost and assembled them myself. Assembly was a little tedious but not difficult. The circuit boards and modules come pre-assembled, and the Elecraft assembly instructions are excellent.

My previous amplifier, an Acom 1000, served me well for several years. Making the switch to the KPA-500 was not a decision I made quickly. The Acom can deliver 1000 watts with 50 to 60 watts of drive (although I typically ran it at 800-900 watts). It's an awesome amplifier and built like a tank but must be manually tuned whenever changing bands or moving far in frequency, and requires 2.5 minutes to warm-up upon every power-up. That can be really annoying for "search and pounce" (S&P) style operation in a contest, or when a needed DX station unexpectedly pops up on the cluster. So, an instant on, solid-state, no tune HF amplifier was appealing, even if it meant somewhat lower power output. Part of my thought process was that there's always the option to add a gently used legal limit tube amp later, if desired. Finding a local buyer for the Acom wasn't difficult and covered the cost of the new Elecraft amplifier.

To put things in proper perspective, 6 dB is equal to about 1 S-unit. In terms of signal strength, I traded off 2 to 3 dB (500 versus 1000 watts), or about half of 1 S-unit. That might make a difference in very marginal conditions, but not too bad all things considered. A 500 watt amplifier provides about 7 dB of signal improvement (a little over 1 S-unit) compared to 100 watts. If running at less than 100 watts on high duty cycle modes, e.g., RTTY, FT-8, PSK, MSK144, an amplifier provides an even bigger advantage. For example, if 40 watts drive provides 500 watts output, that equates to a gain of 11 dB (almost 2 S-units). A legal limit amplifier can provide 16 or 17 dB gain, depending on the input drive required.

P_{out}	Gain over 100 watts
200	3 dB
400	6 dB
500	7 dB
800	9 dB
1000	10 dB
1200	11 dB
1500	11.75 dB
$Gain_{DB} = 10log_{10}[P_{out}/100]$	

On the air, I haven't noticed any difference so far in QSO success rate between the Acom and Elecraft amps. With the optional control cable connected between my FTdx101d or K3 transceiver and the KPA-500/KAT-500, the amp and tuner automatically follow the radio around on the various bands and frequencies quite nicely without having to key the radio or make other adjustments, to include 160 and 6 meters. The amplifier uses a pair of VRF2933 FETs, and is rated for 10 minutes keydown/5 minutes standby. The fan will automatically come on and adjust its speed as needed, or can be manually set to always on. 30 to 40 watts of drive will provide 500 watts output. I ran stations at full output for about 2 hours during the recent ARRL RTTY Roundup and the heatsink temperature in the amp settled in at 60 to 65 deg C the entire time, although the fan got loud a few times. Maximum heatsink temperature

is rated at 90 degrees C. One of the features I really like is the silent PIN-diode T/R switching, which will support high speed QSK if desired. The size is very compact; it weighs 26 lbs. (can be carried around pretty easily) as compared to my Acom which was much larger and weighed in at almost 50 lbs. The main issue I've had with the amplifier so far is a noticeable hum from the power transformer on CW and digital modes. I'm still in the process of working with Elecraft tech support to hopefully solve that problem.

In the table below, I compiled information on some popular solid-state amplifiers currently on the market. All the amplifiers listed cover 160 through 6 meters unless otherwise noted. The features, output, and degree of operation varies of course, but all provide for no-tune operation. The rated power output tends to fall into one of 3 basic classes: 500W, 1KW, and 1.5KW. Some come fitted with an internal ATU, or one is available as an option. If not, a high power ATU is needed unless all your antennas are resonate with a good match since solid-state amplifiers can be more fussy about load than tube amps. Information and prices are from internet sales sites as of December, 2020.

Model	P Out W	ATU	T/R Switch	PA Device (Qty)	Approx Price$	Remarks
Acom A700s	700	N	Relay	MRFE6VP61K25N LDMOS (1)	3250	Auto operation with ACOM 04AT ATU
Acom 1200S	1000	N	Relay	BLF188 MOSFET	3750	Auto operation with ACOM 04AT ATU
Ameritron ALS-600	600	N	Relay	FET (4)	1900	500w CW, no 6m coverage, 10/12m with optional kit $1800 w/switching PS
Ameritron ALS-606	600	N	Relay	MRF-150 FET (4)	2200	$1800 w/switching PS
Ameritron ALS-1300	1200	N	Relays	MRF-150 FET (8)	2600	No 6m coverage 10/12m with optional kit 100w drive for full output
Ameritron ALS-1306	1200	N	Relays	MRF-150 FET (8)	2850	100w drive for full output
Elecraft KPA-500	500	N	Pin-diodes	VRF2933 FET (2)	2400	1.5:1 or less SWR, Auto operation w/KAT-500 ATU
Elecraft KPA-1500	1500	Y	Pin-diodes	LDMOSFET (2)	6000	Full output to 3:1 SWR, up to 10:1 at reduced output
Expert 1.3K-FA	1300	Opt	Relays	LDMOSFET (1)	4000	Price with ATU: $5000 1.5:1 or less SWR without ATU, 3:1 with ATU
Expert 1.5K-FA	1500	Y	Relays	LDMOSFET (1)	5400	Full output to 3:1 SWR, 2.5:1 on 6 meters
Expert 2K-FA	1500 +	Y	Relays	MRF151G MOSFETs (6)	7000	Full output to 3:1 SWR, 2.5:1 on 6 meters
Flex PowerGenius XL	1500	N		MRF-1K50H (2)	7000	Full output to 2:1 SWR, no output above 3:1
Palstar LA-1K	1000	N	Vacuum Relay	MRFE6VP5600H LDMOS (2)	3500	1000w SSB, 850w CW, 500 FM/RTTY, bypasses @ 2.5:1 SWR

Do You Remember Your First Amplifier?

By Warren Alford, K4MMW

I am writing about my first amp. I remember the day I received it. It was on a Sunday. Tom Duncan, KG4CUY (SK), called, said he had something I might like and wanted to come by and drop it off. He arrived and pulled this blue samsonite suitcase from the trunk of his Thunderbird. We went to a nearby table and opened the case. There sat what looked like a brand new Collins 30L1 amplifier. It looked like it just came from the factory. Tom told me someone had contacted him about the amp and if he didn't want it, they were going to throw it in the nearest dumpster. Tom being the ham that he was could not let that happen and that is when he thought of me. He got the amp, cleaned it up a bit and brought it to me. That is the story I was told and it seemed reasonable. But I couldn't imagine anyone throwing away such a beautiful piece of equipment. It looks impressive just sitting on a shelf, whether it works or not. The unexpected gift of an amplifier was a great surprise, but the best part of this amp is yet to come.

Collins 30L1

I was fairly new to ham radio. I had been licensed for maybe two years. I owned one radio, an ICOM 7000 which produces 100 watts. I had bought wire dipole antennas and installed them as high in the trees of my yard as I could get them. I had built my own wire antennas for better performance. Some of my designs noticeably improved signal strength. But nothing I ever did with wire antennas improved my contact success as much as 600 WATTS!!! WOW, this is amazing!

Before the amplifier there were pile-ups I could hear very well but could not get through for a contact. During contest I would go to the high end of the band where there was no traffic and work down the band to where the action was. The operators at the high end of the band could hear and work me with my 100 watts. As I moved into the "fray of activity," my 100 watts got lost in the noise. There is one thing I did learn by using 100 watts and that is timing. If you can detect and use the timing and cadence of an operator, your chances of a successful contact radically increase.

When I installed the amplifier, Wow. Pile-ups were much easer to break through. Using the timing and cadence of the operator I could really get through those pile-ups. This is a lot more fun. During contest I can go further down the band and get deeper into the fray and still make contacts. My contact rates improved significantly. I am an electrical engineer and I know about amplification. I know how to calculate a 7.8dB increase as I go from 100 watts to 600 watts. I know how to build amplifiers and what they do. What I did not know is how much FUN more WATTS are!! This is cool. I do not think I will ever be a QRP operator. I remember when I sold my four-cylinder Volkswagen for a 1972 Pontiac Trans Am with a 455 cubic inch High Output V8. Wow. Life was different. Driving was more exciting. Same way with an amplifier. Radio life is more exciting. It's a higher level of FUN!

You can really get involved with contesting with a good amplifier. I remember my first RTTY contest with the amp. I was only a few minutes into the contest when the amp quit. It went totally dark. I thought it was the end of a great love affair. A little trouble shooting produced a blown fuse. A few minutes later another fuse blew. I called Tom, KG4CUY, about the problem. He seemed surprised that I would run the amplifier at full power on RTTY. Turns out that amps do not

Do You Remember Your First Amplifier? (continued)

like to run on full power with RTTY transmission. I reduced the power output of the amp and added some extra cooling for the amp. The slight modifications really helped my score, and the amplifier kept working.

The 30L1 came with its own travel case. I believe the amp was made to travel. It is a good physical size and weight for traveling. The 110 volt AC is easily supplied with a small generator. I used the amp in the 2018 Alabama QSO Party. I drove to 5 counties in Alabama using the amp at each location. It really improves the performance of my mobile antenna, the Tarheel 200A. I packed the 30L1 into its travel case, and I took it to the Middle Bay Lighthouse for the Alabama Lighthouse Weekend special event in 2012. That little amplifier did an amazing job.

I bought a larger amplifier with more power. I love that amp also, but there is something about my first amp that is unique. I have many good memories with this amplifier, and I hope to make many more. The pictures below help tell the story.

Above: I added a blower; RTTY makes your amp HOT. The amp cooked this little fan. It seized up and totally quit blowing. Good news, the amp kept working.

Above: Full Power on RTTY is not good for your fuses.

Above: I added a bigger blower, after the first one quit working. Also, I reduced power during the RTTY contest.

Mobile ops, the 30L1 was made for travel. This is the set-up I used in the 2018 Alabama QSO Party. The antenna is a Tarheel 200A-HP with a 6 foot whip. Again, 600 watts really improves the performance of the Tarheel antenna.