W8DXCC

Special Edition

SWODXA
WWW.SWODXA.ORG
SouthWest Ohio DX Association

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the exchange

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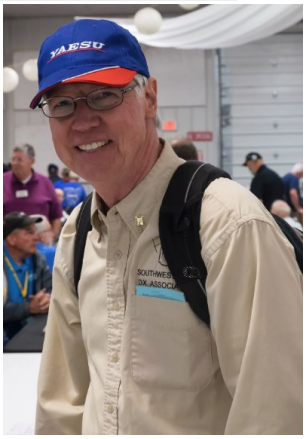
The Prez says…..Tom, NR8Z



Togetherness is slowly returning to normal. The most recent evidence being we held the May and June SWODXA meetings in person. Now the club meetings are on summer hiatus; there won't be a meeting in July and August. Assuming things stay the same or improve from here, we'll hold our September meeting at the Marion's Piazza in West Chester on Thursday, September 9th. Don't miss it!

While you can't attend a SWODXA meeting in the dog days of summer you can participate in the W8DXCC convention. The second W8DXCC convention will be held at the Clermont County Fairgrounds (1000 Locust St., Owensville, OH) in conjunction with the Cincinnati Hamfest℠ on Saturday, August 28, 2021 from 1-6pm. As a teaser, this newsletter has articles from the speakers at W8DXCC. I'm sure after reading the newsletter you'll want to make plans to attend. For more information and tickets check out https://www.swodxa.org/w8dxcc/.

I was surprised to find that this issue represents the completion of four full years of "The Exchange". Hats off to Bill, AJ8B, for his vision and drive to make this informative newsletter a reality. The interviews of active DXers and breadth of coverage demonstrates his tremendous creativity. Thanks Bill and we look forward to many future editions.

73,
Tom—NR8Z

W8DXCC is ON!!!!!

The 2021 W8DXCC Convention will be held in Conjunction with the Cincinnati Hamfest at the Clermont County Fairgrounds.

The Date is Saturday, August 28th, 1 PM to 6 PM

We have a great lineup of speakers: K4ZLE will emcee the event; W3UR, Bernie, of the **DailyDX**, **WeeklyDX**, and the **QST How's DX** column, will be our keynote speaker; renowned propagation expert, Carl, K9LA, will again present to us; Joe, W8GEX , will talk about his DXPedtion to Swains and what the 2022 DXPedition might be in for; W8HC, Hal, will be presenting on the "rig in a box" concept—an idea that may revolutionize DXPeditions.

All of this begins at 1 PM. At 12 PM, we will have a DX roundtable with these DXers and a few more from our club to get the event informally started.

You could Win an ICOM IC-7300, Graciously provided by ICOM and DXEngineering, just for attending!

Tickets are only $8! We have a limited number so go to www.w8dxcc.com and order yours today.

All of the presenters have articles in this edition of "The Exchange" so you can get a feel for their expertise and style.

Hope to see you there!

Congratulations!!!

Congratulations to Joe, W8GEX, for officially achieving 10 Band WAS and unofficially achieving **11 Band** WAS. Joe has confirmed all 50 states on 60 meters, but that band doesn't count towards WAS, so he officially has 10 Band WAS certification! Congratulations Joe!

June Means 6-Meter DX

By Bernie McClenny, W3UR

In keeping with the theme of this edition of the newsletter, our W8DXCC keynote speaker has given me permission to reprint one of his most popular articles. I know it is the first of July and you would have been better served seeing this two months ago, but it is still great information. Thanks to Bernie for his permission to reprint this.

As we approach June in the Northern Hemisphere, we enter the prime weeks of DXing on 6 meters, which is considered by many to be "the magic band." Sporadic E, or Es, is the most popular form of 6-meter DX propagation, and it takes place when signals refract off of ionize clouds in the E region of the ionosphere. While single-hop Es typically ranges to only about 2,300 kilometers (1,400 miles), multi-hop Es often provides propagation to about 8,000 kilometers (5,000 miles), and sometimes to distances of more than 11,000 kilometers (7,000 miles) during June and July. Propagation from eastern North America to Japan and the Middle East and from western North America to Europe typically occurs for at least a few days during June and July.

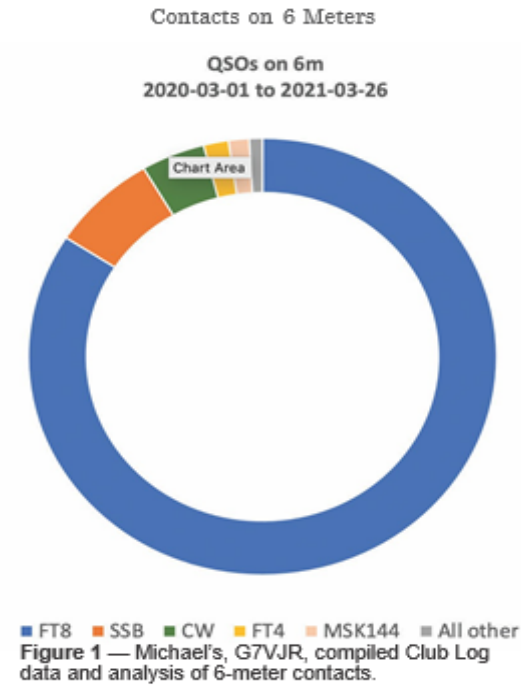


Figure 1 — Michael's, G7VJR, compiled Club Log data and analysis of 6-meter contacts.

DX and FT8

Soon after it was introduced in 2017, FT8 quickly became the mode of choice for most 6-meter DXers. From March 2020 to March 2021, nearly 85% of all 6-meter contacts were on FT8. This data came from Michael, G7VJR, who analyzed data from Club Log. Only about 7% were on SSB and 4.4% were on CW (see Figure 1). FT8 is where the 6-meter DX and 6-meter DXing activity has increased dramatically over the last few years. Most DXers will tell you, "I'm on FT8 because it's where the DX is."

It's critically important that 6-meter DXers transmit during the correct FT8 sequence. The UK Six Metre Group's (UKSMG) put together an "FT8 Intercontinental DX Code of Practice" (available at www.uksmg. org/ft8-code-of-practice.php), which has become widely accepted.

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June Means 6-Meter DX (cont.)

In it, UKSMG recommends that European stations transmit during even periods, 00 and 30 seconds past each minute, and Asian and North American stations should transmit during the odd periods, 15 and 45 seconds past each minute. Unfortunately, some DX stations transmit during the opposite sequence, so it's important to occasionally listen during both sequences. The main thing is that you must be in sequence with the DX station you are trying to work. Most 6-meter FT8 activity takes place on 50.313 MHz; however, when the band is crowded with intercontinental DX activity, it's a good idea to also go to 50.323 MHz.

Just as important is that you should be transmitting as much as possible during the same sequences as your local FT8 operators to avoid mutual interference. Last season, my neighbor Frank Donovan, W3LPL, and I routinely operated simultaneously on 6-meter FT8 with Yagis only 1,000 meters (600 feet) apart without interference, because we always use the same transmit sequences. If all local FT8 operators coordinate to use the same transmit sequences, DX can easily be worked by everyone with no mutual interference.

As a reminder, the DX window for 6-meter CW and SSB activity goes from 50.100 to 50.125 MHZ. In the US, the SSB calling frequency is 50.125 MHz. Once you make a contact on the calling frequency, opera- tors should always move up the band to a clear frequency to finish their contact. This allows others the opportunity to share the calling frequency.

Remember, just because you can't hear anyone on the US calling frequency doesn't mean it's not in use. Also remember that US stations cannot operate on SSB below 50.100 MHz, because that's reserved for CW only.

PSK Reporter (https://pskreporter.info) is an extremely valuable tool for 6-meter DXers. You can set the band to 6 meters (or any other band).

Next, you can decide if you want to see spots just for a specific call sign (yours or someone else's) for a specific country or grid locator. The map also gives you the choice of specific modes or all digital modes, including CW. You can also choose a time frame, from 15 minutes to 24 hours. Once you have all the parameters set, you can view the resulting map.

An excellent FT8 operation guide for DXers on every band, including 6 meters, is available at www.g4ifb. com/

The Swains Story—NH8S

By Joe—W8GEX, and Janet, W8CAA
(Reprinted with permission of the authors)

This trip began when Markus, DL9RCF, and I began brainstorming about where we could go on a DXPedition in the Pacific. We had been gathering information and corresponding with Peter, C2ITA, on Nauru when two HA' s popped up and started operating there. So much for that idea.

We then considered Ofu Island of American Samoa as Markus had been there previously and really liked it. For a variety of reasons, we quickly determined that this would not work.

Next I emailed Larry Gandy, AH8LG, on American Samoa about setting up there. We wanted a good take off to Europe and it looked like the north side of that island would work. Larry said we would need the permission of the village Chief on the north side, but he did not know him.

Then he asked if l would have any interest in going to Swains Island. Swains, which is owned by the Jennings family, is located 200 miles north of American Samoa, and 10° south of the equator. It had been a coconut plantation since the 1800s and had been uninhabited for about a year. Larry was a good friend of Alex Jennings, the family representative, and he thought there was a good possibility that we could get their permission to go there. Of course I was interested!

I emailed Alex and he responded quickly stating he would like to help us put our DXPedition together. Alex had already granted two other groups permission in recent years, so he had a good idea of what we wanted to do. He recommended that we set the date of the operation for September 2012 because the weather would be nice, and the seas would not be so rough. We were in for a surprise on the weather and the seas, but more on this later.

Markus found that he would not be able to get the time off from his work. I was very disappointed that after we had finally found a Pacific location he had to drop out. Of course, he was disappointed as well. Since we were now going to Swains, this had turned into a major DXPedition rather than the smaller group that Marcus and I had originally planned.

I next contacted Craig Thompson, K9CT, who was my co-leader for the PJ7E DXPedition. Swains ranked #31 worldwide and was very high in Europe on the Most Wanted List from The DX Magazine, so Craig was excited about the idea of organizing this trip with me.

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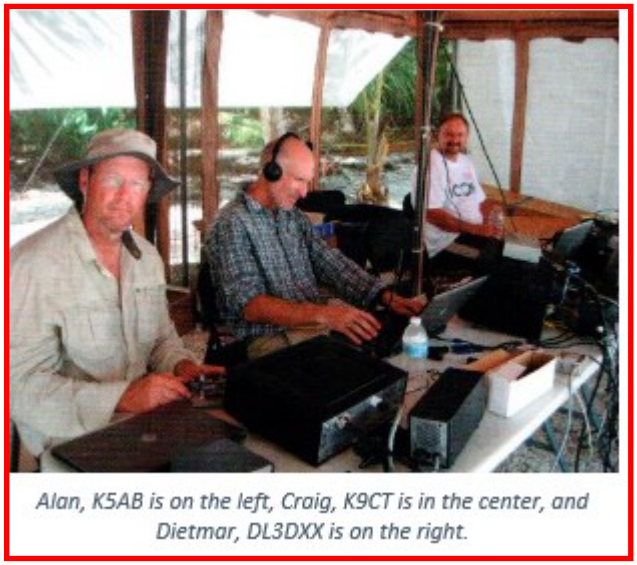
Swains Island (cont.)

This was the third trip that Craig and I had been on together, and the second as co-leaders. While we had both been on many expeditions, this one was special. It ranked high and the location would make it more difficult than our previous trips. It was the first tent/generator operation for us. To put this together, we would need good operators and a good support team. We ended up with outstanding help.

The crew was my job, and it was a big one. We wanted an international team with very experienced DXPedition operators plus a few new guys who had never been on a major trip. Because this was going to be an expensive venture, we needed twenty members to help defray costs. As with all such trips, each team member would be responsible for their own flights, lodging and meals while traveling to and from American Samoa. At times I struggled with getting enough participants because, along with the cost, it was an issue for people to be away from home for such a longtime.



Alan, K5AB is on the left, Craig, K9CT is in the center, and Dietmar, DL3DXX is on the right.

We had a couple of members signup, who then had to dropout due to illness. There were also other trips being planned before or after ours which took some potential crew members away from us. As a matter of fact, Craig was a member of the 3D2C DXPedition which was just one week after ours. He was away from home for six weeks on two DXpeditions. I' II have to ask him if he would do that again!!

When Arnie N6HC signed on as an operator, he also agreed to serve as our team doctor. It would be hot, there was no landing strip or boat dock on Swains for evacuation, and we would be on this island for two weeks, so each member needed to be in good physical condition.

While I worked on the team, Craig was working on a budget, and we both prepared an equipment list. The list of needs was lengthy. After we determined the number of operators needed to run 24 X 7 for two weeks, we calculated the number of stations, equipment requirements, the amount of coax needed, number of generators and amount of power they must supply, amount of fuel needed, tents, tables, food, etc. Craig also took care of the business end by setting up a bank and PayPal account to accept team payments and pay expenses.

Joe, AA4NN (Joe4 as we call him) agreed to be the QSL manager, and his wife Margaretta, agreed to maintain the financial records. Craig asked my wife Janet, W8CAA, to again work on fundraising like she did for K4M and PJ7E. Even though Markus, DL9RCF, was unable to make the trip, he offered to assist by relaying donations from Europe.

(cont. on next page)

Swains Island (cont.)

Although Max, I8NHJ, was not able to join the crew, he provided interfaces for computers and Don Greenbaum, NIDG, assisted us in shipping logistics.

Our attention next turned to radios. Ray Novak from Icom was happy to support our trip by furnishing seven IC- 7600s and four PW1, 1kw amplifiers. Tom. N4XP and Paul, W6XA, helped by testing radios, amplifiers, laptops and interfaces before they were shipped.

For amplifiers we had a combination of five KPA-500's, loaned by Elecraft; four PW 1's from Icom and three AL-80s that we purchased; we had a total of 12 amplifiers for seven stations. We wanted to be sure we had enough in case some were damaged during transportation. They all worked flawlessly so five were never put in service.

We had a good combination of antennas that provided excellent signals. Jerry, WB9Z, was the contact person with DX Engineering who supplied the 80m antenna, radial plates, etc. Jerry was also the contact person with Primus, who donated a mile of LMR-400.

Joe4 and Dietmar, DL3DXX, worked on the four squares for 30 and 40 meters. They designed the layout through emails, and we were ready for setup as soon as we landed on Swains.

Kimo, KH7U, loaned us his Titanex V160e vertical. Because of the height, it takes about ten guys to erect. We got it halfway up when the wind picked up and all we could do was just stand there holding the guy ropes. We didn't want to let it down, and we couldn't raise it due to the high winds. Finally, after a short while we were able to get it up to its full height.

The Battle Creek Special, which is for 40, 80, and 160, and has been on all major trips, also made it to Swains. The guys in Michigan keep this antenna in great condition for DXpeditions like ours and it worked like a charm. John, N7CQQ, and Paul, W8AEF, loaned us their SVDA's which work so well along saltwater. All antennas were beamed north over the pole in order to work Europe, and they worked perfectly. We were hoping to have propagation to Europe and luckily, we did: 29% of our QSO's were from there. QSLing is an important and tedious job. AA4NN (Joe4) volunteered to respond to the paper QSLs. We wanted to use technology as much as possible to simplify the whole process and examined several systems. ClubLog was chosen for its robust features such as simple uploading, embedding in our website for searching, and

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Swains Island (cont.)

bureau cards. We would send the ADIF file for OQRS. Paper QSLs requests would go to Joe4 with an SASE and he would issue the paper card. This process has been a great way for the DXpeditions to receive funds and to defray our expenses.

We decided that we would send bureau cards using the GlobalQSL website. We would upload a file from Joe4 for Bureau cards and also from the ClubLog website. Those hams choosing this process would receive the same QSL card, but later than the direct card. The ClubLog output would help because the file already matched our log and Joe4 would not have to check every QSO. We Would also eliminate the need to handle so many cards by hand. An LOTW certificate has been received and the major donors will receive uploads soon, with all other QSOs within 6 months.

Our webmaster choice was easy. Our PJ7E teammate, John, K6MM, is an outstanding webmaster and he agreed to handle the job. During the DXPedition, John added a banner that scrolled across the front page giving up-to-date island news as it was happening. This was an excellent way to keep everyone updated on our activities. We received a lot of positive comments on the website. The DXPedition rented a BGAN satellite phone to upload logs daily plus give the entire team email access and we were able to relay information to John on a routine basis.

Mark, NA6M, was the youngest member at 46. This was his first DXPedition, although he is a very active contester and DXer from his Texas home. Early on, Mark offered to be our IT specialist, and do all of the audio and video work. He was busy when he wasn't on the radio taking care of this, plus the BGAN satellite phone and computers. He did an excellent job.

Craig, K9CT, set up all of the rig interfaces and made sure that the radios worked properly with NI MM. The MMTTY program for RTTY was set up with N1MM. He gathered all of the logs on a daily basis and gave them Mark for uploading. He also tested every radio with the microphones and CW paddles for proper operation.

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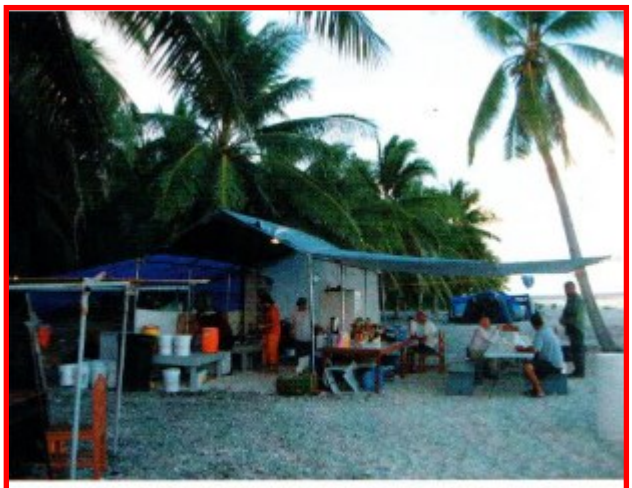
Swains Island (cont.)

We had two pilot stations. Valerie, NV9L, handled traffic for North America and Col, MM0NDX, handled the European traffic. Both pilots answered what emails they could and sent the rest to the webmaster. John condensed and forwarded them to the island for Craig and me. Emails took some time as the BGAN phone was set to pole the satellite every four hours for our messages and then pole again in four hours for the return messages. So, it took up to eight hours to send and receive messages.



Home or base camp gave us a place to congregate for meals or just to talk

Valerie, NV9L, suggested we subscribe to a Tsunami warning system. Great idea, as needless to say, a tsunami would have been catastrophic to us on a flat island. There were four cellphones setup to be notified in the event of a tsunami, plus the BGAN satellite phone. Luckily this was not an issue.

Larry, AH8LG, had given us permission to use NH8S, the Swain Island DX Club call. Unfortunately, during planning of the trip Larry, the trustee, passed away. His widow, Uti, was contacted and with the club's authorization appointed Craig to become the trustee of NH8S. Just another bump in the road.

Craig and I feel that communication is a must on these majors DXpeditions, so we agreed early on to be very transparent about everything. We sent out team newsletters to keep everyone posted as plans developed and we encouraged input from the team members. We were also in constant contact with the Jennings family. They knew what we were doing, and we knew what they were doing. The major donors also had some early information to keep them up to date on our progress.

To arrive on time, all cargo had to be sent via containership to American Samoa in July. All of the radio equipment and the team's personal items were first sent to Amie, N6HCwho placed it on pallets, shrink wrapped it, and arranged for pickup and transport to the dock .Once the container left California it was a three week journey before it arrived in American Samoa.

Dietmar, DL3DXX, and I met in Honolulu four days before the rest of the team so that we could go over lastminute details before the remainder of the team arrived. When we arrived on American Samoa, we were met by Alex Jennings. His brother David and his crew were already on Swains, so we spoke with him by phone to discuss the setup he

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Swains Island (cont.)

and his crew were building on our behalf. Alex gave Dietmar and latour of the island, a`nd then we had some extra time, so Uti, Larry Gandy, AH8LG's widow, invited us to run some Q's from his station. It was fun to be able to put another call sign, KH8, on our resumes.

After three days, the rest of the team arrived on American Samoa and the next day we anxiously boarded the MV Lady Naomi. This was not a luxury ship by any means. It was an old vessel and there were plenty of critters and roaches to go along with an unpleasant odor. It was a 24-hour trip to Swains, and what a trip. We thought the seas would be calm, but we considered them to be pretty rough. Even though we were all wearing Scopolamine patches, some of the team members had trouble with seasickness.

Our contract called for the food, drinks, tents, generators and fuel to be provided by the Jennings family. Under the leadership of Captain Wally and his sailing mate Tim Thompson, the family had purchased and re- furbished an old landing craft. They used this to transport the 30 drums of fuel, refrigerator, two chest freezers, water, tents, and ATV and small wagon prior to our arrival.

By the time we arrived, the advance team had everything unloaded using the landing craft. The tents were erected, the "kitchen" and

the toilet and shower in place, plus the generator/ electric system set up. This was no small feat and their work saved us an enormous amount of time. They took care of maintenance of the generators. and had to get up periodically during the night to refuel them. The crew consisted often men who built and maintained the camp and all of the facilities.

There were also three cooks that kept us well fed. They took advantage of the availability of fresh fish; plus, all of the food we took with us. The food was plentiful and very tasty. If we came in hot and tired, they were always there with their smiling faces. Even in the middle of the night, they had a pot of coffee going. or cold drinks available. No way could we have executed this trip without this hard-working team. We so much appreciate their hard work and our hats go off to each and every one of them.

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Joe, W8GEX is never at a loss for words and thoroughly enjoys being a DXpedition Team Leader ... or Co-leader in this case along with Craig, K9CT..

Swains Island (cont.)

The ATV they provided was an invaluable asset to our operation. It was 1500 ft. from base camp to the SSB camp, and 3000 ft. from base camp to the CW site. The sand was deep and soft. which made walking difficult, especially in such hot temperatures. They used the ATV to take water to the operating tents several times a day, plus move the fuel and oil to the generators.

When we arrived on Swains, we transferred the team and personal items to shore by dingy. After placing our stuff in the sleeping tents, we began to move equipment to the operating sites. We were anxious to get everything set up and, on the air, and worked two full days non-stop. It was very hot with the temperature as high as 125° F during the day. We quickly realized that because of the heat we had to stop working by 1 I A.M., and then resume after 5 P.M. That is the reason that not all stations were running 24/7 immediately.

At the Going Away party we were each presented with several gifts and a wonderful Certificate of Achievement which will be cherished by team members.

We had our share of injuries. It started on the boat when Jurgern, DI2VO, became disoriented in the middle of the night, fell, cut his leg, and required multiple stitches. We now think he had a rare reaction to the Scopolarnine patch and became disoriented and confused. Because of the extent of his leg injury we asked that he return to Pago Pago for further evaluation and treatment. There he was hospitalized for a few days. Fortunately, he recuperated fully and was able to join the team when we returned from Swains. We were all disappointed that he could be so close yet be unable to stay with us, but thankful for his full recovery.

One team member had a very bad swollen leg, another a stomach virus, and others had issues ranging from heat rash, sunburn, blisters, and more. The sun and heat were just brutal. We believe one member was bitten by something as his lower leg was red, very swollen and uncomfortable. After he returned home, he went directly to the hospital where he was admitted and later diagnosed with MRSA. Everyone is now home and has fully recovered.

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Swains Island (cont.)

We had so many good comments during and after the DXPedition. One was from AB7ZU who said, "we were the best in his 52 years of hamming". That was nice to hear! Those comments and so many like that kept us going in that heat.

We were extremely happy to have worked a total of 105,500 on all bands, all modes. For a breakdown, go to our website at www.nh8s.org.

We stopped operating one day early for a couple of reasons. Number one was that the crew was just exhausted. We were sleep deprived because we worked shifts of three hours on and six off and weren't able to sleep well. The heat was wicked, and it took a toll on us. Another reason is that we didn't want to take a chance on a rainstorm passing through while we were packing. That gave us an extra day to rest and be sure everything was packed properly for shipment.

The last night, after all of the equipment was dismantled and ready for departure, we were surprisingly entertained by our hosts. For an unforgettable farewell, they played instruments and serenaded us. Such great friendships were bonded.

These were extraordinary people who recently endured a lot of tragedy. Before we even started planning this trip, Larry Gandy, AH8LG and Uti lost a son in the lraq war. Then during the planning of the trip, Larry Gandy himself passed away. Next Alex and Rowenda's 26-year-old son died suddenly where he was working in California. After that, David's father-in-law passed away in California; his wife and family returned to American Samoa with Dietmar and I. They are a close family group and friends that supported each other during their times of loss yet were able to continue helping us execute this DXPedition. These are wonderful people.

After we arrived back in Pago Pago, the Jennings family had a going away party like we had never seen before. It was held at Rowena and Alex's house with Uti and Sulva helping to cook another great meal. They treated each team member with a coffee mug with our home call sign and a picture of the island imprinted on it, an island Tee-shirt, and a Certificate of Achievement for making this DXPedition happen.

Some of the behind the scene things, such as paper and bureau cards, OQRS, LoTW, paying of the bills, and returning borrowed equipment and personal items will go on for at least another year.

In closing, all I can say is that this was an amazing trip with outstanding operators. I had one of the best co-leaders to help me plan and execute a successful trip. Our goals were to make a lot of Qs. have fun, be safe, and come home friends. Because we had such great support on and off the islands, with a total of 45 people we met our goals.

We received tremendous support from foundations, clubs and individuals. We cannot express our appreciation enough, as this could not have happened without this hep. Thank you!

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Swains Island (cont.)

And of course, we have a special thanks for our loved ones who have supported us in this endeavor. The last year was full of emails, phone calls. assignments, etc. And while we were gone, they were the ones at home concerned for our safety while we were trying to have "fun in the sun."

A huge thank you to our great support team: Markus, DL9RCF; Max, I8NHJ; John. K6MM; Col, MMONDX; Don, NIDG; Tom, N4XP; John, N7CQQ; Valerie, NV9L; Paul, W6XA; Paul, W8AEF; Janet, W8CAA; and Margarett, XYL of AA4NN.

Everyone got along so well and worked so hard. We have wonderful memories and made lasting friendships. My hat goes off to an amazing team: Barry Fletcher, 9VIFJ; Joe Blackwell, AA4NN; Dietmar Kasper, DL3DXX; Alan Brown, K5AB; Carl Schroeder, K9CS; Craig Thompson, K9CT; Mike Tessmer, K9NW; Lou Dietrich, N2TUI; Arnie Shatz, N6HC; David Greenhut, N6HD; Mark Stennett, NA6M; Tom Berson, ND2T; Hawk Eriksson, SM5AQD; Charlie Spetnagel, W6KK; Joe Pater, W8GEX; Hal Turley, W8HC; Clark Stewart, W8TN and Jerry Rosalius, WB9Z

(Images. on next page)

Swains Island (cont.)

Another closer view of the base camp with more of the team discussing straegy

Tom, N2DT listens intently to be sure he gets the call logged correctly.

The beach had almost more aluminum than sand when we got all those verticals set up.

Lou, N2TU obviously enjoying his turn at the radio.

Two of the cooks who kept us well fed

Tower or Power?

By Jay, K4ZLE

(I had received this very question from a new DXer who reads the Ohio Section Journal. I recalled this article by Jay, originally printed in The DX Magazine.)

Buy or build? CW or SSB? Yaesu, Kenwood, ICOM or TenTec? New or used? Questions, Questions, Questions! This time we will attempt to answer a question almost every DXer has asked themselves, "Should I spend money for a linear or on improving my antenna?"

Back in the middle ages of ham radio (when I was first licensed), the old timers used to say, "Put it in the antenna." The court counselors of that day claimed you got more bang for the buck in the antenna and like good little pages, most of us blindly accepted their words as gospel. As a matter of fact, once I reached the rank of *Sage*, I often regurgitated the same 'truism' when some minor minion posed the same question to me. Now many years later, I question that advice. Let's quantitatively examine that question.

In order to do a quantitative comparison, we have to use the same yardstick and measure from the same point of reference. For this analysis we will measure dollars spent per band affected, relative to using a dipole at the same height. We assume dipoles are already in the air for the five so-called pre-WARC bands, 80 – 10 meters. The structure to hold them is zero cost and not suitable as a sky hook for a beam. We also assume zero labor costs, and everything is purchased new. The table at the bottom of the page lays out the basic numbers.

There are other considerations you should weigh or consider.

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Linear	$2200.00	11.7 dBd gain	$37.60/dBd/band
Tower			
40' Rohn 25 w/ guys	658.00		
Concrete	400.00		
Tri-bander	650.00		
Rotator and cable	790.00		
Total	$2,49800	7 dBd gain	$118.95/dBd/band

Tower or Power? (cont.)

For instance, a linear only improves the transmitted signal while a directional antenna will improve your transmitted AND received signal. There will probably be an expense to run a good 220 VAC circuit to the ham shack for the linear. Towers usually require building permits and possibly zoning hearings and other related hassles, all of which have certain monetary and /or physical and psychological costs.

Now for an explanation of my background assumptions. The linear is from the class that provides 1.5 Kw out for 100 w drive. It covers 80 – 10 meters. This nets a gain of 15 (11.7 dB) on each of the 5 bands. As a bonus, most of these amps will provide some gain on 17 and 12 meters as well.

The tower is a Rohn 25 kit complete with top section, guys, and other associated hardware to withstand 90 mph winds. This is a bit of an overkill for most areas, but not unreasonable. I have allocated for 4 yards or concrete, delivered. The tri-bander is a Cushcraft A3S and the rotor is a Ham IV. The power gain figure of 7 dBd is an average, since a 3 element Yagi can have between 6 and 9.5 dBd gain. A trap beam of this nature will have an average of 7, maybe 8, dB gain over a dipole for the three bands. If we allow 8 dB instead of 7, the cost is still better than $120/dBd/band.

Obviously, the right choice for you depends upon your individual needs. For instance, if you want to work *all* bands and/or have antenna restrictions or have specific aesthetic desires, the linear is a no brainer. If you seek superiority on a subset of bands, desire the advantage of a rotary antenna, prefer to work QRP and/or could care less what your neighbors think, you might want to go the tower and beam route. If so, don't stop at just one tower or with a simple tri-bander!

Other things to consider are whether my assumptions fit your circumstances. If you already have a tower, can get the various components at different places or have different requirements, such as a different tower height, you should plug your numbers into the above chart and derive your own personal analysis.

As you can see there is no simple answer to the age old question, "Should I spend money on a linear or on improving my antenna?" However, the intent of this treatise is to help you define the criteria for making the decision most appropriate to your needs and wants. Of course, the REAL answer for the REAL DXer is: Why either/or? Do both! To quote some of my best friends (and pileup adversaries), "Life's too short for QRP!" Turn that beam and turn up the wick!

Interview with Gabriel, EA6VQ

I have worked Gabriel many times and just had to contact him for an interview. He agreed and answered my questions quickly.

AJ8B: How did you first get interested in amateur radio?
EA6VQ: I think that like many of the radio amateurs, listening to an old vacuum tube shortwave radio when I was a child. When I had the legal age I got the beginner license (EB6KU) in 1983 and two years later I got the actual call.

AJ8B: Do you have a favorite band or mode?
EA6VQ: I have been always more interested in the higher HF bands, especially on 10m, and in the VHF bands, specially 6m and 2m EME. However I have equipment and antennas for all bands from 160m to 23cm and the QO-100 satellite. I rarely work in SSB, but I like CW the most and I am also active a lot in FT8 mode lately.

AJ8B: It looks like the only band we have not had a QSO on is 10 meters. I hope to catch you there when conditions improve. Do you spend much time on 10?
EA6VQ: Yes, 10m band is one of my favorites; however there is little propagation to the USA at this point of the solar cycle. I always monitor 10m looking for some good opening.

AJ8B: What time of day and days do you like to operate?
EA6VQ: Since five years I work at home as a freelance computer systems engineer, so I can be QRV almost at any time any day, when there is something interesting on the bands. My only restrictions are night times when you will hardly find me active.

AJ8B: Any secrets to your success?
EA6VQ: Just a good QTH by the countryside, with relatively low noise level and a lot of room for good antennas.

AJ8B: Any tips that you can share?
EA6VQ: Patience and perseverance are the keys in a successful hobby, plus having fun and enjoying what you are doing all the time.

AJ8B: Describe what you are currently using:
EA6VQ: For HF I use a 10 elements 5 band Log Yagi for 10-20m, plus a 1/4 wave vertical for 30m and inverted V dipoles for the lower bands. For 6m I use a 6M9KHW long Yagi and for 2m EME an array of eight 2M5WL antennas. I also have two reversible Beverages for reception and I can run QRO on all bands.

(cont. on next page)

Interview with Gabriel, EA6VQ (cont.)

AJ8B: What advice do you have for those of us trying to break pileups to work DX?
EA6VQ: I am afraid I can't give any special advice, apart from the obvious: Good antennas and power, plus perseverance.

AJ8B: What is your favorite contest?
EA6VQ: When I was younger I used to be active in the CQ WW and WPX contests every year, but presently I don't work any contest seriously. May be with the exception of the IOTA contest when I try to be QRV in CW as many hours as I can.

AJ8B: Any QSLing hints?
EA6VQ: I answer all the paper QSL I receive, but I never send cards in advance unless I need the confirmation for DXCC or IOTA awards. I also upload the log weekly to LoTW. My QSL policy is explained in detail in the QRZ.COM page.

AJ8B: What coaching/advice would you give new amateurs?
EA6VQ: Don't get stressed trying to get a super station in weeks and work all DXCC in months. Improving the station year after year is an essential part of the fun.

AJ8B: If I were to stop by for a visit, what local place would you want us to visit?
EA6VQ: Mallorca has places for every taste, but I always recommend spending a day or two by the northern mountain chain ("Serra de Tramuntana"). The road that goes along it offers nice landscapes, spectacular viewpoints and goes through charming villages.

AJ8B: What local food would you want me to try?
EA6VQ: There are too many to recommend one in particular. "Arros Brut" (a tasty soup rice) and "Fitro Mallorquin" (fried pork mixed with vegetables and aromatic herbs) would be a good choice together with a local red wine.

AJ8B: Thanks for taking the time to answer my questions. Is there anything you would like to share with us?
EA6VQ: Just my thanks for the chance to answer them and my best wishes to all readers of the SouthWest OHio DX Association newsletter.

73. Gabriel - EA6VQ
WWW.DXMAPS.COM
WWW.VQLOG.COM

The Man Behind the Butterworth Filter

By VK6CSW—Clive Wallace of the Radio Amateurs Old Timers Club Australia

We have an agreement with several organizations that allows us to reprint articles, with acknowledgement and they reprint our articles with the same acknowledgement. This article that appeared in the Radio Amateurs Old Timers Club Australia caught my eye. Years ago while cutting my teeth on a CAD/Simulation system, I chose a 3 pole Butterworth Filter to design and then simulate. Thanks to our friends from RAOTC for allowing me to reprint this interesting article.

One of the better known filters in radio and electronics is the Butterworth. In the electronic sense, a filter is a network that passes signals of certain frequencies and rejects or attenuates others. A radio receiver, for example, is essentially a filter system which ideally removes all frequencies other than the one desired by the listener, while a transmitter uses filters to transmit only the desired frequency or frequencies necessary to convey intelligence while suppressing all spurious radiation.

The Butterworth filter, be it low-pass, high-pass, or band-pass, is a type of signal processing filter designed to have as flat a frequency response as possible in the passband; it can thus be described as a maximally flat magnitude filter.

When Stephen Butterworth was designing his filters, transistors were, of course, unknown. His filters were built using passive, physical, inductors and capacitors, and of necessity were quite large. These days we often use active circuits called gyrators in their place (see end of article). An important property of a gyrator is that it inverts the current-voltage characteristic of an electrical component or network.

In the case of linear elements, the impedance is also inverted. In other words, a gyrator can make a capacitive circuit behave inductively, a series LC circuit behave like a parallel LC circuit, and so on. The gyrator is primarily used in active filter design to simulate the passive design, achieving miniaturization impossible with conventional coils and capacitors.

The start of modern filter theory is usually credited to Stephen Butterworth in his paper '*On the theory of filter amplifier*', Experimental Wireless and the Wireless Engineer, vol 7, pp 536 - 541, published in 1930. It is but one of many important papers by the man once described by Professor R V Jones, Assistant Director of the Intelligence Section of Britain's Air Ministry during WWII, as 'a most impressive character'.

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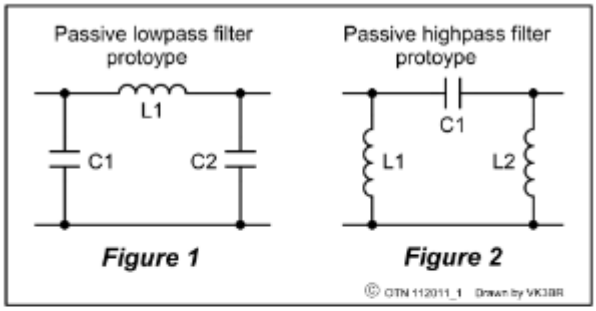
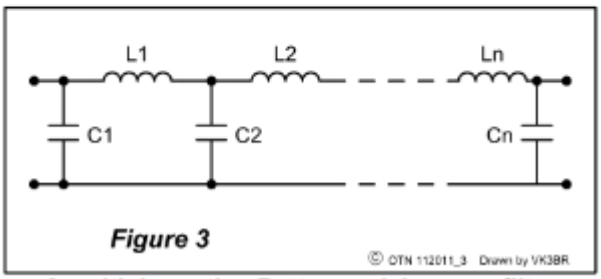


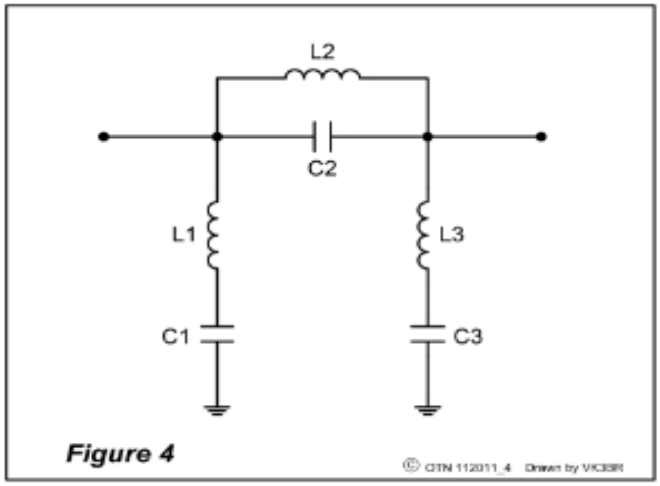
The basic circuitry of Butterworth passive lowpass and highpass filters.



A multiple section Butterworth lowpass filter.

The Man behind the Butterworth filter (cont.)

Butterworth himself modestly held that his one claim to fame was that as an Examiner he had once failed Captain P P Eckersley, the Chief Engineer of the BBC![1] A glance through the titles of scientific papers written by Butterworth tells a very different story.



A passive Butterworth bandpass filter.

Stephen Butterworth was born in 1885 in Rochdale, near Manchester, England, the son of a postman. Despite his modest position, Stephen's father must have appreciated the value of education because in 1904 Stephen entered the University of Manchester and just three years later graduated with a first class Bachelor of Science degree in physics and a first class Teacher's Certificate. In 1908 he gained a Master of Science degree in physics and for the next eleven years was a lecturer in physics at the Manchester Municipal College of Technology. After this, he joined the National Physical Laboratory at Teddington, Surrey, England, doing theoretical and experimental work in the determination of standards of electrical inductance.

In 1921 he joined the British Admiralty's Research Laboratory (ARL) but the classified nature of his work there precluded the publication of some of his work. However, in 1924 he published a paper dealing with "*The distribution of the magnetic field and return current round a submarine cable carrying alternating current*" and he also studied the effects of underwater explosions as well as the stability of torpedoes.

Between 1911, when he gained his MS degree, and 1931, Butterworth published a major research paper almost every year except for the war years of 1914-1918. As mentioned earlier, it was in 1930 that he published *On the theory of filter amplifiers*, which laid the foundation for what we now know as the Butterworth filter.

By 1939, the year that WWII started, Butterworth had risen to the position of Principal Scientific Officer. Throughout the war he continued his work in the ARL's Scientific Research and Experiment Department, retiring in 1945. During this period he successfully investigated means of degaussing ships to protect them from triggering magnetic mines.

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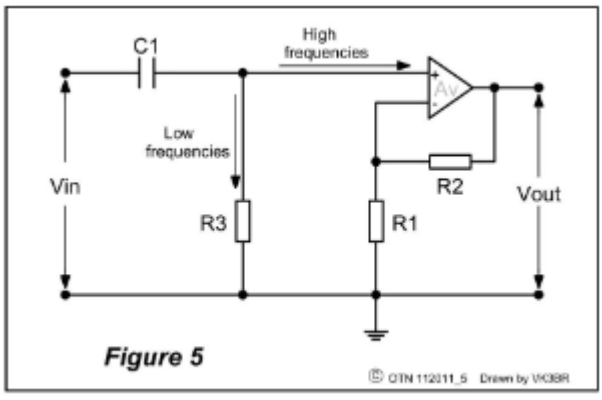

A Butterworth active highpass filter.

The Man behind the Butterworth filter (cont.)

For his work he was awarded the Order of the British Empire in 1942.

A quiet, unassuming man, Butterworth was a first-rate applied mathematician who often solved problems others regarded as insoluble. His knowledge and advice were widely sought and readily offered, qualities that made him revered and respected by his colleagues.

Stephen Butterworth died on 28th October 1958 at his home in Cowes on the Isle of Wight, England.

Note

1. Captain P P Eckersley (1892-1963), Chief Engineer of the British Broadcasting Company, later British Broadcasting Corporation, from 1922 to 1929, should not be confused with T L Eckersley (1887-1959) of the Marconi Company, famous for his predictive work on radio wave propagation.

References

Wikipedia; and Most Secret War by R V Jones.

Gyrators

One of the problems in electronics has been the inductor. Large values of inductance generally mean physically large coils, even when ferrite cores are used. Many inductors are required in the ordinary land-line telephone network, not only in graphic and parametric equalizers but also in a host of other filter circuits. Without gyrators to replace inductors, the miniaturization of many of today's commonly used devices would be almost impossible.

The idea of simulating an inductor by using a gyrator is credited to a Dutch electrical and electronics engineer, Bernard D H Tellegen (1900-1990), who invented the circuit around 1948. The availability of tiny operational amplifiers today has seen his circuit widely adopted in many miniaturized devices. Without the gyrator to simulate the action of a bulky inductor, most devices would be far larger. Telephone exchange circuit boards (which may include many inductors for filtering) would be much larger, as would modern graphic and parametric audio equalizers, plus a host of other equipment. It's fair to say that without the gyrator today's tiny mobile phones would not be possible. RLC bandpass, bandstop and other filters can be made without physical coils by using tiny capacitors, resistors, and op amps to simulate the action of inductors.

Another advantage of the gyrator over wire wound inductors is the elimination of inductive hum pick-up, making the placement of filter components less critical in a crowded circuit board. However, there are applications where it cannot be used, such as high voltage flyback circuits, power conversion circuits where an inductor is used to store energy, and some RF circuits. In the latter case, most RF coils are very tiny anyway, as inspection of a mobile phone's innards will show.

While the basic circuit of the gyrator is simple, understanding its action is not. Readers Interested in pursuing this topic may find: <http://sound.westhost.com/dwopa.htm#inductor> and <http://en.wikipedia.org/wiki/Gyrator> helpful.

60 Meters—The Channel Band

By Joe, W8GEX—w8gex@aol.com

Kyrgyzstan is latest to arrive on 60 m/5 MHz The Union of Radio Amateurs of Kyrgyz Republic (ARUKR) announced that on 4th June 2021, the Kyrgyzstan Telecommunications Regulator made the new WRC-15 Amateur Secondary Allocation of 5351.5 – 5366.5 kHz available to Kyrgyz hams at a maximum power of 100W.

Other Secondary allocations made available at the same time were 472 – 479 kHz at 1W, 122.25 – 123 GHz and 134 – 141 GHz both at 100W.

Thanks to Andrea EX0DX /HB9DUR ARUKR IARU Liaison Officer. The Union of Radio Amateurs of Kyrgyz Republic (ARUKR) http://qrzex.com/

Tks: EX7DY, EX0DX

XT - Burkina Faso—DF2WO, Harald, gives us more details on his June 13 to 28 trip to Ouagadougou, Burkina Faso as XT2AW. He will have a Yaesu FT-991A running 100 watts into a hex beam, vertical, all band dipole and 80 cm offset for QO-100. Activity will be on FT8, CW and SSB on 160, 80, 60, 40, 30, 20, 17, 15, 12, 10 and 6 meters (grid locator IK92fh). QSOs will be uploaded to M0OXO OQRS (not Club Log) and LoTW. QSL via M0OXO.

JW0W SVALBARD DXPEDITION NEWS
Ken, LA7GIA, posted the following:

JW0W expedition to Prins Karls Forland Island west of Svalbard, is going well (20-26th July). Today we received the final permit from authorities to access the nature reserve west of Svalbard. The area is only accessible by boat roughly 3h west of Longyearbyen. We do plan for 60.

All supporters get a free express QSL card and LoTW from our QSL Manager Charles Wilmott, M0OXO. If you want to support us, please paypal to: jw0wpk@gmail.com. Thanks to FUNKAMATEUR for supporting us.

S90K Sao Tome & Principe islands: Dave Beran OK6DJ reports that he plans on a FT8 and CW operation from the island. Oct. 2 to 16. QSL direct to OK6DJ or LoTW, OQRS. More info on their website at www.cdxp.cz

C5 – The Gambia— F5RAV, Luc, with friends F5NVF, Gerard, and M0NPT/7X2TT, Abdel, have received a Gambia license, C5C, good until April 22, 2022. They are including 60M. For QSO confirmation it's LoTW, eQSL, and direct via the F5RAV home QTH.

Facebook: https://www.facebook.com/groups/347995275954755/

60m website: www.60metersonline.com

Interview with Francesco, IK0FVC

Over lunch with Joe, W8GEX, I mentioned that the one ham I really wanted to meet/interview was IK0FVC. I had worked him at his home QTH, the Vatican, and at SMOM. Joe mentioned that he had the email address for Francesco and offered to introduce us. Francesco instantly agreed to an "interview" independent of his hectic. While he was composing his answers, it was announced that he was inducted into the CQ DX Hall of Fame! Congrats for a well-deserved Honor!

AJ8B: How did you first get interested in amateur radio?

IK0FVC: To be honest, like many of us, I started at age of 9 when my brother lent me his cb transceiver and from that moment a long adventure that still continues began. I got the ham license in 1985 and I still remember the first QSO with a Russian, it was like talking to a Martian, the memory still excites me.

AJ8B: What an honor to be inducted in to the Hall of Fame. How did you feel when you first learned?

IK0FVC: Of course very excited, I will put the email of 12 May sent to me by Bob N2OO - who informed me about the induction - in a picture, which I will keep among the most dear things. I immediately called my brother and told him that I would never have imagined that that the little CB transceiver loaned to me almost 40 years ago would take me this far!

AJ8B: How did you get involved with the Vatican Radio Station?

IK0FVC: In 1991 His Eminence, Cardinal Roger Mahony of Los Angeles - W6QYI, helped me to install the shack at the Pontifical North American College, a Vatican extraterritorial area in Rome, and since then I have always been in constant contact with the authorities of the Holy See, who have supported and still support me in this long journey.

(cont. on next page)

Interview with Francesco, IK0FVC (cont.)

AJ8B: That must be a great honor. Is it difficult to schedule time at the Vatican station?
IK0FVC: If you intend to access the shack there is no problem, now the College is like my second home. The problem, if anything, is finding the time to activate the station, but luckily there is a team of local colleagues who gives me a strong help.

AJ8B: You have also operated from 1A0KM, the Sovereign Military Order of Malta. How did that relationship develop?
IK0FVC: I had and I maintain relationships on a personal level, unfortunately it has never been possible to install a permanent station and this makes the activity as if it were a real expedition from the logistical point of view and the time available is always so little.

AJ8B: It seems to be several years since you have operated from there. Anything planned in the future?
IK0FVC: Not for this year, we will see in the future.

AJ8B: Your own station is very impressive. How do you split time between the three operating locations?
IK0FVC: Nice question … let's say it's like I have three children to look after, even if I can't hide that the two favorites are HV0A and 1A0KM in terms of QSO number, much to IK0FVC's jealousy!

AJ8B: Overall, do you have a favorite band or mode?
IK0FVC: I like each band of its kind, but I can't hide a certain preference for 10 meters, which, unfortunately, is very much affected by the eleven year cycle. As for the mode, it is impossible to resist the charm of cw, a dead and glorious language that only we ham continue to guard.

AJ8B: What time of day and days do you like to operate?
IK0FVC: On weekends and, of course, during the gray line, especially in the months when you can work the low bands and then, if the gray line is the one of the afternoon, a good glass of Italian wine completes the joy of making radio!

AJ8B: Any secrets to your success?
IK0FVC: As in all things in life, have consistency over time and always have the passion of the first qso. There have been years in which - for the arrival of the family and for job - when I went to the HV0A shack I found the cobwebs, but I never thought of giving up, indeed, the thought of how many om I could make happy was a decisive help.

(cont. on next page)

Interview with Francesco, IK0FVC (cont.)

AJ8B: Any tips that you can share?
IK0FVC: I think that on the radio the first rule to be respected is to listen, to listen, to listen before calling. You can't imagine, when you are on the other side of the pile up, the incredible number of stations that continuously call, call, call, but it is knowing how to listen and understand how the dx station operates that makes the difference.

AJ8B: Describe what you are currently using at your home station:
IK0FVC: Radios are an Icom IC-7851, a Kenwood TS-2000, an Icom IC-7300 and, of course, two vintage, the Yasu FT-101ZD and a Kenwood TS-930S (also a Yaesu FT-290R and a Kenwood TM-702 for locals) .

Amplifiers are an OM Power 2000A, an Acom 1000 and a Henry 2002-A for 144 mhz.

Antennas are an Ultra Beam UB50, a vertical Chuscraft R6000, one 8JXX for 144, one 5JXX for 50 MHz and two dipoles full size for 80 and 160, not that bad to be in downtown.

Of course, the Lafayette Dyna Com-23 could not be missing, that little cb radio that my brother lent me and from which everything started!

AJ8B: What advice do you have for those of us trying to break pileups to work DX?
IK0FVC: To those who use to break the pile ups I would ask what they would do if, in line to buy something, someone stood in front of them (something not so rare in Italy). Sometimes, during the pile ups, if someone insists too much I repeat his name saying that he is on the black list and only if he stops then I pick up him.

AJ8B: What is your favorite contest?
IK0FVC: I wouldn't want to disappoint you, but I'm not a great lover of contests, I see something competitive that, if exasperated - as sometimes happens - interferes the ham spirit. However, the ARRL and CQ contests I admit that they have their own charm and, at times, are useful to give the country to those who need.

AJ8B: Any QSLing hints?
IK0FVC: Absolutely! In my opinion, among the topics to be studied to take the test for the amateur radio license, I will put the qsl policy. Too many people still send paper QSL without SAE, if not without SASE, incredible to believe. Then, I would encourage the use of LoTw, at least after one has received the first paper qsl useful for the album, the others are no longer needed.

(cont. on next page)

Interview with Francesco, IK0FVC (cont.)

AJ8B: What coaching/advice would you give new amateurs?
IK0FVC: I would advise them to learn to love the radio as a life partner, it is eternally faithful and will surely keep you company at all times. Radio is a condition of the soul!
Then, experience the radio discovering its many potentials one at a time, between DXCC, diplomas and anything else there is always something new to start.

AJ8B: If I were to stop by for a visit, what local place would you want us to visit?
IK0FVC: Here's a typical day: of course a visit to the HV0a shack first, then here in Rome there are so many places full of history. I would start with St. Peter's Basilica, there is a centuries-old bronze statue of St. Peter whose foot has become smooth due to the many caresses given by the faithful, impressive! Then I would finish with the day by diving into a nice restaurant, some delicacies are only found on real Italian tables.

AJ8B: What local food would you want me to try?
IK0FVC: Everything except what is not Italian! Well, why not to start with a real pizza, they make such good ones over here, with a pasta so light that after two hours you are still hungry, a bit like when you go to a Chinese restaurant, but of course it is vaguely similar only in this!

AJ8B: I really enjoyed the history and other items on your website. (www.ik0fvc.it) How often do you keep that up?
IK0FVC: If you mean how much time I dedicate to the maintenance of the site I'm afraid to disappoint you, too little, unfortunately it is a static site, but over time I will make it more lively, I promise.

AJ8B: Thanks for taking the time to answer my questions. Is there anything you would like to share with us?
IK0FVC: Besides the common passion for radio I would like to be able to say the love I feel for your wonderful Country. My mother's mother was American, I still have cousins living in San Francisco, I grew up with the American dream, sooner or later I'll buy a house somewhere in US, but don't worry, HV0A will continue to stay on the air!

Thanks Bill for the opportunity, I hope to meet you as soon as possible at the dx dinner.

Best 73

Francesco IK0FVC/HV0A

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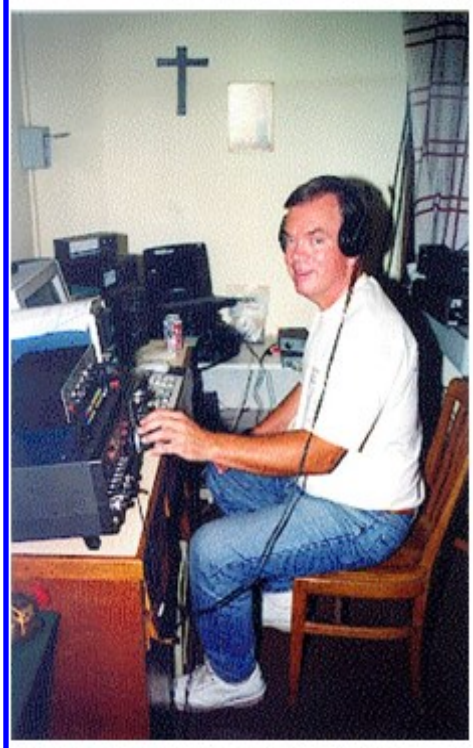
Interview with Francesco, IK0FVC (cont.)

AI6V with I0JBL



K6AW operating at the Vatican

N6MZ, Mike, Operating at the Vatican

Our DX Friends are saying….

As we have done in previous newsletters, I sent our DX Friends a question and asked for their opinions. The question was "*What internet resources do you use to assist your ham radio DX quest? This would include DX spotting, contests tracking, research, DXPedtions etc.*"

Thanks to our former interviewees for sharing their thoughts.

Here from a medium WX report in Port Elizabeth Eastern Cape of South Africa

1. The website I use for DX spotting is DXSUMMIT. I enjoy it and also get my solar numbers there.

2. The Contest tracking i normally use for local contest the Sarl blue book for international contest i refer to the ARRL etc ….not a member of ARRL membership fee to high for a disability pensioner.

😁 😁 😁 😁 😁 😁 😁 😁 …

3. There is no specific site I use for research and DXPeditions. They are always different but are mostly situated in the USA or EU..

I hope and believe this answers your questions .
73 and enjoy the day. week and be safe

De ZS2EC—Theunis

Dear Bill,

I find the Reverse Beacon project the most useful. If as now I can not hear a single cw signal on any band at least it shows me if and where my cq is being heard. I use DX Summit in Finland to find out what stations are being heard on the bands.

I look at the weekly DARC DX Newsletter to find out what DXPeditions are on the go and planned and special event callsigns.

QRZ.com is invaluable for looking up a QTH when a DX station does not give it likewise a name. I will often use Google to find out more information about a QTH.

73 Brian 9J2BO

(cont. on next page)

Our DX Friends are Saying… (cont.)

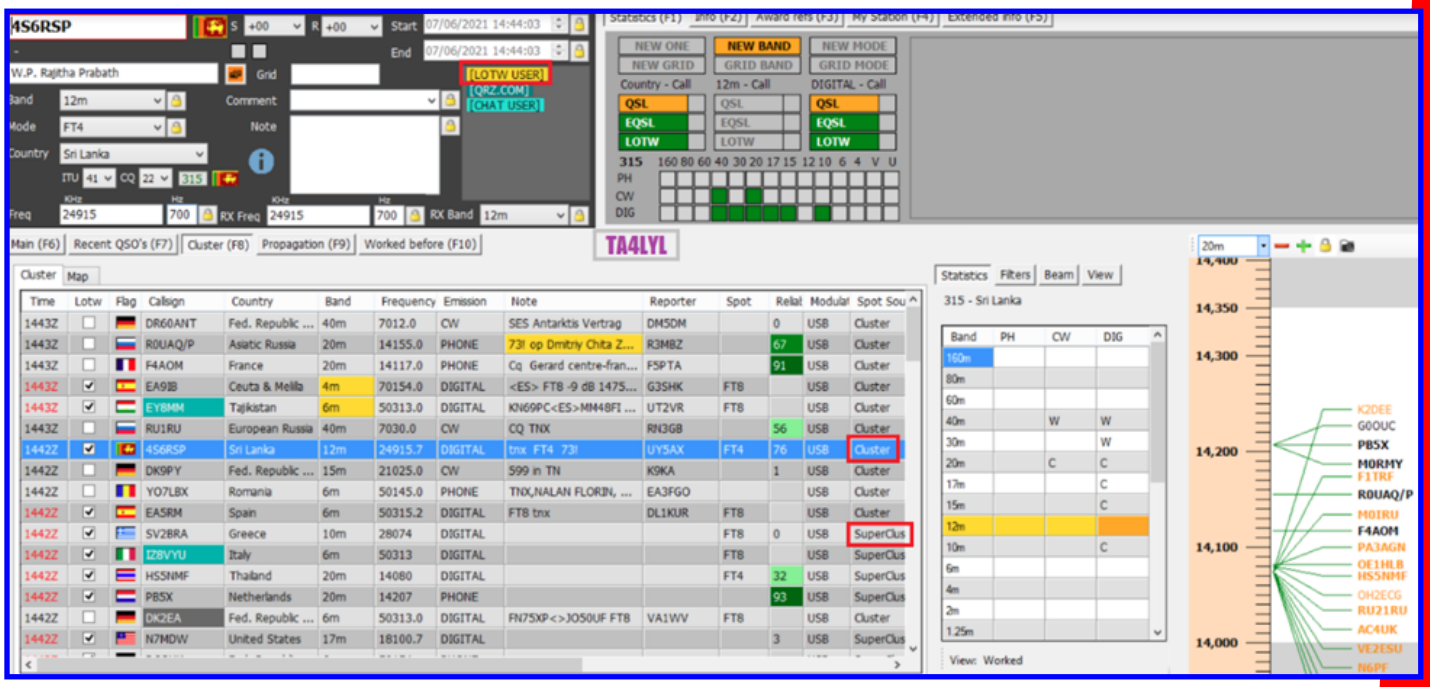
Bill, thank you for your question. Here is the answer.

I don't use any internet resource in my DX quest. I am using Log4OM software. I'm setting up HamQth and Telnet servers in it. So I can see all the DX stations that come into the air and I can make a call by turning my antennas in that direction. With this method, I am at the level of 285 DXCC pending LotW approval and 251 DXCC approved. It can be checked on my QRZ page and ARRL.

So, I don't need anything else to be a good DX'er.

I couldn't go to the air due to antenna problems during 2020, but I will try to be in the air again by solving the problems in a short time. First of all, thank you for your interest and then everyone who reads. See you in the air.

VY 73 de TA4LYL



Hi Bill AJ8B

Thank You for your email and for the copy of the 1st of July newsletter. The only source I use is DXSUMMIT. As far as new projects, I am working on changing my hexbeam antenna to Hygain Explorer 14 which will arrive in September. I will post you all the project detailed photos as soon as I finish the installation.

VY 73 Nart JY5IB

(cont. on next page)

Our DX Friends are Saying… (cont.)

Well, I am a European CW operator and I have participated in most of the smaller and bigger CW contests one or more times. This has mostly been from Denmark or sometimes from elsewhere in the European mainland and often I got the feeling that this particular contest must look quite different from outside EU.

My first attempt to try contesting from another place was in 2012 when I visited Greenland for the first time in my life. That was a great experience and made me decide to go back for some more radio activity. I would play high game for a really good result in the CQ WPX CW 2012. To help me achieve my goal I had to make some advertisements around in the HAM World to tell the other participants that I would be active as XP2I - a nice prefix for WPX.

I had my own website (www.oz1bii.dk/xp2i-wpx.htm) where I could make all the advertisements I wanted to, but how many will know my site and read it?

So, first I made the call sign, XP2I available on the **qrz.com** website. I found this to be the most important and most used source of information - also for the DX Clubs etc.

Next I sent an announcement to **NG3K** to his list of forthcoming contests where CQ WPX is one of the bigger lists https://www.ng3k.com/Misc/wpxc2012.html - I had to change my plans for All Band operation caused by the lack of antennas and bad conditions on the lower bands. So instead it was changed to be 20 meter single band Low Power.

Third I sent a message to **DXCoffee.com** who announced some information about my trip. I cannot find DXCoffee on the web anymore - only on Facebook I think - https://www.facebook.com/page/252326227315/search/?q=xp2i - I also made a banner to support the words. (Below)

And then, of course I spread the word to all my HAM friends and my clubs. These things worked well out for me and I had really many callers - both within and outside the WPX contest. Sure it helped me to achieve the world record on 20 meter. Ever since I have advertised via QRZ.COM - NG3K.COM - Facebook groups and my own website, now www.oz2i.dk.

I do not use DX Clusters and have never made a single spot. I know that the RBN will catch my CW and put me on the "list" ;o)

Best 73 de OZ2I
Henning

(cont. on next page)

Our DX Friends are Saying… (cont.)

What internet resources do you use to assist your ham radio DX quest? This would include DX spotting, contests tracking, research, DXpedtions etc.

Tropospheric Ducting Forecast for VHF & UHF Radio & TV - www.dxinfocentre.com

VKSpotter - www.vkspotter.com

HF : **Log4om solar figures**

William Hepburn – VK7AC

Below is a description of my website, dxmaps.com. Here is a description:

DXMAPS.COM is a free-to-use web site which main objective, although not the only one, is the near-real-time monitoring of the propagation conditions in all the radio amateurs and SWL bands, from long wave to UHF. This is done by analyzing the information from the various channels that report contacts and SWL, and showing the result in a visual way on regional maps or on a world map, what allows in a quick and intuitive way to know the real propagation conditions in a certain band at the present time.

DXMAPS is a personal project of Gabriel, EA6VQ, and was born about twenty years ago running on his personal computer as an aid to detect propagation openings in the two-meter band, based on the analysis of the DX-Cluster spots. Currently it is used every day by thousands of HAMs and it is running on a dedicated server with twelve Xeon processors (twenty-four cores) and every day processes between half a million and a million DX reports from all available sources, which are: the DX-Cluster, PSK Reporter, WSPR network, Reverse Beacon network, FM list and Vesseltracker, apart from reports sent directly by users making use of automated tools such as the WSJT DX aggregator, the AIS DX aggregator and the APRS DX aggregator.

The reports received are filtered, eliminating those that due to their distance cannot be considered as DX and those that for some reason cannot be considered valid, such as false chat-type spots sent through the DX-Cluster network or sent by stations that are known to routinely generate misinformation, for example reporting contacts of one band in another one. In this way it is avoided, as much as possible, that irrelevant information is displayed and false propagation alerts are generated, offering a result that prioritizes quality over quantity.

In the case of spots of 28 MHz and higher bands, the system applies a complex probabilistic artificial intelligence algorithm that tries to determine the type of propagation by which the reported QSO or SWL has been possible, identifying it on the maps with a color code. Apart from the band maps, there is also a separate tab that shows maps of the sporadic-E MUF, estimated from the sporadic-E reports, and that is widely used for watching the level of ionization of the E-layer in order to detect possible openings in the VHF bands.

(cont. on next page)

Our DX Friends are Saying… (cont.)

Apart from viewing the QSO / SWL on a map, DXMAPS also offers the possibility of displaying them in a list or in a band graph. It has many customization options that allow each user to configure it according to his preferences, for example by selecting the mode or modes (phone, CW, digital) in which he is interested, or in the case of bands above 28 MHz also the type of propagation (tropo, sporadic-e, etc.). Likewise, and mainly useful for HF bands, it allows overlaying maps with additional information, such as the gray line or the prediction calculated by VOACAP.

Another widely used service is the email propagation alert system (alerts.dxmaps.com) for the 2m, 4m, 6m and 70cm bands. Each user can configure the bands and propagation modes he is interested to receive alerts for, the number of alerts per day, whether or not use digital mode spots to generate them, etc.

Although DXMAPS.COM is mainly known for the maps and the propagation alerts, the website also offers other interesting complementary services, such as a Callbook, a DX news service, a DX Atlas, an online personal log, online calculator for EME, tracking of a DX callsign, VOACAP point-to-point calculator, etc. To facilitate their use, these can be accessed through subdomains whose list is at dxmaps.com/subdomains.html

A detailed description and tutorial videos of DXMAPS.COM can be found at https://www.dxmaps.com/spots/manual.html

73. Gabriel - EA6VQ

Evening Bill, hope you and yours are all well. Hopefully there is an end to this virus in sight.

Yes, I would be lost without the internet in the shack. I use it for the dx cluster as I have seemed to have lost the ability to scroll up and down the bands manually!

I use LOTW, eQSL, Club Log QRZ etc. I also get regular email updates on DXPeditions.

Also, our club 'Shannon Basin Radio Club' have a good "WhatsApp" group to keep us all informed. WSPR is also great to see where your signal is heading and can be monitored on WSPR.Net.

That's it Bill,
Short and Sweet.
73 de EI8IU, Brian

An Introduction: Radio in a Box

By AA7JV—George R. Wallner

AA7JV, George, Hal, W8HC, and others, have been working on this revolutionary concept for quite a while. After reading about it in the Spring Edition of the NCDXF Newsletter, I contacted AA7JV and asked to reprint it here for two reasons. First, it appeared to me to be something that could revolutionize DXPeditions and I knew that our club members would find it interesting. Secondly, W8HC has agreed to speak at the W8DXCC convention.

DXpeditions to rare locations make exciting DX happen. During the past few years, however, it has become increasingly difficult to get landing permits to the most wanted locations and we are almost at the point where environmental concerns have com- pletely locked Amateur Radio out of the most desirable DX entities.

Operating challenges

During the 2018 Baker Island DXPedtion (KH1/KH7Z) I realized that, in the face of changing attitudes, we would have to change how we operate. Getting a USFWS Special Use Permit for Baker was exceedingly difficult, and we had to live under many restrictions, but, grudgingly, we were allowed to set up camp on a narrow strip along the beach.

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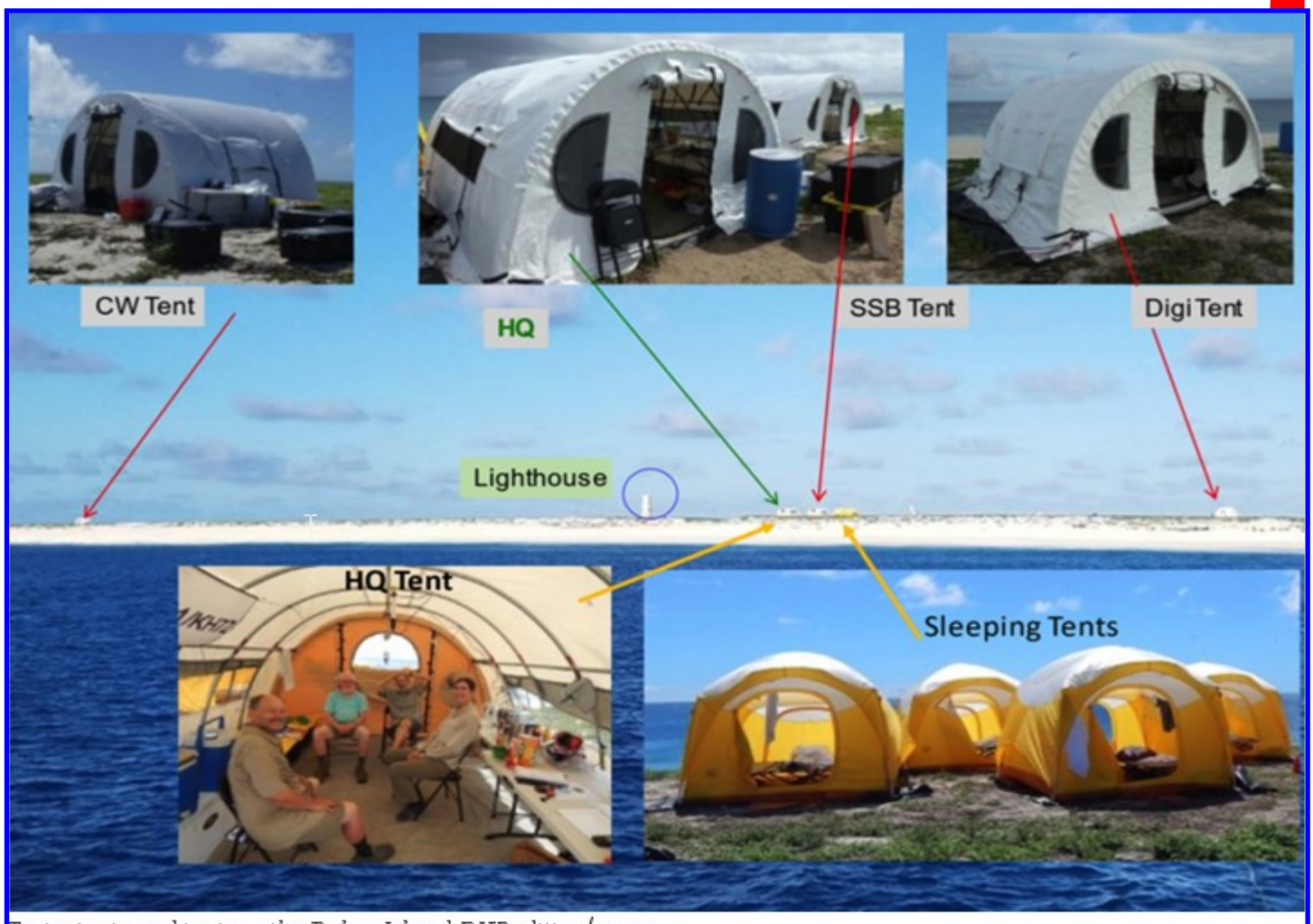

Tents, tents and tents — the Baker Island DXPedition camp.

An Introduction: Radio in a Box (cont.)

While there, we had a USFWS observer with us who watched our every move and during those two weeks, I tried to find out what it was that the FWS did not like about DXpeditions. It turned out that it was the camping that bothered them the most, not so much the antennas! In fact, our WFS observer carefully watched all our antennas for bird strikes. She was pleasantly surprised — and so were we — that during the entire 12-day operation there was only one bird (out of 7 million) that was seen to hit one of our antenna guys. It looks like birds get it.

The camping — with latrines, showers, sleeping and operating tents, trash and all the back-and-forth activity — was the main thing on our observer's mind, although another concern was for safety. She saw middle-aged-plus men getting in and out of a small boat in high surf and waves, as they ferried back and forth to the island, and they were working in the unrelenting equatorial sun building a miniature city. An accident could make the entire department and its leadership look bad, so it's easier for the USWFS to just say "No!"

A New Idea

As I was picking the FWS observer's brain, an idea came to mind. What if we could do away with the whole camping mess? Indeed, during Baker, because we were only allowed 11 operators on the island at any time, we were hoping to have some operators work from the boat. As it turned out, technical difficulties prevented that, but the idea was there: operate from the boat. In that way, there would be no camping which meant no tents, much simpler logistics, less time to set up, and so on. And, perhaps, an easier path to obtaining a permit.

Thus was born the Radio in a Box (RIB) — an entire station preassembled in a weather-tight enclosure — containing a Flex 6700 transceiver, a 1kW PA, power supplies, control and networking equipment. The generator is plugged in at one end and at the other end, the antenna. A high-speed IP radio link connects it to the boat where the operator would use a Flex Maestro console (or PC) to remotely operate the radio. A couple of people would go to the island on a daily basis to top off the generators with fuel and perform antenna maintenance if required.

Thus, it would put an end to camping, trampling upon the island and messing up the environment. Of course, there would still be antennas, but they could be of a new low-profile design that wouldn't bother the birds. Most importantly, there would be no people or pollution on the island, which are what the protection rules are mostly about.

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RIB on Water Cay, Bahamas. Note the external cooling radiators.

An Introduction: Radio in a Box (cont.)

Test Run

In a bold experiment, NCDXF has sponsored the development of RIBs to enable future DXpeditions to operate from places where camping is not allowed, and in November 2020 four of us — Michael Snow, KN4EEI; Gregg Marco, W6IZT; Hal Turley, W8HC, and myself, AA7JV — took four newly built RIBs to an uninhabited island in the Bahamas to test them in a simulated DXPedition. Using the call sign C6AGU and operating from the boat, the RIBs were used to make over 9,000 contacts during a 14-day period including the CQWW CW and ARRL 160 contests.

During this simulated DXPedition, we not only tested the RIBs, but also worked on minimizing the set-up time and optimizing the data link, network and antenna arrangement — all things that a real DXPedition using RIBs would have to deal with.

The RIB uses an IP network for the radio, monitoring and control. The 900 MHz IP radio bridge has 30 MBps of bandwidth. The DAQ is an analog/ digital data acquisition and control system and is controlled by software running on a PC (laptop) inside the RIB. The PC contains a VNC server and is accessed from the boat using a simple VNC viewer.

Multiple RIBs can be interconnected via a local Ethernet network and four such interconnected RIBs were tested at C6AGU, running concurrently, sharing a single 900 MHz link. The operation was smooth with no network congestion issues.

Users of Flex SDR radios know that operation via its Ethernet/IP connection is just like using a traditional radio, and at no time during our test on Wood Cay at C6AGU did we feel that we were operating a remote device. During both the CQWW and the ARRL 160M contests we were competitive, proving that you don't have to be on the island for good operating efficiency and station control. In fact, operating from the boat resulted in a more efficient (and comfortable) operation.

Another advantage for DXpeditions with limited time is the substantial reduction in set-up time. There is no infrastructure to be built and removed; food doesn't need to be ferried to the island and, apart from the daily generator refueling, people aren't being transported back and forth.

Power and fuel are major parts of the logistics and the expenses of a DXPedition. Because CW and SSB modes are "low" duty cycle modes with average power that is much less than the

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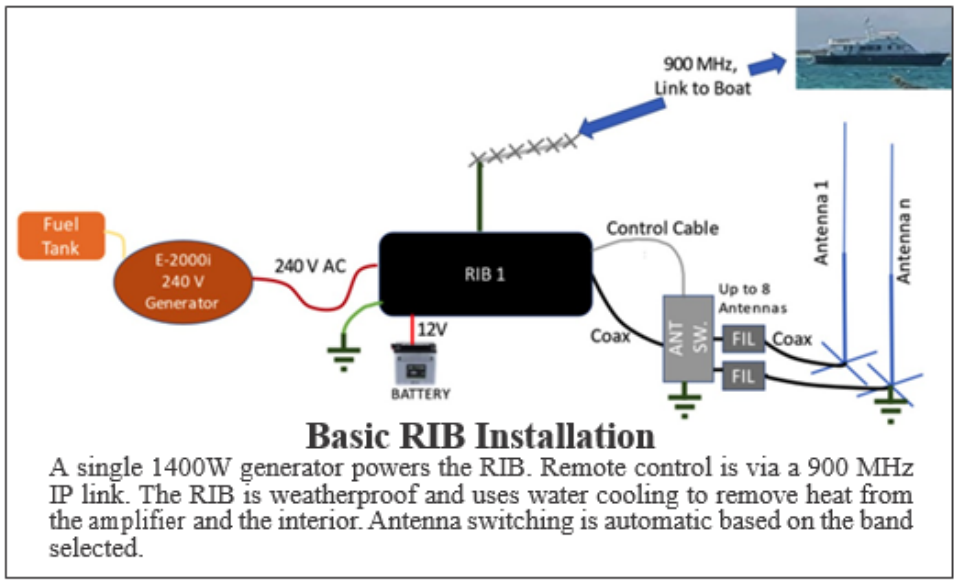
The RIB contains special features that allow the entire 1kW station to run on this efficient and low fuel consumption generator. Note the extended fuel tanks that allow up to 36 hours of operation on a single fill. Fewer visits to the island!

An Introduction: Radio in a Box (cont.)

that is much less than the peak power, the RIB contains a large ultra-capacitor bank to smooth out the power drawn by the RIB PA, allowing the use of an undersized generator. In the case of C6AGU, we had a single 1400W generator to power an entire station (1 RIB) with a 1kW output (maybe a bit more). Fuel efficiency was also improved (up to 30%), as the generator ran smoother, not having to rev up and down with each dot and dash.



Basic RIB Installation

A single 1400W generator powers the RIB. Remote control is via a 900 MHz IP link. The RIB is weatherproof and uses water cooling to remove heat from the amplifier and the interior. Antenna switching is automatic based on the band selected.

The Future

We are not done yet, but so far things are looking promising. We intend to do more testing to refine and speed up the set-up process, create an operating and troubleshooting manual, as well as generate more data on generator fuel consumption.

DXPeditions of the future will likely be different. Operating remotely using RIBs (or other solutions) will become the norm in sensitive areas. Although some of the adventure of going onto the island may be lost, more QSOs will be made and more rare locations will make it into more logs and enable DXpeditions that may never happen otherwise.

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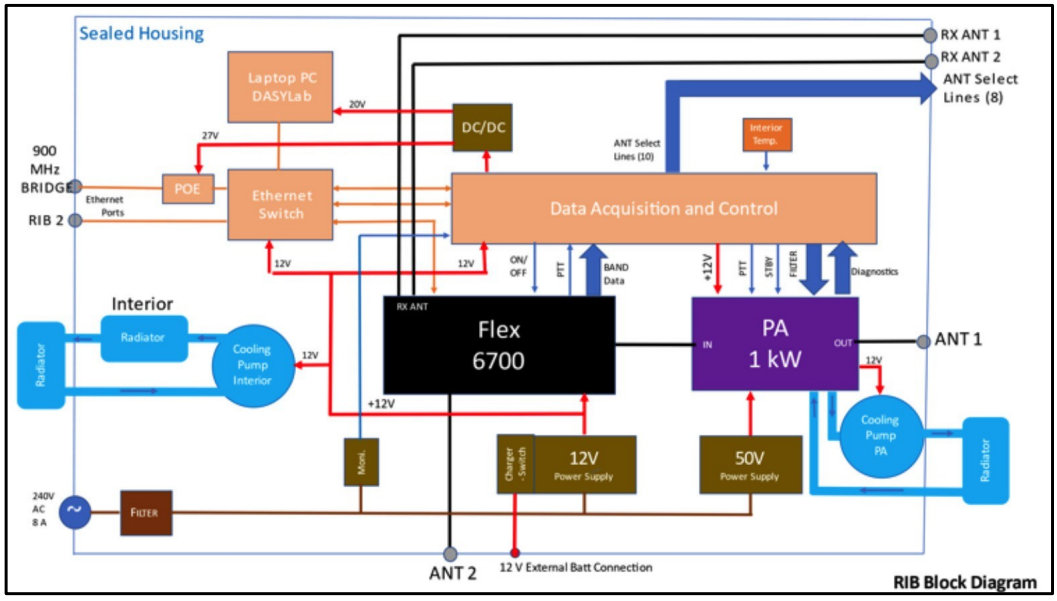

Interview with AA7BQ—Fred Lloyd

I have always wanted to get the details on QRZ.com, the founders, its success etc. So, I reached out to AA7BQ, Fred. He immediately responded with excellent answers to my questions. I thought this would be a great interview for our W8DXCC edition.

AJ8B: How did you first get interested in amateur radio?

AA7BQ: By 1988 I'd had enough of being denied the pleasure of enjoying ham radio and so I made a decision to commit. I sat down and forced myself to learn Morse code, which I had resisted all those years. I took my first test on January 7, 1989, in Cupertino, CA. On that day I passed the 5 WPM code (with my hands shaking), and the Novice(2), Technician (3A), and General (3B) written exams. My Technician license, N6UFT, was issued on January 31, 1989. When it arrived a few days later, I made my first QSO on 40 meters CW (by then, CW was a personal goal) and went on the air with a 220 MHZ mobile rig as well. There were lots of fine 220 Mhz repeaters in the Bay Area at the time, and every available channel had a repeater on it.

Three weeks later I upgraded to Advanced Class when I passed the 13 WPM code and written exams. I asked for a new callsign and was granted KJ6RK which luckily sounded good on CW. In April of that year, while attending the monthly Foothills College hamfest, I took the Extra Class exams on a dare. I read the written study guide while waiting in line and passed the written exam but then missed the code test by one character. Then, after brushing up some more on the code, I passed the 20 WPM test and earned my Extra class license on the 13th of May. It was a busy spring season for me and I was having a blast! I kept the KJ6RK callsign until I moved to Arizona later that year and was systematically issued AA7BQ. I love having a great non-vanity call sign!

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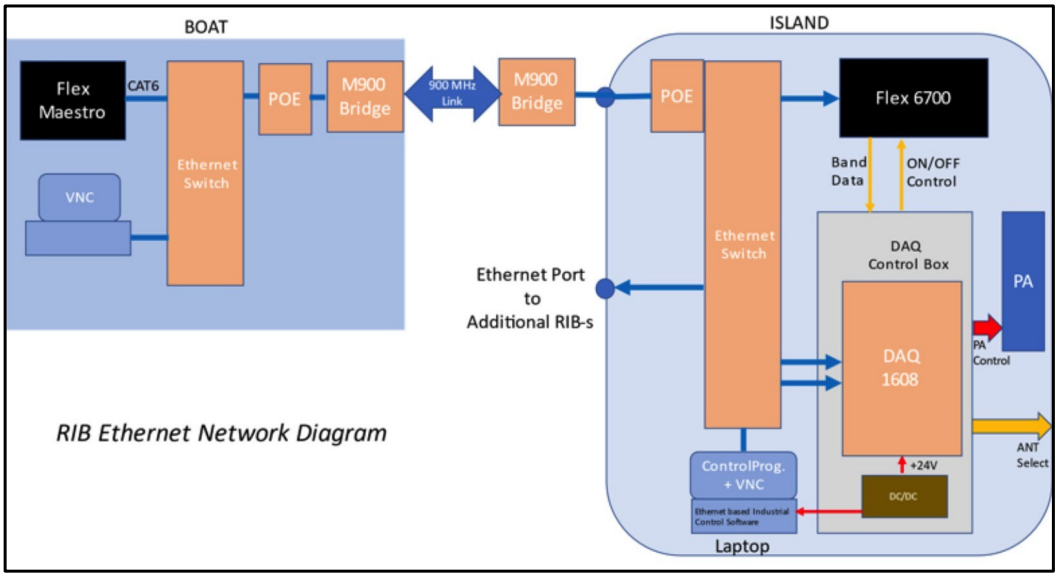
An Introduction: Radio in a Box (cont. from previous page)

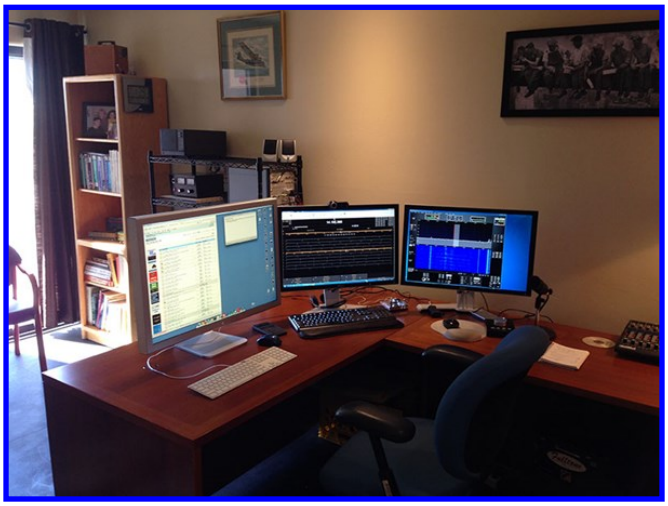


Interview with AA7BQ—Fred Lloyd (cont.)

AJ8B: Are you able to operate much?
AA7BQ: Not really. My current housing situation prohibits it, and I sold my RV. I'm hoping to go on the air for Field Day.

AJ8B: Do you have a favorite band or mode?
AA7BQ: Mostly HF digital modes, some 40M and 80M rag chew on rare occasions.

AJ8B: How did qrz.com come about?
AA7BQ: Back in 1992, I was a participant in an Internet newsgroup called rec.radio.amateur where I learned a great deal about the hobby from other hams around the world. There was no World Wide Web at the time, and the bulk of the Internet was mostly just email, newsgroups, and FTP downloads. A group of guys mentioned that one could buy the USA callsign database from the government for about $700, but it was a price that few were willing to pay. This got me to thinking, "what if someone bought a copy and then split it with enough people to recover the cost"? Well, I did exactly that and before I knew it I was making copies on digital tape and sending them out all over the country. We made about 100 copies of the data and sold them for $20 each, which covered all of our costs.



With my copy of the database, I started a dial-up bulletin board in the Phoenix, AZ area that featured call sign lookups. Each week I would spread the word with local hams on the weekly 2-meter swap net. Soon, I had about 100 regular users on the text-only dial-up system which was then called "The AA7BQ Callsign Database Server".

Six months later, it was time to get a refreshed copy of the data but by now I was tired of making tape copies. It was just more work than I wanted to do. At the time, CDROM's were just coming out and it seemed like a perfect distribution media. I contacted a popular shareware company called Walnut Creek CDROM and asked them if they had a spare 60Mb of space on one of their existing shareware titles and was surprised when they suggested that we go ahead and create an all-new Ham Radio CD. They agreed to pay for the production and pay me a sales royalty. Having never authored a commercial software product before, I enlisted the help of John, NJ7E, who designed the CDROM data format that would eventually become a legacy in the ham radio world. The software was written in C and ran under DOS as well as UNIX.

Next, having the software out of the way, I started looking for a suitable name for the project. While driving home from work one evening, it occurred to me that the Q-signal QRZ sounded good since it seemed to answer the question, "Who is calling me?". So we called the first CDROM "QRZ!" and thus began one of the most interesting and rewarding chapters of my life.

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Interview with AA7BQ—Fred Lloyd (cont.)

The new CD sold very well with the first 1000 copies disappearing almost overnight. Six months later, another FCC update was available and so started the six-month cycle of QRZ CDROM updates that lasted for 16 years. In total, there were 33 editions printed.

In 1993 I made friends with a local dial-up ISP and they agreed to let me move my land-line BBS into their server room so QRZ could be on a high speed (56kb) internet connection. Getting the QRZ.COM domain name wasn't hard. I wrote an email to internic.net and was immediately granted the domain name QRZ.COM in October of that year. At the time there were fewer than 25,000 registered hosts on the entire internet. I started a crash course in learning HTML using Mosaic, the world's first web browser, and designed a web lookup for the database. For those who are interested, Mosaic is the great grandfather of what we know as Firefox today.

The rest is history. We stopped making CDROM's in 2009 after selling more than 150,000 copies. Since 2009, CDROM drives have nearly disappeared from most computers, and everything is done online. As CDROM sales began to wither in the late 2000s, our internet traffic started to grow accordingly. Back in the 1990s, QRZ would send copies of the CDROM to NASA so that they could be taken aboard the MIR space station. Today, the International Space Station doesn't use our CDROM, because they have the internet just like everyone else. It goes without saying that they're using QRZ in space these days.

AJ8B: Is the current "product" what you envisioned?

AA7BQ: I'd have to say yes, but I would add that my vision wasn't that specific. I simply wanted to augment my hobby and provide a service to the ham community. I was happy when QRZ had 100 users, and that satisfaction continues to this day. Running QRZ has never seemed like a job because I was doing what I was most interested in. QRZ has grown beyond my expectations and continues to gain in popularity. I'm grateful to the community for their support which in turn provides the resources that keep us growing.

AJ8B: How many regular users do you support?

AA7BQ: We have over 850,000 registered users. At any one time, around 25% of those are active on the site.

Many people come and go. Some spend all day on the site. It's a vibrant mix of activity that provides something for everyone.

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Interview with AA7BQ—Fred Lloyd (cont.)

AJ8B: What have been some of the biggest challenges?

AA7BQ: A huge challenge is trying to adopt new things on the site. We're always weighing the utility of a potential new feature against the portion of our users who are resistant to change.

AJ8B: What feature is the "best kept secret"? (What all don't have enough time to explore and experiment)

AA7BQ: We encourage folks to try PicSafari - a scrolling, searchable list of over 2,000,000 ham radio photographs, cards, and ham ephemera. You can find it under the Database menu on the home page. It's at the bottom.

AJ8B: What kind of upgrades/features do you see in the near future that you are willing to share?

AA7BQ: We hope to transition to new forums software this year.

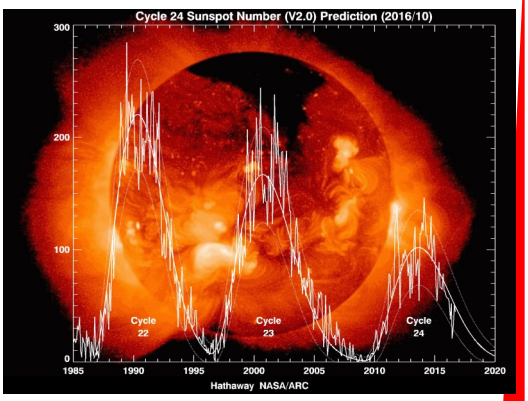
AJ8B: Thanks for taking the time to answer my questions. Is there anything you would like to share with us?

AA7BQ: Thanks to all who frequent QRZ and please consider becoming a subscribing member. This year we're letting folks know that all of the great new things that we've been providing have been mostly due to our subscribing members. Without them we'd not be able to provide such things as the Logbook, the Awards Program, or our 365 days a year support. Your subscriptions make the site possible and we especially thank every member who shows their support.

73, Fred Lloyd, AA7BQ

The FLUX is 65!

This story is reprinted with the permission of Paul, VE1DX. Paul has written many stories and edited many more in the style of Hugh Cassidy, WA6AUD. (SK) Hugh and his wife, Virginia, published the West Coast DX Bulletin from 1968 to 1979. I have used several of those stories before and really enjoyed them. Hope you like this selection.



We were sitting in the shack musing about the Great Days of DXing the other afternoon. The temperature outside was in the mid 90's and we were glad we had made the leap and acquired an air conditioner in the shack. It was a comfortable 70 degrees in the shack and we recalled how we had sat up half the night waiting for the VP8SSI boys on 14.195 just a few years ago. And how great it had been to work Peter 1st just a year or so later. Those were the Golden Days of DXing. Absolutely. And no one could argue with that.

We glanced out the window and saw one of the Local QRPers making his way up the hill. This was the same QRPer that had been by a lot recently . . . the lean hungry looking QRPer who thought too much. Had it not been so hot outside, we would have quietly slipped out the back door. However, the air conditioner was doing it's job just a bit too well so we decided to weather the storm. The QRPer came in and sat down, looked at us for a minute or two, then said, "Sure is nice and cool in here."

We nodded in agreement, but we were pretty sure the QRPer wasn't here to get cooled off. And we weren't far off the mark, either! "Do you know what the solar flux is?", he asked, "Do you know that it's been 65 for the last two days?" We had to admit that we didn't know the exact numbers. "Well, it probably is.", we replied, "Sunspot Louie has been reporting numbers between 68 and 75 or thereabouts for the past few months. This is the bottom of the cycle", we continued on, "and us DXers have to be patient. Louie says things are about to turn around and it's common knowledge the Palos Verdes Sundancers are hard at work. You shouldn't be too concerned."

The QRPer looked at us for a moment, then he replied, "Well, I wasn't at first, but I decided to do a bit of research. You see, it's not possible to have a solar flux of 65. I've been checking the libraries and reading all the research papers coming out of NASA and the Jet Propulsion Lab in Pasadena. Do you know what the solar flux is? Did you know that it's measured by the amount of 10.7 centimetre radiation that reaches ground level. And did you know that the solar flux is reported in solar flux units, and that one solar flux unit is equivalent to 10 raised to the minus 22nd watts squared per Hertz? Did you know that?"

Son of a Gun! We just stared at the QRPer for a few moments. Since we hadn't a clue where he was leading us, or what he was talking about, we simply nodded. "Well", he continued, "since it's the solar flux that causes the ionization at F2 layer heights that is critical for long haul HF DX transmissions, this is not good news. Not at all. Now, the problem is, sunspots are areas of enhanced radiation emissions.

(cont. on next page)

The FLUX is 65! (cont.)

With no sunspots, with none at all, the background radiation from the sun will produce a solar flux of 67 solar flux units. Follow?"

The QRPer had caught us off guard, for we'd drifted off thinking about how we'd caught the AH1A crew on 160-metres at greyline. We snapped back to attention and did a quick recovery. "Of course.", we replied, hoping there wasn't a test at the end of all this.

The QRPer ploughed on. "We presently have a sunspot count of zero . . . in other words, no sunspots. None. So, it follows that the solar flux should be 67, not 65. This leads me to conclude that there has been a fundamental change in the thermodynamics of the sun. We are on the verge of another Maunder Minimum. There's no doubt about it. Now, what are we going to do?"

We were stumbling for something to say, when the Old Timer came in and sat down. "Nice and cool in here", he said, "What's new?"

There are times when the unknowing can ask the right question at the right time! And this surely was one of them. We sat back and listened to the QRPer repeat the entire story to the Old Timer, ending with the same question: "What are we going to do?"

It wasn't long before the Old Timer began his answer. "That's 65 solar flux units, right?", he began and the QRPer nodded in agreement. "Well if we assume that during an entire solar cycle the flux varies from the mid sixties to over 200, it's safe to say that we have a variation in flux of at least 150, and during very active cycles, even more so. And while the solar cycle generally follows a sinusoidal pattern, it's safe to say one has to run the data through a high pass or median filtering algorithm to remove the high frequency components, right?" The QRPer shook his head in agreement. "Or more properly, although a bit more complicated, a Fourier transform would probably do a better job of identifying the noise and separating it from the true signal. And, mathematically speaking, one has to have at least seven readings before any statistically significant conclusions on a data set can be drawn, right?"

This time the QRPer was a little slower indicating his agreement. We noted the look of conviction he had earlier was slowly being replaced by growing confusion. "The way I see it", the Old Timer continued, "is that you should run your data through some processing software that applies the filters and transformations I just described. Then, take your smoothed data and calculate the standard deviation, discard the datum that fall outside the 95% confidence limit and do a time series plot of the processed data set."

We had absolutely no idea what was going on here and we had slowly inched our chair back so we were a bit further out of sight. We didn't want to be asked any opinions on any of this! The QRPer got up slowly, looked around a bit, and said, "I guess I better get started on that.", he said slowly and made his way out the door and slowly down the hill. Somehow we had the feeling his heart wasn't really into watching the solar flux anymore! We turned to the Old Timer and asked "What were you talking about?"

"No idea.", the Old Timer replied. "My grandson studies oceanography in college. He's always talking like that! Beats the heck out of me what it means, but he seems to like it. I memorized that part the last time he was over. Never know when it might come in handy."

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The 2020/2021 DXPedtion of the Year

The Southwest Ohio DX Association (SWODXA) is proud to announce that the 2021 DXPedition of the Year award goes to **VP8PJ**, South Orkney Island. The DXPedition team consisted of: Dave, K3EL and Les, W2LK (co-leaders); Gene, K5GS; Arliss, W7XU; Heye, DJ9RR; Laci, HA0NAR; Vadym, UT6UD; Walt, N6XG, Rob, N7QT; Steve, W1SRD; Mike, WA6O; Ken, NG2H; Hans-Peter, HB9BXE; and Alan, VK6CQ. Congratulations on a well-organized and executed DXpedition in a very challenging environment.

Each year the Southwest Ohio DX Association presents the DXPedition of the Year Award at the annual DX Dinner. Our goal is to recognize excellence in DXPedition planning and execution from Most Wanted entities. DXpeditions that completed from March 2020 through February 2021 are eligible for this year's award. Winners of the DXPedition of the Year award have overcome significant access, licensing and logistical challenges to deliver a large number of contacts to a broad swath of the global amateur community. They represent the pinnacle of DXPeditioning.

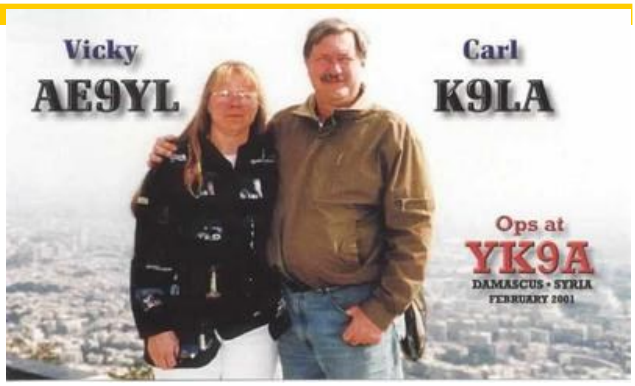
The FLUX is 65! (cont.)

Our head was starting to ache a bit from all this. "You see", the Old Timer said, "all that translates into two words . . . and they are: 'Who cares?'" All of a sudden we understood! "Yes, who cares if the flux is 65! Come hell or high water, the flux will be 100 next year. There will be DX for all, although for some more so. "Exactly", the Old Timer said, "and while it is a well known fact that QRPers who are lean and think too much can be dangerous, they are still QRPers! The Golden Days of DXing are near. There will be DX for the Deserving! Be a Believer . . . even when the flux has been 65 for two days straight! No matte what the flux is, you have to be in the chair, listening!"

Son of a Gun! The Old Timer was right. For sure. As Albert had so often said, "All things are relative, some more so." Who could argue with the fundamental laws of nature?

Space Weather Parameters and Propagation

By Carl Luetzelschwab, K9LA



This article is from Carl's website and is his current monthly article. Carl will be presenting at the W8DXCC convention as well as being a member of our roundtable. Reprinted with permission of Carl from www.k9la.us. Thanks Carl!

Caution

When talking about how space weather parameters affect HF propagation, we must realize that what we're trying to do is reduce very complicated solar, atmospheric and ionospheric processes into simple statements. This doesn't work all the time. For example, if today's 10.7 cm solar flux is greater than yesterday's 10.7 cm solar flux, does that mean that the higher bands (15m, 12m and 10m) will be better today

Unfortunately, the answer is "not necessarily."The reason is although solar radiation at extreme ultraviolet (EUV) and x-ray wavelengths instigates the ionization process (of which 10.7 cm solar flux is a proxy), geomagnetic field activity and events in the lower atmosphere coupling up to the ionosphere also come into play to determine the amount of ionization at any given point on Earth at any given time.

We have a decent understanding of solar radiation and geomagnetic field activity effects on the ionosphere, but we are lacking in our understanding of events in the lower atmosphere coupling up to the ionosphere. There's much research going on in this latter area. The result of this is that our propagation predictions are not daily predictions – they are monthly median predictions.

Where Do You Get Space Weather Data?

As you're probably aware, there are many sources of space weather data. Here are the ones that I usually mention in my presentations.

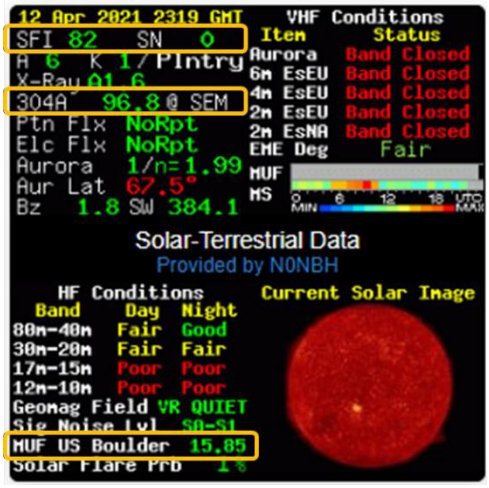
a) The NØNBH banner at https://www.qrz.com/ (it shows up in many other places, too)

b) The https://spaceweather.com/ website by Dr. Tony Philips

c) The Space Weather Prediction Center (SWPC) website at https://www.swpc.noaa.gov/

d) VE3EN's website at https://www.solarham.net/

e) WX6SWW videos by Dr. Tamitha Skov at https://www.spaceweatherwoman.com/



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Space Weather Parameters and Propagation (cont.)

SFI is the daily 10.7 cm solar flux, SN is the daily sunspot number and 304A is the daily EUV radiation at 304 Angstroms (304 Angstroms is equivalent to 30.4 nm). It's important to note that about 60% of the ionization in the F2 region is due to solar radiation between 26 and 34 nm. Thus the 304A parameter is a good direct indication of how well the F2 region could be ionized.

The table below shows the rough values of SFI, SN and 304A that are needed to open the indicated bands for worldwide propagation on a daily basis (not just for a day or two during the entire month).

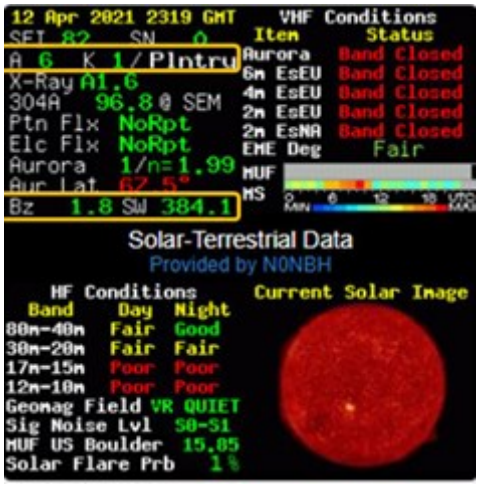
Note that the values are for many weeks. Ideally, they should be long-term smoothed values, but 'many weeks' is a reasonable compromise.

Now you have some ballpark values to assess which of the higher bands could be open on a daily basis. A final comment – the MUF US Boulder parameter is the maximum useable frequency (MUF) in MHz over the Boulder ionosonde assuming it is the midpoint of a 3000 km hop. It is not an assessment of what the ionosphere may be doing – it is an actual measurement of what the ionosphere is doing right now. And it takes into account what we're going to talk about next.

band	SFI for many weeks	SN for many weeks	EUV for many weeks
17m	80	30	105
15m	90	50	140
12m	100	65	160
10m	105	70	200
6m	145	140	300

Parameters That Could Degrade the F2 Region

Although the SFI, SN and 304A parameters indicate that the bands may be open, we have to know if there are any disturbances to propagation that may be degrading the F2 region in terms of the amount of ionization (the number of free electrons). The parameters that can help us are those that tell us if the Earth's magnetic field is active (disturbed). These are K, A, Bz and SW in the gold boxes in the image below.



The K index is a 3-hour parameter on a logarithmic scale (0-9). The A index is the daily average of the eight 3-hour K indices and is on a linear scale (0-400). The 'Plntry' annotation is short for 'planetary', indicating that the K and A indices are averages of multiple worldwide observatories. To indicate planetary, a subscript 'p' is appended to K and A – thus the planetary K and A indices are Kp and Ap to distinguish them from observations from a single observatory.

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Space Weather Parameters and Propagation (cont.)

Bz is the strength and magnitude of the interplanetary magnetic field (abbreviated IMF and roughly from -100 to +50 nT). The Bz component is perpendicular to the ecliptic – the plane in which the Earth rotates about the Sun. Thus, Bz is essentially the north-south component of the IMF, and Bz tells us how much the IMF is coupling into the Earth's magnetic field.

SW is the solar wind speed in km per second. The quiet time value is around 400 km per second, and it can increase to around 2000 km per second when a big Earth-directed coronal mass ejection (CME) or when an Earth-directed coronal hole (CH) high speed stream occurs.

The higher the K and A indices, the more degraded the F2 region of the ionosphere can be. The more negative the Bz component, the more degraded the F2 region can be. And the higher the SW parameter, the more degraded the F2 region can be. Here's a table of what we generally desire in terms of these parameters for an undisturbed F2 region.

parameter	what we desire
K	≤ 3
A	≤ 15
Bz	positive or small negative value
SW	not too much above 400

These four parameters can be considered to be bundled into the three categories of disturbances to propagation as defined by NOAA: geomagnetic storms (G), solar radiations storms (S) and radio blackouts (R). The scale for these three disturbances is from 1 (minor) to 5 (extreme). The details are at https://www.swpc.noaa.gov/noaa-scales-explanation. If you see any of the three at greater than 2 (at the top of the home page at https://www.swpc.noaa.gov/, for example), then you can be assured that the F2 region could be disturbed (lower MUFs) and there could be increased D region absorption in the polar cap (from energetic protons caused by a big M- or X - Class solar flare) and/or increased D region absorption on the daylight side of the Earth (from x- ray wavelength radiation caused by a big M- or X-Class solar flare).

Real-Time Assessment of the Ionosphere

All of these parameters (SFI, SN, 304A, K, A, Bz and SW) allow us to make an assessment of the ionosphere. But remember the caution at the beginning of this column. Sometimes interesting propagation can happen when we think propagation won't be good.

The 2018 California QSO Party was a great example of this. I didn't hear any W6s on 10 meters on Saturday. But the K index spiked up a bit Sunday and then there were many W6s on 10 meters. Looking at the Boulder ionosonde showed MUFs around 20 MHz until the K index spiked up on Sunday. Then the MUF went up to a bit higher than 30 MHz, allowing good propagation between W6 and the Midwest on 10 meters. So pay attention to when the K index initially spikes up a bit – if you're in the right place at the right time, good things could happen. There are also many observations of improved 160 meter propagation across the high latitudes when the K index spikes up a bit [note 2].

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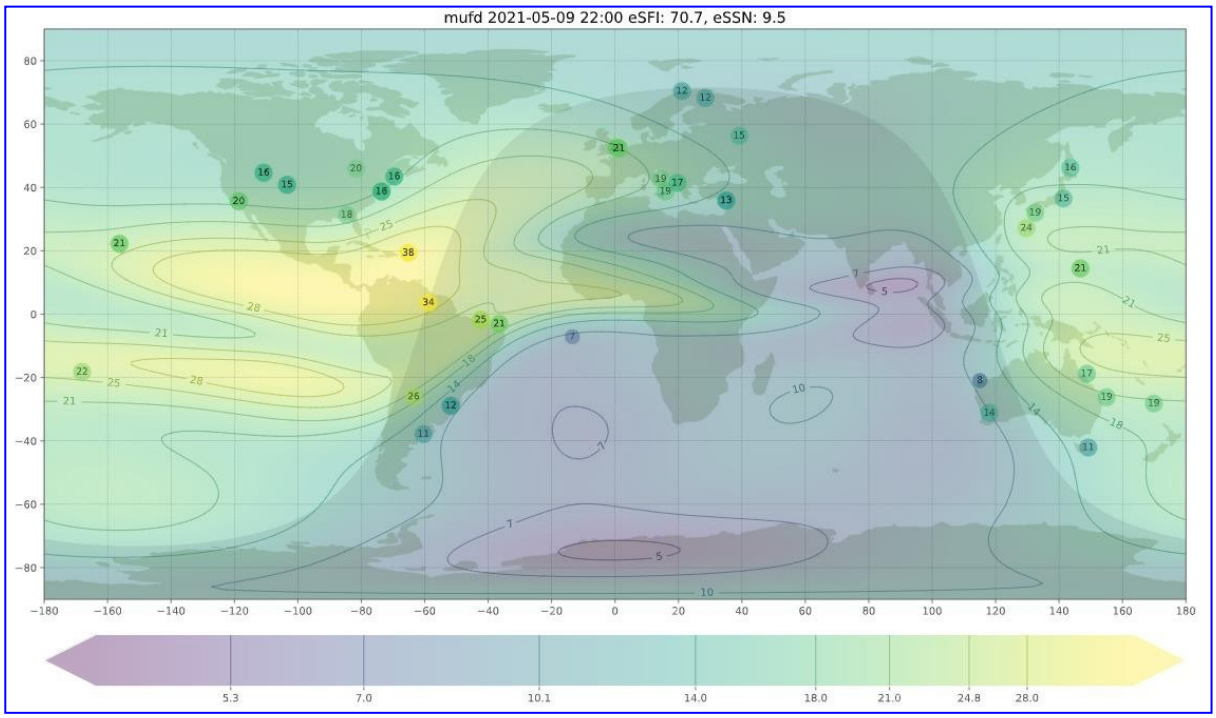
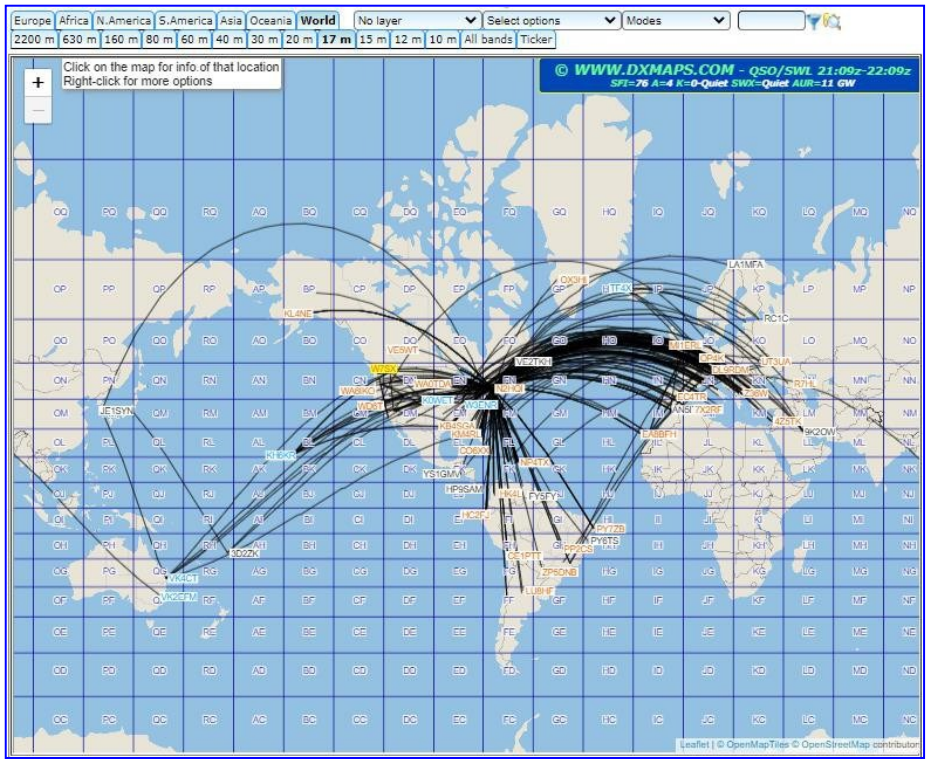
Space Weather Parameters and Propagation (cont.)



With so much information on the Internet, it's also possible to bypass all those parameters to get a decent picture of what the ionosphere is doing right now. With respect to the ionosphere, visit http://prop.kc2g.com/. It will show you worldwide MUFs for 3000 km paths. Here's a sample map at 2200 UTC on May 9. It uses ionosonde data (the numbers in circles) and adds contour lines. It's updated every 15 minutes. From this you should be able to estimate what frequencies may be propagating anywhere in the world. Remember this includes all the aforementioned parameters.



To find out who everyone else is working right now, visit dxmaps.com. Select your view (North America, Worldwide, etc.) and the band. Here's a sample display for 17 meters on May 9 between 2109 and 2209 UTC. As you can see, 17 meters was doing very well between North America and VK/ZL, South America and Europe.

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Space Weather Parameters and Propagation (cont.)

PSKreporter, WSPRnet, the Reverse Beacon Network (RBN), and the worldwide IARU/NCDXF beacons on 20m, 17m, 15m, 12m and 10m are similar applications that can tell you what's going on right now

Summary

I hope I've given you some good guidelines to assess propagation. Just remember the caution on page 1.

It's interesting to think about what the future holds. As mentioned in my September 2020 Monthly Feature titled "The Future of Propagation Predictions," perhaps someday we'll have all kinds of real-time propagation information displayed on our SDRs.

Notes:

1) Ionospheric absorption is also important, but there are no regular measurements of the D region (where most absorption occurs). So there isn't a parameter that we can monitor. We have riometers (relative ionospheric opacity meters) that measure galactic noise as it passes through the ionosphere, but translating those measurements to absorption is tough. And the D-RAP (D Region Absorption Predictions) measurements (https://ww.swpc.noaa.gov/products/d-region-absorption-predictions-d-rap) only tell us about D region absorption in the polar cap or on the daylight side of the Earth when there is a big (M-Class or X-Class) solar flare.

2) And don't forget that the Sun hiccups every once in a while, which might give us great propagation on the higher HF bands. Late last year was a good example. The EUV spiked up significantly, which resulted in great propagation for the CQ WW DX PH Contest in October, the CQ WW DX CW Contest in November and even the ARRL 10 Meter Contest in December. Unfortunately the EUV settled back down to solar minimum levels in early 2021. But it was a good look into the future when Cycle 25 gets going in earnest.

Mark Your Calendars for W4DXCC by SEDCO

DX and Contest Convention, September 24-25, 2021

Mark Your Calendars!

Cincinnati Hamfest℠

The Premier Hamfest of Greater Cincinnati

Saturday, August 28th, 2021

"Shake off those COVID Blues"

Raffles

Yaesu FTM-400XDR

BaoFeng BF-R3 Tri-Band

Need Not Be Present to Win!

Details at www.cincinnatihamfest.org

SouthWest Ohio DX Association (SWODXA)
DX Donation Policy

The mission of SWODXA is to support DXing and major DXpeditions by providing funding. A funding request from the organizers of a planned DXPedition should be directed to the DX committee by filling out an online funding request.
(https://www.swodxa.org/dx-grant-application/)

The DX Grant committee will determine how well the DXPedition plans meet key considerations (see below). If the DX Grant committee recommends supporting the DXPedition in question, a recommended funding amount is determined based on the criteria below. The chairman of the committee will make a recommendation at the general meeting on the donation.

Factors Affecting a DXPedition Funding Request Approval

DXPedition destination	Website with logos of club sponsors
Ranking on the Clublog Most Wanted Survey	QSLs with logos of club sponsors
Online logs and pilot stations	Logistics and transportation costs
Number of operators and their credentials	Number of stations on the air
LoTW log submissions	Bands, modes and duration of operation

H40GC	H44GC	ZL9HR	XX9D	HK0NA	FT4TA
KH1/KH7Z	EP2A	FT5ZM	C21GC	VK9WA	NH8S
K4M	CY9C	VK9MA	PT0S	FT4JA	YJ0X
6O6O	VP6D	TO4E	XR0ZR	VP8STI	VP8SGI
W1AW/KH8	K1N	3D2C	VK0EK	S21ZBB	E30FB
ST0RY	TI9/3Z9DX	VK9MT	K5P	9U4M	TX3X
VU7AB	3Y0Z	3C0L	TX7EU	CE0Z	3C1L
TI9A	3D2CR	3B7A	K9W	VU7RI	6O7O
C21WW	CE0Z	T30GC	T30L	D68CCC	W8KKF/WP5
K5D		T33A		CY9C	

SouthWest Ohio DX Association (SWODXA)
Club Fact Sheet

Who We Are: *SWODXA* is comprised of active DX'ers and contesters with a deep passion for all aspects of Amateur Radio. We welcome everyone who is interested in joining our club to please contact us. *SWODXA* members are active in all facets of DX and Contesting. We also travel to, and fund various DXpeditions all over the world. *SWODXA* sponsors the annual DX Dinner held on the Friday evening of Hamvention weekend in Dayton, Ohio. In addition, *SWODXA* members moderate the Hamvention DX Forum. *SWODXA* is proud sponsor of the prestigious *DXPedition of the Year Award*.

DX Donation Policy: The policy supports major DXPeditions that meet our requirements for financial sponsorship. Details are available on the website at: https://www.swodxa.org/dxgrant-application/ and elsewhere in this newsletter

Club History: The Southwest Ohio DX Association (SWODXA) is one of the country's premier amateur radio clubs. Though loosely formed in mid-1977, the club had its first formal organizational meeting in August of 1981 where Frank Schwob, W8OK (sk), was elected our first President. While organized primarily as a DX club, SWODXA members are active in all aspects of our hobby.

Requirements for Membership: We welcome all hams who have an interest in DXing. It doesn't matter whether you're a newcomer, or an old-timer to DXing; everyone is welcome!
Visit http://swodxa.org/member.htm

Meetings: The club meets on the second Thursday or each month alternating locations between at Marions Piazza on Kingsridge Dr. in Dayton, OH or Marions Piazza in West Chester. (Check the website) Members gather early in the private room for dinner and then a short business agenda at 6:30 PM, followed by a program. If you enjoy a night out on the town with friends, you'll enjoy this get together. Meeting attendance is NOT a requirement for membership.

Club Officers: Four presiding officers and the past president (or past VP) make up the Board of Directors The current roster of officers are: President Tom Inglin, NR8Z; Vice President Kevin Jones, W8KJ; Secretary Mindi Jones, KC8CKW, and Treasurer Mike Suhar, W8RKO.

Website: We maintain websites at www.swodxa.org and www.swodxaevents.org managed by Bill, AJ8B. These sites provide information about a variety of subjects related to the club and DXing.