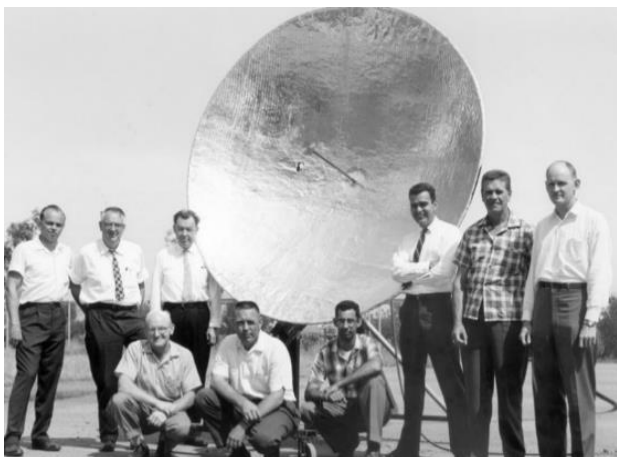


432 AND ABOVE EME NEWS AUGUST 2020 VOL 49 #8

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CONDITIONS: As almost everybody knows, on 18/19 July was held the biggest CW 23 cm Contest of the season - **VK3UM Memorial/DUBUS/REF CW EME Contest**. Activity was high, weather (WX) in Europe and much of the World excellent. The only negative was the presence of the COVID-19 virus that caused the cancellation of dxpeditions and discouraged group operation. Although the scores are not what they were ten years ago, they were generally up over last year. The top reported score is from OK1CA with 78x64. OK2DL also had 78 QSOs but fewer multipliers (mults). There was actually 81 QSOs reported last year but worked outside of the contest. It is nice to see the increasing number of EME stations on 10 and 24 GHz bands. The microwave activity weekend (MVAW) for 25/26 July was on Saturday for 3 cm and Sunday for 13 cm. It attracted considerable 10 GHz activity, but could have had a better turnout for 2.3 GHz. Coming up on 15/16 Aug is the next MVAW with 9 cm on Saturday and 6 cm on Sunday. The Aug 70 cm CW activity time period (ATP) is on 16 Aug 0400-0600 and 1200-1400. There are no dxpeditions to report, but in Sept is the **ARRL's Microwave EME Contest weekend (13 cm & Up) on 12/13 Sept, and the ARI's Autumn Trophy EME Contest on 19/20 Sept**.

It should be noted that on 17 July, we celebrated **60th anniversary** of the first EME QSO, which was on 23 cm between W1BU (the Rhododendron Swamp VHF Society headed by W1FZJ) and W6HB (the Eimac Radio Club). More info is at the end of this NL.



Eimac end of 1st EME QSO by W6UOV, W6HB, W6UF, W6RXW, W6MUC, K6GJF, W6KEV, W6IVZ & K6GSO

REPORTS (Many from 1296 CW EME Contest & MVAW):

CT1BYM: Miguel miguel.pelicano@gmail.com reports about his participation in the **VK3UM Memorial/DUBUS 23 cm CW Contest** -- It was a weekend of great challenge for me. I am very inexperienced using CW; less than 6 months learning and now 9 QSOs in the contest! I would have been happy with just one QSO. I still need a lot of CW practice, but this is just the beginning. Thank you for all your patience. I worked OZ4MM, OK1KIR, OK1CA, UA3PTW, I1NDP, OK2DL, OH2DG, G4CCH and DG5CST. The station here consisted of my 3 m dish, 150 W SSPA, 0.4 dB NF LNA and IC-9700 with GPSDO.

DJ3JJ: Andreas dj3jj@gmx.net was **QRV** in the **VK3UM/DUBUS Contest** – I used my 2.5 m dish and 250 W instead of 500 W. Before the contest I lost one of my 2 SSPA modules due to a cooling failure.



DJ3JJ's 2.5 m dish (f/d 0.36) with RA3AQ 23 cm feed

Even with 3 dB less power, I worked on Saturday at 0414 OK1CA (559/549), 0434 DG5CST (569/559) - very strong, 0446 OK2DL (569/559), 0454 SP6JLW (559/539), 0511 ES5PC (559/549), 0520 UA3PTW (569/569) - arm chair copy, 0521 OK1KIR (569/559) for an initial (#), 0538 OH2DG (569/449), 0549 DL3EBJ (559/559), 0610 IZ1BPN (559/519) – Moon at max el limit, 1243 SP7DCS (O/O) (#), and 1339 KL6M (O/O), and on Sunday at 0532 OH2DG (569/549) DUP, 0559 I1NDP (569/559), 0613 OK1CS

(559/449) (#), 0707 SP2HMR (549/539) (#), 1607 OZ4MM (569/539) - one of the loudest, 1738 DF3RU (O/O), 0738 G4CCH (559/549) – just above my el limit, 1427 K2UYH (O/O) – finally after many tries in past (#) and 1518 LZ2US (559/559). I ended with a score of 20x19 for 38,000 points, which is my best result ever. I CWNR DL7UDA and had QRZs from WA6PY, F6CGJ, IK3MAC and SM5DGX. Big fun was my QSO with OH2DG. Eino called at the end of my QSO with OK1KIR. He sent dots and moved up in freq for an easy QSO. Most of the weekend I had degraded RX performance because the Sun was too close (< 6.5 degs) to the Moon for my small dish. Sunday evening when there was greater separation, I had significantly better RX performance.

F5KUG: Jean-Louis (F6ABX) f6abx@wanadoo.fr sends news his club's activity in the DUBUS Contest -- Despite the recent installation of a pancake choke ring on our septum feed, our results were not as good as last year. We made 30 QSOs versus 42 in 2019. We identified 3 reasons for the > than 25% drop: 1) The absence of G3LTF, SM4IVE, OE5JFL, OK1DFC from our log; 2) the Moon was very close to the Sun, which increased the noise; and 3) the hot temperature here, which affected our preamp and the SSPA – we could see the loss in output power. Also, maybe the operator – Hi? We QSO'd OK2DL, SP6JLW, DG5CST for an initial (#), ES5PC, OH2DG, OK1CA, OK1KIR, IZ1BPN, DF3RU, UA3PTW, G4CCH, DL3EBJ, OZ4MM, OK1CS, SP7DCS, I1NDP, LZ2US, IK3MAC (#), OK2ULQ, K2UYH, WB2BYP (#), WA6PY, KL6M, IK5VLS, OH1LRY, 9A5AA, SP2HMR, ON5GS, F6CGJ and SM5DGX (#). Someone answered my CQ, but I could not copy the call. I know now that it was G3LTF. I answered many of WA9FWD's CQs, but only received QRZs from John.

F6ETI: Philippe f6eti@wanadoo.fr contributes his 1296 VK3UM/REF/DUBUS Contest report -- During two Moon passes, I worked 35 stations x 33 mults (including 8 initials), all on random CW. Of these 19 were in response to my CQs. QSO'd with OK1CS, OK2DL, SP6JLW, DL3EBJ, OK1CA, G4CCH, UA3PTW, ES5PC, DF3RU, OK1KIR, IZ1BPN, OH2DG, SP6JLW (DUP), SM6FHZ for initial #81, SM2CEW, SM4GGC, IK3COJ, LZ2US, DG5CST #82, I1NDP, OZ4MM, VE6TA, KL6M, WB2BYP #83, K2UYH, OH2DG (DUP), OK1KKD #84, OZ4MM DUP, OH1LRY #85, SP7DCS, IK5VLS, WA6PY, SP2HMR #86, SM5DGX #87 and F6CGJ #88 – last worked 18 years ago. I had partials with JH1KRC and PA3DZL.



F6ETI EME during the recent 1296 contest

My station consists of a 3 m dish with 300 W @ feed from a DF9IC SSPA, 0.3 dB NF LNA, 144/1296 SGLAB TVTR and IC-202. See https://youtu.be/tJexpX9O_f0 to hear some of our contest QSOs. Hear a memorable VK3UM QSO at https://www.youtube.com/watch?v=xg9jw_HGyfg. (Note: after the third failure of my DF9IC 1296 SSPA due to the output connector, I was able to finally repair it. See info at <https://photos.app.goo.gl/3CabeobBeUNHvC4BA> and <https://photos.app.goo.gl/ARUU5LsYdCJbTWMc6>).

FR5DN: Phil phil.m974@gmail.com had limited time to operate in VK3UM/DUBUS 1296 CW EME Contest – I operate only 1.5 h on Saturday and just a bit more than 2 h on Sunday. Conditions were very good on Saturday morning with very nice reports. We are in winter and I had to park the dish in the bird bath position due to high wind from time to time. The WX was very bad. Being in the southern hemisphere, the high Moon declination also limited my window. Never the less, I was able to QSO on Saturday OH2DG, OK2DL, SP6JLW, OK1CA, UA3PTW, DG5CST, DL3EBJ, ES5PC, IZ1BPN and OK1KIR, and on Sunday OZ4MM, LZ2US, I1NDP, G4CCH, OK1CS, DF3RU, SP7DCS, SM6FHZ, G3LTF, IK3MAC and OH1LRY for a total of 21x19. Partialis were nearly completed with OK1KKD and IK3COJ. Many others were heard. I was very happy to work SM6FHZ to give him a new country and continent, and WAC! My power was lower than usual; possibly due to a problem with my transverter. I had only about 150 W to my 3.6 m dish. I need to repair my CW audio configuration; as I had to operate without my audio filter from my PC due to a bad connection. All in all, it was a very fun time on the Moon!



FR5DN's 3.6 m dish

G3LTF: Peter's g3lft@btinternet.com EME report for June/July – I was not very active during June; but on worked on 23 cm using CW on 24 June OE3JPC for initial #494 with a great signal from his 2 yagis, and on 26 June G4CCH. My next activity was also on 1296, on 17 July, the evening before the contest, when I managed to blow up the PA PSU. I had no replacement components (poor planning) and so had to operate the DUBUS Contest with just the driver, which meant 30 W at the feed rather than 350 W -

(think of a 3 m dish with 120 W). Never the less, I worked 31 stations x 29 mults with some interesting results. I got 4 replies to my CQs and I worked 5 stations with 2.4 - 3.5 m dishes, the smallest was Dragan, 9A5AA with his 2.4 m offset dish. The best repliers, fewest QRZs, were the old timers who had come up through 144 and/or 432 CW. Worked were UA3PTW, OK1KIR, OK1CA, OZ4MM, OK2DL, I1NDP, DL3EBJ, SM6FHZ, SM2CEW, SP6JLW, DG5CST, OH2DG, ES5PC, DF3RU, G4CCH, OK1CS, WB2BYP, IK3MAC #495, K2UYH, WA6PY, SP2HMR, SP7DCS, VE6TA, KL6M, FR5DN, ON5GS, 9A5AA, LZ2US, F6CGJ, SM5DGX and WA9FWD. Called, but unfortunately could not get replies with my callsign were heard from OH1LRY, OK1KKD, F5KUG, UA4AAD and VA7MM. Thanks for trying. I heard CT1BYM, UA9FAD, SM6PGP, IK3GHY, DJ3JJ, IK3COJ, OK1YK, ES3RF, G4RGK, G4YTL, OK2ULQ, DF2GB, F6ETI, N4PZ, PA2DW, N5BF, SM4GGC, NQ7B, DL7UDA, AA4MD, OK1DFC, IK5VLS, JA6AHB, F5IGK, UA3TCF, K8ZR and RA4HL. I tried a few times the technique of sending my callsign as GGGG 3333 LLLL TTTT FFFF and on two occasions I think that worked and enabled the callsign to be copied. Activity seemed pretty high especially in the EU-NA window with sometimes 20 traces on the SDR. On 26 July I was on 13 cm for the MVAW. The declination was low and I was getting some tree noise at times, but I worked all on CW OK1KIR, SM3BYA, F2CT, SM2CEW, DL4DTU for initial #150, G4CCH and IK3COJ. I could just hear 4X1AJ on CW, but not well enough to QSO. I am still working on the 23 cm PA and PSU with some changes that will improve its resilience and should be back to the normal power soon. I am looking forward to the 9/6 cm MVAW with its good Moon conditions on 15/16 Aug.

G4RGK: Dave zen70432@zen.co.uk was active in the [VK3UM Memorial Contest](#) – I found conditions and activity quite good, and worked on CW UA3PTW, ES5PC, OK1CA, DG5CST, IK3MAC for an initial (#), DF3RU, UA4AAV (#), OH2DG, SP6JLW, G4CCH, OK1KIR, I1NDP, WB2BYP, OZ4MM, OK2DL, KL6M (#), DL3EBJ, SP2HMR (#), SM2CEW, OH1LRY, SP7DCS, OK1CS and K2UYH for a total of 21x19. CWNR were OK1DFC – nearly got my call, and WA9FWD - called for long time with no response. I have to find way to fix my Moon window; the surrounding trees have grown over the years, and I now have a very small area where I have a clear shot at the Moon.

JH1KRC: Mike jh1krc@syd.odn.ne.jp reports on the [VK3UM Memorial/DUBUS Contest](#) -- During the contest on 23 cm CW, I worked 26 stations including 4 initials in the first NA/SA window and the two EU/AF windows. Condx for NA, (I cut several trees in front), seemed to be very good, while my EU window seemed a little noisy (+1 dB) even though I had cut down hundreds of trees that were blocking my Moon window. Initial QSOs were with DG5CST #142, VK2JDS #143, IK3MAC #144 and OH1LRY #145. I CWNR NB7Q. BTW the hex screws (see last NL) that I needed are already in my hands. I found a US company who had them, but that did not want to sell to me directly. Fortunately, KL6M was able to buy them for me. A BIG thanks to Mike!

K8ZR: Tony temanuele@ebulent.com was back on 1296 in July after a long absence – I was pleased to be active during the 23 cm DUBUS CW Contest, if only on Sunday. It was fun! I worked OK1CA, OZ4MM, KL6M, UA3PTW for an initial (#) and OK2DL. I heard plenty of stations including G4CCH, K2UYH, N4PZ, WA6PY, WA9FWD, LZ2US, I1NDP, OK1KIR, DG5CST and ES5PC that I remember. I tried with SP6JLW. They were very patient. We tried for more than 20 minutes, but did not complete as they ran out of moon. I plan to be QRV for the ARRL EME Contest weekends.

KL6M: Mike melum@alaska.net did well in the [VK3UM/DUBUS Contest on 1296](#) -- I ended up with 64 QSOs and 10 new ones. Two better than last year. Interestingly there were only 29 repeats from last year. Where were all the other 33 no shows? Maybe I just missed them. I always have the most fun with the weak ones. G3LTF apparently blew his amp and was only running 30 W, but had a good signal here. I also worked OM4AX for a new one with his 3 m dish and 50 W, which was more of a challenge. Another interesting QSO was K8ZR. He was kind of weak, but the funny thing is that he was over 1 kHz below me with WA6PY calling CQ between us! Tony was on the other side of Paul, yet somehow, I found him calling me. Thanks to Spectravue, I actually visually decoded his CW and realized he was calling me.

KNOWS: Carl carlhasbargen@q.com has not had much luck with WX this year -- I had two weekends in a row off from work in July; and my plan was to spend them up north at my EME QTH. The first on 23 cm during the [DUBUS Memorial Contest weekend](#), and then the second with 23 cm under my belt, trying 13 cm again during the MVAW. I drove to my dish site on 17 July (Friday) and set up my gear in 95 deg heat, but the humidity made it feel like 105 degs. I took it real slow and drank lots of fluids and rested frequently. Unfortunately, I discovered my Signal Link USB audio box was not working and I did not have a substitute. Without the interface, I was going to simply have to try to be serious about CW the next day. I crawled into my cot to get some sleep with my alarm clock set for 0330 LT. The expected evening thunder storms rolled in. There was torrential rain, lightning and thunder all night. The storms were supposed to stop by 0230 LT, but they were still going strong when my alarm went off. When I went out in the rain, I was horrified to find my equipment was flooded. There was 3-4" of water on the ground. I have not seen this much water before. Submerged were the coaxial cables with their N connectors, the relay and PTT cables and connectors, the 110 volt outlet, and the power supply plug and the power supplies for my laptops. I drained the water, took everything apart and packed it up to head home. I then noticed a earlier text message from my wife saying to come home because 80 mile per hour winds and tornados were headed my way. Since my return home, I have dried things out, and bought new power supplies and another Signal Link interface. However, I will NOT be heading north for the 13 cm day tomorrow because we are in the middle of more lightning storms - basically a repeat of last weekend! I hope

the WX will be more cooperative for the fall EME contest weekends.

LA3EQ: Jan j-lustru@online.no writes on his 1296 DUBUS 23 cm weekend – I found good condx and lots of CW activity during the contest. My station is a 2.3 m dish with a 240 W SSPA and a DDK LNA to a TS2000X. I intend to submit a check log. I worked on 18 July OK1CA, OK2DL, DG5CST, OK1KIR, I1NDP, UA3PTW, OZ4MM and SP6JLW, and 19 July OH2DG for a total of 9x8.

N5BF: Courtney's courtney.duncan.n5bf@gmail.com 23 cm EME Report for June and July -- Since my last report, I worked two new mixed initials using JT65C with KD5FZX (15DB/9DB) #188* and G4DDK (22DB/14DB) #189*, who produced my LNAs. I decided to have a relaxed run at the 23 cm DUBUS/VK3UM Memorial event and still did quite well. My preliminary result is 18 QSOs with 17 mults and new initials with WB2BYP (569/559) #190*, IK3MAC (569/529) #191* and OH2DG (579/449) #192*. Immediately after the contest on Sunday afternoon, the dish came down to be extended from 3 to 3.8 m, and to add an improved feed system to allow "field interchangeability". This activity is expected to take about a month. I just received a QSL from OH2DG showing that he did something very similar when upgrading from 3 to 5 m!

OK1CA: Franta fr.strihavka@seznam.cz sends his July EME report -- I prepared my setup on Friday before DUBUS Contest on 23 cm. During the tests, I measured my Sun noise at 20.4 dB (SFÚ 68.7), Moon noise at 0.8 dB and Cassiopeia A at 1.9 dB. I started the contest at my moonrise at Saturday and was QRV only half of the Saturday part. I worked 54 QSOs. I started a little later on Sunday, but I was QRV again until my sunset. My last QSO was at 10° el. My score was 78 QSO and 64 mults. Initials were with UA9FAD, DK5AI, F5IGK, IK3MAC, AA4MD, SM5DGX, CT1BYM, IK3GHY and OM4XA to bring me to #375. I was OM4XA's first EME CW QSO. Fero had a nice signal from his 50 W and a 3 m dish. The signals on Sunday seemed better than on Saturday. I was lucky that my QTH was passed by storms that swept through the Czech Republic.

OK1DFC: Zdenek ok1dfc@seznam.cz reports on the DUBUS/REF CW Contest -- I was QRV mainly on Sunday. Saturday I was busy with my grandsons - celebrating a birthday is a very important thing :-). In the contest, I worked OK2DL, DG5CST, OH2DG, OK1CS, OK1KIR, JA6AHB, DL3EBJ, DF3RU, IK3MAC, UA3PTW, SM6FHZ, SP6JLW, IK3COJ, OK1CA, OK1KKD, G4CCH, ES5PC, OZ4MM, KL6M, OH1LRY, SP2HMR, LZ2US, SM4GGC, SP7DCS, SM2CEW, I1NDP, WA9FWD, ON5GS, K2UYH, VE6TA, WA6PY and N4PZ for a total of 32x28. I also QSO'd out of the contest LU1HKO and VE3KRP using JT65C for digital initials. This year I managed to participate in the 1.25, 3, 6, 9 and 23 cm weekends. I missed 13 and 70 cm (for which I do not at present have a suitable dish). I was running a 2.4 m offset dish, G4DDK VLNA and 1 kW SSPA in the 23 cm contest. [Zdenek also continued his work toward 47 GHz EME, reported on in the July NL. See more at http://www.ok1dfc.com/eme/47ghz/47_ghz_page.htm].

OK1KIR: Vlada vlada.masek@volny.cz and Tonda report on their June/July EME results -- On 23 cm, we worked using JT65C on 20 June GM0PJD, LZ4OC, GM4PMK, AA4MD, G7TZZ for digital initial {#373}, VE6TA {#374} and KD5FZX {#375}, around 1600 R1NW decoded us with a 1 x 50 el (24DB) yagi; and on 23 June LU1HKO {#376} in FF field. In the 23 cm VK3UM Memorial EME Contest (part of DUBUS Contest) we contacted using CW on Saturday (18 July) UA3PTW, OK1CA, OK2DL, SP2HMR, SP7DCS, VK3NX, VK5MC, JA4LJB, UA9FAD for initial #463, VK4AFL, SP6JLW, DL3EBJ, UA3TCF, DF3RU, OH2DG, F5KUG, DK5AI #464, DK3WG, IZ1BPN, DJ3JJ, IK3MAC #465, JH1KRC, OK2PE #466, JA6AHB, ES5PC, OK1DFC, FR5DN, F6ETI, OK1CS, G3LTF, IK3COJ, SM4GGC, RA4HL, PA3DZL, 9A5AA, I1NDP, CT1BYM #467, OK1KKD, UA4AAV, OK2ULQ, IW3HVB #468, SM2CEW, IK3MAC DUP, LZ2US, DL7UDA, LA3EQ, DG5CST, RA2FGG, G4RGK, WA9FWD, WK9P, IK5VLS, OH1RLY, WA6PY, KL6M, N5BF, VE6BGT, SV1CAL, VE6TA, NP4Z, K2UYH, WB2BYP, G4CCH, OZ4MM, PA2DW, NQ7B #469, VA7MM and AA4MD (67 QSOs); and on Sunday SM5DGX, JA8ERE, OK1YK, DF2GB, OM4XA # 470 and new DXCC, ES3RF, F5IGK #471 and ON5GS (8 more) for a contest total of 75x64. Off Contest we worked using JT65C on Saturday at 1227 CX2SC {#377}. During the MVAW there was good activity on 3 cm. On 25 July using CW we worked at 1159 UA4AAV (559/569), 1219 HB9DUK (O/449) for initial #137, 1512 SP6JLW (589/579) and 1557 G4NNS (569/579). Using QRA64D we QSO'd at 1002 ZL3RC (20DB/18DB), 1238 UA3TCF (19DB/12DB), 1342 F5IGK (11DB/9DB) {#211}, 1354 DF1SR (18DB/9DB), 1430 S57NML (15DB/13DB) for digital initial {#212}, 1442 F6BKB (11DB/9DB), 1503 the time of highest Doppler change and spreading when the Moon was passing zenith using JT4F with SM6CKU (15DB/16DB), 1628 DL4DTU (15DB/10DB), 1711 G4BAO (17DB/15DB), 1741 WA3RGQ (15DB/14DB) {#213} EL field and the State of FL, 1751 OK2AQ (15DB/14DB) and 1810 EA3HMJ (15DB/14DB). Heard were JA1WQF, JA8ERE, DB6NT and IK0HWJ. **We again experienced frustrating trouble with no decode of QRA64D when the Moon moves through the zenith area. The 80 Hz/min Doppler rate initiates several 20 Hz frequency jumps of Kenwood TS790 receiver during each QRA64D period. These disrupts the synchronization of QRA64 and no decoding results. That's why we requested a change from QRA64D to JT4F. JT4F accepts the 20 Hz jumps in frequency as well as high spreading! We have concluded that all radios without 1 Hz tuning may not function properly with QRA64D on the MW EME bands, especial on the higher bands!** On 26 July, the 13 cm day of the MVAW activity was quite poor. Using CW, we worked at 1222 DL4DTU (569/579) for initial #182, 1253 F2CT (559/559), 1312 SM3BYA (559/569), 1325 G3LTF (569/579), 1338 G4CCH (569/569), 1457 SM2CEW (569/579), 1529 G4CCH (569/579) again when Howard was testing a new transverter for all the subbands, 1553 4X1AJ (O/O) #183 for a new CW DXCC on 2304 where Andrey has the lowest interference from local WIFI, at 1717 IK3COJ (559/569); and using JT65C on 2320 at 1140 UA3TCF (10DB/16DB), 1151 DL4DTU (8DB/8DB) for digital initial {#77} and his first

13 cm QSO, 1428 G4CCH (2DB/8DB) {#78} and 1544 4X1AJ (14DB/10DB) on 2304.

OK2AQ: Mirek mirek@kasals.com made a special effort to be QRV for the 3 cm MVAW -- We usually spend the summer at our country cottage. When the MVAW for 3/13 cm was announced, my plans for the weekend changed. I actually started operation on 10368 on 18 July and connected with G4BAO (21DB/18DB) using JT4F followed by IW2FZR (18DB/18DB) using QRA64D. In the following week, I made 26 digital QSOs and one on CW with DL4DTU (559/559) for initial #22. Mixed initials were made with WA3RGQ (18DB/15DB) #94*, **CT1BYM (16DB/15DB) #95* for DXCC 33 and ZS1LS (20DB/16DB) #96* and DXCC 34.** I was especially pleased to QSO ZL3RC. I had tried several times to find a good sked time. It's not easy with my minimum elevation limit of 10 degs. Roger was limited to 4 degs at the time. This time he was out with a tripod, so he could go to near zero elevation. However, in ZL it is winter - the temperature was 1.5 degs and the local time was 2200. But, just after moonrise, ZL3RC appeared with a beautiful QRA64D signal with horizontal polarization. The connection went absolutely smoothly with excellent reports, **ZL3RC (15DB/18DB) #97* and DXCC 35.** It is, of course, my ODX of 18,067 km.



ZL3RC's 3 cm rig that was used for the far end of long distance QSO with OK2AQ

This QSO was followed by a series of mostly repeated QSOs, and on Sunday I worked DF1SR (15DB/15DB) #98*. My online log is at http://www.urel.feec.vutbr.cz/esl/files/EME/LOG/EME_LOG_10G.htm. It was a perfect week. In addition to the QSOs, I did a number of experiments and measurements. With OK1DFC, we did a very interesting QRP test, when we established a connection with a power of 1-2 W on Zdenek's side. OK1DFC started with 50 W using JT4F and gradually reduced power to 1-2 W. While at 5 W, I still reliably decoded him (17DB); at 1-2 W. I managed to decode only once (20DB). However, we switched to QRA64D mode and completed the connection without problems with reports of (21DB) and (23DB) at a signal width of 60-70 Hz. Prior information was not needed.



OK2AQ EME QTH with a 1.8 m offset dish that replaced a 1.2 m dish used until this spring

OK2DL: Marek ok2dl@seznam.cz sends info about his participation in the **DUBUS 23 cm CW Contest** -- This was the first big contest that I used my new 23 cm SSPA based on W6PQL's modules with 2xFRF13750s. This SSPA replaced my PE1RKI's modules. I placed temperature sensors near the transistors to monitor the temperature of both PAs. Interestingly, one PA has a temperature about 4 degrees higher. If I call CQ for any length of time, the temperature rises to a maximum of 55 degs C, which I consider good. I started the contest at 0300 LT with the Moon about 2 degs above the horizon. The band was surprisingly full of stations. My contacts grew steadily in the log, the PA worked great and the coffee was good; what more could you want. However, the problems came in the evening when we had a big rain storm. A few drops of water flowed into the PA. There was nothing I could do, but to stop operating until the rain let up and allowed me to attempt a repair. Around 0900, I managed to fix the leak, which only affected the sequencer. I was then able to continue contesting, but I lost my eastern window. **I ended up with a total of 78 contacts and 56 mults;** a little more than last year. Initials were UA9FAD, DK5AI, OK1KKD, IW3HVB, NQ7B, CT1BYM and K8ZR. QSO'd on 18 July were SP2HMR, UA3PTW, OH2DG, OK1KIR, OK1CA, JA4LJB, SP6JLW, SP7DCS, VK5MC, UA9FAD, DL3EBJ, ES5PC, VK4AFL, G4CCH, SM4GGC, DK5AI, F5KUG, VK3NX, DF2GB, DK3WG, DJ3JJ, FR5DN, OK2PE, IK3MAC, JA6AHB, OK1CS, OK1DFC, IK3COJ, F6ETI, JH1KRC, IZ1BPN, DL7UDA, PA3DZL, F5IGK, DF3RU, OZ4MM, RA4HL, G3LTF, UA4AAV, 9A5AA, OH1LRY, I1NDP, OK1KKD, RA3AQ, OK2ULQ, IW3HVB, LZ2US, G4YTL, SM2CEW, WB2BYP, G4RGK, AA4MD, IK5VLS, DG5CST, ES3RF, SV1CAL, K2UYH, VE6TA, N5BF, IK3GHY, VA7MM, WA9FWD, VE6BGT, KL6M, NQ7B, WA6PY and N4PZ; and on 19 July OK1YK, CT1BYM, ON5GS, SP3XBO, SM6PGP, RA3AUB, LU1CGB, F6CGJ, RA2FGG, SM5DGX and K8ZR. [TNX to OK1TEH the translation from www.ok2dl.eu].

OK2PE: Karel ok2pe@kbb.cz sends the following contribution to the NL from his **23 cm DUBUS EME Contest** effort -- I started operating on Saturday at 0500 as I had no Moon window earlier. My first contact was OK2DL, then

OK1CA, OK1KIR and OH2DG. Then the Moon was blocked again. I live in a deep valley among many trees. Later in a clear spot, I worked OZ4MM. On Sunday morning, I added DG5CST and I1NDP. I then went QRT because of a local Czech VHF/UHF contest. Unfortunately, I didn't catch my afternoon window and thus finished with 7 contacts but 3 initials. I am using only a small 1.8 m dish (I have plans for a bigger one) and a 600 W SSPA.

OK2ULQ: Petr ok2ulq@seznam.cz participated in the **DUBUS EME Contest on 23 cm** – I lost some contest time getting my EME equipment setup, and was active only on Saturday afternoon. I worked 28 stations, and made initials with IK3MAC, SM6FHZ and OK1KKD. From OK, I worked 4, OK2DL, OK1CA, OK1KIR and OK1KKD. Conditions were especially good at the beginning, so was also the activity. Perhaps in autumn during the ARRL EME Contest I can have more time for EME. [TNX to OK1TEH for translating Petr's blog at <http://ok2ulq.blogspot.com>].

OM4XA: Fero cesnefk@gmail.com is QRV from Slovakia (JN98EO) and is current seems to be the only regularly active OM station on 23 cm EME. He is using a 3 m mesh dish (0.4 f/d), 50 W LDMOS PA at feed and a IC9700 in his ham shack. He made his first EME contact on 30 May with NC1I. Since then he has worked several CW and JT65C contacts. He is also preparing a bigger 300 W SSPA. If you need a sked, email Fero. [TNX to OK1TEH for forwarding this report].

ON5GS: Dirk dirk.reyners@telenet.be was QRV only on Sunday during the 23 cm contest -- I finally had my gear running again late in the contest after some time of absence, but didn't want to miss my favorite contest! It was so nice to hear all those CW stations. Some had really strong signals, while others were deep in the noise... But this is what makes CW EME so much fun. I worked 30 stations with 28 mults. They were I1NDP, DF3RU, SP6JLW, OH2DG, LZ2US, G4CCH, OK2DL, IK3MAC, F5KUG, UA3PTW, OK1CA, OK1KKD, SP7DCS, DL3EBJ, G3LTF, DG5CST, UA4AAV, OH1LRY, OK1CS, SP2HMR, OK1DFC, K2UYH, PA3DZL, IK5VLS, OK1KIR, VE6TA, OZ4MM, WA6PY, KL6M and ES5PC. I used a 6 m dish with 200 W @ feed and FT-736.

OZ4MM: Stig gsvestergaard@gmail.com was pleased to make it on for the **VK3UM/DUBUS 1296 Contest** – I got to work 60 stations with 3 initials in a few hours of operating during the contest. My desire was to be QRV as much as possible, besides the other activities that seem to have taken over my life. I have not calculated the score, as it is not so important for me as to enjoy all the activity. There were very good condx here during the weekend with lots of great signals including many from the smaller stations. The coming months will be quite busy here, but I hope in Oct to be back to normal. I'll try to be on 1296 and 432 for some shorter periods.

PA2DW: Dick qtc@kpnmail.nl sends info on his July 1296 Moon activity – I was on from my home station during the **July DUBUS Contest weekend**, but could only be QRV on

Saturday. I limited my operation to CW and made 6 QSOs with following stations: I1NDP, WB2BYP for an initial (#), OZ4MM (loudest), SP6JLW, OH2DG and OK1KIR. The rig was my 2.4 m dish with septum/choke feed, 500 W SSPA, DDK 2.4 dB NF LNA and K3/TR1296H (locked to GPSDO).

PA3DZL: Jac pa3dzl@icloud.com sends the following info for the NL -- I was QRV for some hours during the DUBUS/REF 23 cm Contest. On Saturday, 18 July, I worked using CW DL3EBJ, OK2DL, OK1CA, OK1KIR, UA3PTW, OZ4MM, SP6JLW, OH2DG, IK3MAC for mixed initial #362*, ES5PC and DF3RU; and on Sunday I1NDP, SP7DCS, OK1CS, OH1LRY, SM2CEW, SP2HMR, OK1KKD #363*, DG5CST, LZ2US, OK1YK, DL3EBJ (DUP), SP3XBO, ON5GS, IK3COJ and WA9FWD. On 22 July, I was QRV using JT65C on 23 cm and QSO'd CX2SC #364*, UA9FAD #365*, VE3NXX, G7TZZ #366* and LU1HKO #367*. My on air time is limited at this moment. I am very busy at QRL, and I am also working on EME hardware. I finished a new 70 cm feed (OK1DFC cup-ring design) with H and V pol control, which I am going to use in my 3.7 m Andrew dish. I will be QRV on 432 very soon. I am also building a 24 GHz EME station. I did my first tests on 2 July and measured about 1 dB of moonnoise and 10 dB of sunnoise (at a temp of 19 deg C and 72% humidity). I did run a receive test with PAØBAT, but conditions were very poor with big spreading and no signals were heard. I am working on a system with a small actuator so that I can move the feed forward and backward to tune for the best feed point position. I have a 45 W 1127 TWT for 24 GHz. I also finished a H frame (4.8 x 4.2 m) for my tower with AZ and EL. I have not decided yet what antennas/bands to mount on it. It could be used to make easy a change to vertical pole. I will have to make a decision soon.

SM4GGC: Stig stig.ake.larsson@gmail.com reports on his **VK3UM/EU EME Contest operation** -- I was QRV for about 7 hours on Saturday and 2 hours on Sunday. I managed to work 27 stations in 25 mults. Activity seems to be good with many strong stations. I QSO'd OK2DL, ES5PC, DL3EBJ, G4CCH, SP2HMR, OH2DG, SP6JLW, DG5CST, SM6FHZ, OK1KIR, UA3PTW, F6ETI, OK1CA, SP7DCS, I1NDP, SM2CEW, IK3MAC, OZ4MM, DF3RU, WB2BYP, WA6PY, VE6TA, OH1LRY, K2UYH, OK1CS, OK1DFC and 9A5AA. My rig was a 3.9 m dish with 500 W at the feed.

SM6FHZ: Ingolf ingolf.fhz@gmail.com reports about his 23 cm activity -- It was great to be back on 1296 EME after 8 years of absence. The last time I was QRV was in early Nov 2012. In between I have been active on 70 cm and 6 cm EME; as well as rebuilding my summerhouse where my EME dish is situated. The 23 cm EME rig worked amazingly well after being stored for quite some time. I was easy on my YD1277 PA when first running it, and the RX was almost as good as when I last used it. At least the CS/G and Solar noise was very close to what I had back then. It was amazing how many very good signals there were on the band - fantastic signals everywhere. I was focusing on looking for initials, challenging myself with the weakest signals. I listen a lot and did less TXing. I did not participate actively in the contest; I just tried to have fun and enjoy

being back on 23 cm EME. All in all, I made 12 initials and worked DG5CST, SP2HMR, SM4GGC, F6ETI, IK3MAC, WB2BYP, OK2ULQ, OK1KKD, SV1CAL, WA9FWD, IK5VLS and last but not least FR5DN. **FR5DN gave me a new country as well as Africa to complete WAC!** I have been QRV on 23 cm EME since 1984, with some breaks, but never heard any stations from Africa before. My breaks may have coincided with activity from Africa, but now I finally got it too. The QSO was close to being spoiled by QRM from a station calling me twice, right over FR5DN. I strongly urge all stations to listen carefully on the frequency before calling, so as not to call over a QSO in progress. Here it would have been very clear that FR5DN and I were fighting with marginal signals trying to establish a QSO. Luckily, we found each other again and completed. It meant a lot to me. Stations heard and called, but not QSO'd were IW3HVD, N5BF (lost in trees at moonset) and JH1KRC. All three would have been initials. I parked the dish and switched feeds at about 0800 Sunday, as a rain front was coming in from the west, and I wanted to avoid switching feeds in the rain. I now have the 70 cm feed in the dish. I will be on 23 cm EME again, and am happy to take skeds with anyone interested. I also plan to make some improvements to my 23 cm rig.

SM6CKU: Ben ben@sm6cku.se reports on his recent July 3 cm EME – Using my 4 m dish with a circular pol feed and only 14 W, on 10368 I QSO'd on 22 July using JT4F **CT1BYM for a mixed initial (#*) and a new DXCC**, and OK2AQ; on 23 July F5VKQ using CW and WA3RGQ using QRA64D (#*); on 25 July during the MVAW using CW DL4DTU for an initial (#) and UA4AAV (#), and using JT4F IK0HWJ (#*), OK2AQ, OK1KIR, **S57NML (#*) and a new DXCC**, OK1DFC and WA3RGQ; and on 26 July using JT4F F6BKB (#*) and heard/called on CW IK2RTI who didn't copy me.

SP6JLW: Jacek sp6jlw@wp.pl and Pawel (SP6OPN) took part in the 23 cm VK3UM/EU EME CW Contest – We used our 6.5 m dish to accumulate **70 CW contacts and 56 mults**. This time we enjoyed nice summer WX. Our observations indicate that the downward trend in the number of participants continues, although our results are a little better than a year ago, but still worse than a few years ago. The old guard is leaving; new operators prefer more effective digital modes that do not require a knowledge of the Morse code... We think that *efficiency* is not always the most important thing. If this were so, we wouldn't have seen any sails on the water for a long time. In our 23 cm log is UA3PTW, UA9FA, UA4AAV, RA4HL, RA3AUB, OK2DL, OK1CA, OK1KIR, OK1CS, OK1KKD, OK2ULQ, OK1DFC, OK1YK, SP2HMR, SP7DCS, SP3XBO, OH2DG, SP2HMR, SP7DCS, SP3XBO, OH2DG, OK1LRY, DL7UDA, F5KUG, F6ETI, F5IGK, F6CGJ, VK4AFL, G4CCH, G4RGK, G4YTL, G3LTF, SM4GGC, SM6FHZ, SM2CEW, SM5DGX, SM6PGP, LZ2US, 9A5AA, SV1CAL, OZ4MM, K2UYH, WA6PY, WK9P, KL6M, N5BF, NQ7B, WB2BYP, WA9FWD, AA4MD, LA3EQ, VA7MM, VE6TA, VE6BGT, PA3DZL and PA3DZL. During the MVAW of 24/25 July we were active on 10 GHz too. QSO'd using CW unless noted were on 24 July F5IGK, IW2FZR and DB6NT

(CW and SSB), and on 25 July OH2DG, JA8ERE, UA4AAV, F5IGK, G4NNS, DL4DTU and OK1KIR. [TNX to OK1TEH for translating].

SP7DCS: Chris sp7dcs@wp.pl sends his **DUBUS/REF EME 1296 CW Contest report** – I have a back problem that limits the time I can sit at the radio, but I was pleased to be able to be QRV for about 7 hours on Saturday and 3 hours on Sunday for the contest. **I made 54 QSOs x 45 mults** and 7 initials. It was great fun. In my log are on 18 July UA3PTW, OK1KIR, OH2DG, OK1CA, OK2DL, JA4LJB, SP6JLW, VK3NX, VK4AFL for an initial (#), DL3EBJ, SP2HMR, G4CCH, ES5PC, VK5MC, DF3RU, DG5CST, IK3MAC (#), OZ4MM, SM2CEW, DF2GB, DL7UDA, OK2ULQ, F5KUG, I1NDP, SM4GGC, OK1KKD, SV1CAL (#), UA4AAV, IK3COJ, WB2BYP, IK5VLS, OH1LRY, DJ3JJ (#), AA4MD (#), WA6PY, OK1CS, K2UYH, VE6TA, KL6M, LZ2US and G3LTF; and on 19 July OK1DFC, FR5DN, PA3DZL, 9A5AA, OK1YK, F6ETI, UA9FAD (#), ON5GS, F5IGK (#), SP3XBO, G4RGK, SM6PGP, AA4MD (DUP), UA9FAD (DUP) and WA9FWD. My rig is 6 m dish and 500 W SSPA.

UA3PTW: Dmitry ua3ptw@inbox.ru reports on his recent EME -- I added initials at the end of July on 432 using JT65B with AC4TO and GW4LWD, and on 1296 using CW [**likely in the DUBUS Contest**] with WB2BYP, NQ7B, F5IGK and K8ZR. [TNX to DK3WG for sending this report].

VA7MM: Mark (VE7CMK) and Toby (VE7CNF) va7mm@rac.ca were active on 1296 CW for the **23 cm VK3UM Memorial EME Contest** -- In 8 hours of operation we made 29 contacts including 4 initials to bring us #140 and mixed mode initials to #263*. We use a vintage OZ9CR water cooled cavity amplifier with 200 W power at the feed of a 3 m dish. For RX, we have a 0.33 dB NF preamp with about 35 dB gain. We are available for schedules by e-mail anytime. Just e-mail us.

VE3KRP: Fast Eddie eddie@tbaytel.net writes on his late May/July 1296 EME activity -- I haven't been too active with all that's been going on. The summer has been the warmest in years and I have been out enjoying it. I recently upgraded from WSJT9 to WSJT-X 2.2.2 and still prefer the older version for some reason, but am trying to become comfortable with it. I was QRV on 23 cm using JT65C and QSO'd on 23 May DL0SHF for a mixed initial (#*) and PA3FXB; on 24 May DF2VJ, IK5EHI and F1RJ; on 14 June K2UYH; on 19 July OK1DFC and RA4HL – I completely forgot this was the **DUBUS 23 cm Contest weekend**, else I would have been on CW - sorry; on 21 July ON4QQ, DK5AI (#*), OM4XA (#*) and CX2SC (#*); and on 22 July DF2VJ, G4FQI (#*), UA9FAD(#*), ON4QQ and DJ2DY.

WOHZ: Gene comtek39@gmail.com formally KD6R (and K6DV) has shown up in Iowa. He was QRV on 432 and 1296 with a big signal from Mt. Palomar, CA for many years with a 28' dish. He became inactive after his mount was damaged. He moved to Iowa about 10 years. At his present age, he feels his big dish is too much for him to handle –

see FOR SALE. I am hoping we can convince him to become QRV again off the Moon.

W4PO: Dale parinc1@frontier.com writes on his attempts to be on for the DUBUS Contest -- I tried my best to get the new 4.5 m dish finished up for the DUBUS 23 cm Contest, but there was just too much to do. I managed to get my new surface onto the mount and built back up ribs for the 4 ribs that support the feed. I also managed to get the feed in, no optimization and no TX cable was installed before ran out of time. I did listen Sunday morning and signals sounded great. I should be ready by the by the next EME activity weekend.



W4OP's new 15' dish

W6TOD: Todd w6tod@yahoo.com is just about ready for 23 cm EME skeds -- I'm running 2 x M² 23CM35 yagis properly phased for minimal loss, but presently have only 8.5 W at the power divider. I do have 250 W SSPA on order, but do not expect to receive it until Nov. I also have 2 more yagis on order. My total feed line loss is 0.7 dB. I can operate from 95 degs to 200 degs Az and elevate up to 60 degs. Keeping the feedline very short limits my window. I have a little bit of JT65A experience from operating 6 m EME. [Todd would like to hear from stations capable of working him].

WA6PY: Paul pchominski@maxlinear.com was QRV on 1296 in the DUBUS Contest -- I QSO'd on 18 July LZ2US, SP6JLW, IK3MAC, OK1KIR, UA3PTW, VA7MM, 9A5AA, WA9FWD, DL3EBJ, SP7DCS, SP2HMR, IK3COJ, ES5PC, OH1LRY, SM4GGC, OK1KKD, F5KUG, DG5CST, VE6TA, OK2ULQ, OH2DG, N5BF, OK1CS, DL7UDA, OK2DL, G3LTF, IK5VLS, KL6M, K2UYH, JH1KRC, VK2JDS, VE6BGT, VK3NX and VK5MC, and on 19 July OK1CA, F6ETI, F6CGJ, I1NDP, OZ4MM, G4CCH, ON5GS, WK9P, DJ3JJ, DF3RU, SM5DGX, SP3XBO, OK1DFC and DF2GB for a total 48x40. I plan to be QRV in ARRL EME MW Contest. I didn't decide on which bands/when yet.

WB2BYP: John storyavenue@hotmail.com sends news of his July EME -- I was active for the DUBUS event on 23 cm. I worked on 18 July all on random CW UA3PTW, OK1CS, 9A5AA, G4RGK, ES5PC, OK2DL, OH1LRY, SM6FHZ, SP7DCS, DL3EBJ, OK1CA, IK3MAC, OK2ULQ, LZ2US, SM4GGC, DG5CST, G4CCH, UA4AAV, IK3COJ, IK5VLS, PA2DW, OK1KKD, OK1IL, F5KUG, G3LTF,

VE6TA, SV7CAL, OH2DG, SP6JLW, AA4MD, OK1KIR, F6ETI, N4PZ, VA7MM, WA9FWD, KL6M, VE6BGT, NQ7B, K2UYH, SM2CEW and N5BF for a total of 41x33. I heard near my western limit, N6OVP but the breakup of his signal due to trees prevented me from getting his call straight. (Sorry Dave, thanks for patience with my QRZ's). The local WX, kept me off on Sunday. I was using my 8.5 m dish with 300 W from FN13ib.

WK9P: Tim tcerrone@yahoo.com was active in the DUBUS Contest on 1296 in July -- I operated CW for 4 hours Saturday and about 3 hours on Sunday, which was cut short due to a storm. I worked 8 stations on Saturday and 6 on Sunday for a total of 14 QSOs. Some of the stations worked on Saturday were just outside of my elevation window a few degrees, but fortunately there was enough signal that I eventually figured out the calls. I was using a recently added SDR display to find CQ callers, which was very helpful. I enjoyed hearing all of the CW activity. Currently, I can see the Moon from just after moonrise to near zenith. I have offending tree limbs in the way afterwards. I have a tree trimmer on schedule to remove them, so I'll have zero blockage, but he may not be able to come out until early Oct.

K2UYH: I (Al) alkatz@tcnj.edu was pretty active in June and July. I QSO'd on 21 June using JT65C on 1296 at 1413 UA6AH (14DB/13DB) for mixed initial #639* and 1829 LU1HKO (10DB/15DB) #640*; and on 28 June using JT65B on 432 at 2010 ZS4TX (15DB/15DB) for mixed initial #1017*, 2051 WP4G (17DB/O) #1018* - very nice to QSO Angle after 25 years since we met in PR and 2110 SQ7CYD (5DB/16DB) #1019*. I was on 1296 to work using CW in the VK3UM/DUBUS Contest on 18 July at 1205 DG5CST (579/579), 1218 OK2ULQ (569/589), 1224 UA3PTW (579/579), 1227 SP6JLW (589/579), 1231 I1NDP (559/599), 1238 OK1CS (559/569), 1245 OH2DG (569/579), 1249 OK2DL (589/589), 1258 IK2COJ (569/569), 1304 WA9FWD (569/569), 1310 DL3EBJ (569/579), 1314 SP2HMR (569/569), 1322 F5KUG (559/559), 1405 OH1LRY (559/559), 1412 9A5AA (559/569), 1415 SP7DCS (569/579), 1422 VA7MM (559/559), 1435 G4CCH (579/589), 1440 OK1KIR (589/579), 1456 SM4GGC (579/579), 1509 PA2DW (559/559), 1515 G3LTF (559/579), 1527 IK5VLS (559/559), 1531 N4PZ (579/579), 1533 KL6M (589/589), 1558 OK1KKD (569/579) for initial #418, 1600 F6ETI (559/579), 1622 ES5PC (579/589), 1637 VE6TA (579/579), 1700 AA4MD (559/579), 1712 WB2BYP (569/589), 1720 SM2CEW (559/579), 1725 VE6BGT (569/569), 2019 JH1KRC (569/569), 2025 WA6PY (569/579), 2114 VK4AFL (559/569) NG; and in the second day of contest on 19 July at 1245 ON5GS (559/569) #419, 1248 OK1DFC (559/579), 1313 OK1CA (589/589), 1323 G4RGK (559/579), 1323 DF3RU (579/579), 1422 DJ3JJ (O/O) #420, 1519 DL7UDA (559/579), 1527 N5BF (559/559) -- no 73 disappeared suddenly, 1556 SM5DGX (559/559) #421, 1625 F6CGJ (579/569), 2135 JF3HUC (569/569), and 2223 VK4AFL (559/559) for a total of 47x40. Conditions and activity seem good during the contest and the high declination should have helped me, yet my score was down

about 20% from the previous year. I do not plan to submit an official log because of my use of the HB9Q Logger during some of the earlier contest weekends. I was also QRV for the MWAU on 10368 and worked on 25 July using QRA64D at 1855 OK1DFC (12DB/14DB), 1900 OK2AQ (16DB/15DB), 1911 IK0HWJ (10DB/15DB) for mixed initial #51*, 1934 WA3RQG (17DB/17DB) #52* and 2119 using JT4F K6QPV (15DB/15DB) #53*; and on 26 July stayed on 3 cm using QRA64D at 1924 F6BKB (14DB/15DB) #54* and 2100 VE4MA (12DB/15DB) – our first 3 cm QSO on digital. I plan to be QRV on both 3 and 6 cm for MWAU.

NET/CHAT/LOGGER NEWS: **W3SZ** planned to be QRV on 10 GHz for MWAU with his 2.6 m prime focus dish and 200 W. [We do not think he was QRV]. **G4BAO** also planned to be QRV for the MWAU on 3 cm with his 1.1 m offset dish and 20 W. John notes he came close to completing his first 3 cm CW QSO with OK1DFC. **KB7Q** went on 222 EME to MT to K1OR for his 38th State. **N5NHJ** (X-18NHJ and has been member of many EME dxpedition teams) is setting up for 432 EME. Max asks for advice on 70 cm LNAs. **WA3QPX** was QRV from his DE QTH on 1296 during the DUBUS weekend. Paul did not have much luck on CW, but did make some JT65C QSOs including JA8SZW. Contact him at wa3qpx@atlanticbb.net for sked. **XE1XA** been QRT for months while he waits for his 23 cm SSPA to be repaired and upgrade in Germany. Max expected to miss the VK3UM/DUBUS Contest, but will participate in the SSTV Party on RX only with improved reception with his new flared horn feed. **OK1UGA** with OK1CU are working on a 6 m dish for use on 23 cm - see <http://ok1uga.nagano.cz/emegth23.htm>. Currently Martin and Slavek (respectively) are working on the AZ/EL mount. They should be QRV in the autumn possibly for the ARRL contest. **OK1YK** is struggling with local QRM on all the EME bands. However, he was QRV in the 23 cm DUBUS CW Contest and made 17 QSOs. Look for Mirek in the ARRL EME Contest. **OK1TEH** is currently QRT on 23 cm EME because of an SSPA failure that prevented Matej from being QRV during the DUBUS weekend.



OK1CU (L) and OK1UGA (R) with of their 6 m dish

FOR SALE: **OK1TEH** has available for EU30 a 3 m aluminum (f/d 0.35) dish (originally OK1EM's dish) with massive ribs and surface good for 24 GHz and weight ~ 70

kg (same type was used by OK1UWA), contact Matej at ok1tehlist@seznam.cz.



3 m dish good to 24 GHz available from OK1TEH

N1NK has for sale a Kuhne TR 144/1296 transverter, 500 mW in to 18 W out. A DEMI a L23HP 1296 25 W transverter 28/1296. Contact if interested email Jim at n1nk@cox.net.

PA2DW is selling an HP435B power meter plus 8482A 4.2 GHz sensor (3 uW -100 mW) that is working well. He is asking EU500. Contact Dick at gtc@kpnmail.nl. **KD2XN** has for sale a DEMI 30 W 23 cm linear amp kit for \$80 incl shipping (S); a Vhfdesign.com 23 cm LNA with NF=<0.3 dB and 30 dB gain for \$75 incl S; Kuhne 23/144 transverter for \$400 incl S; and a 23 cm RFHamDesign dual mode septum feed, p/n CIR-1296/Opt 1 with CLX-05 dish feed bracket for \$350 incl S. Shipping is to USA conus. All never used. If interested contact Phil at kd2xn@icloud.com or cell 315-415-9332 before 9 pm ET. **SA6BUN** is arranging a group purchase of ETS25 05SER absolute 12 bit encoders from Megatron to meet minimum purchase requirements. Dirk, DK2DF doing the buy. The costs will be roughly EU50 if you are interest, email Dirk at dirk.fischer@fh-muenster.de with the number of encoders you wish to purchase. You can also contact Michael at sa6bun@gmail.com. **SM6CKU** is looking for a coax switch with SMA connectors that can handle up to 40-50 W on 10 GHz. Send any suggestions to Ben ben@sm6cku.se. **W0HZ** formally KD6R now in Iowa – see his report, has a 28' dish [believe the same as used by K5JL] and a movable mount (damage) for sale. If interested contact Gene at comtek39@gmail.com. **VE1KG** reports that Zach Tek in Sweden <ZachTek.com> is now producing a high stability 10 GHz LNB (PARI-O) that is designed for use with the OSCAR 100 Satellite. Serge thinks it might be useful for the reception of 3 cm EME signals.

TECHNICAL - DL6SH's Dish: Slawek DL6SH@online.de sends interesting info on his EME antenna -- I started 12 years on 23 cm EME with a 3 m dish. Later, I extended it to 3.7 m. In 2010, I decided to buy 4.8 m mesh dish (f/d 4.8) from OK3RM and transported it home. One year later in Dec 2011, I extended it to 6.5 m (f/d 0.3), but then the dish was badly damaged in a wind storm. I didn't give up on it; and during 2012 ordered new ribs from OK3RM for the dish, which were extended to a final 8 m diameter (F/d 0.3). The construction wasn't easy; many friends involved helping. (Special TNX to DF1SR). Since the end of 2012, I used this dish on 2 m thru 6 cm. It has survived all storms in perfect shape, and proven to be well designed.



DL6SH and dish during 2020 refurbishment



DL6SH's completed dish in May 2020

In May 2020 after 7 years of operation, I refurbishment the surface because the black tie-wraps that I used to hold the mesh in place were disintegrating, mainly from UV rays. I used 3,500 short lengths of stainless wire to hold the mesh. This was not an easy job working from an 8 m high platform.



Redoing the mesh

The dish's the ribs were designed with AutoCad and then cut with a laser. They are made from 3 mm thick stainless steel. The resultant counterweights are 750 kg. The mesh is 6x6 mm. I use for el a 36" superjack; and for tracking an old system from DF1SR (his version 1), but I have recently upgraded to N8CQ's controller with a Raspberry PI3B.

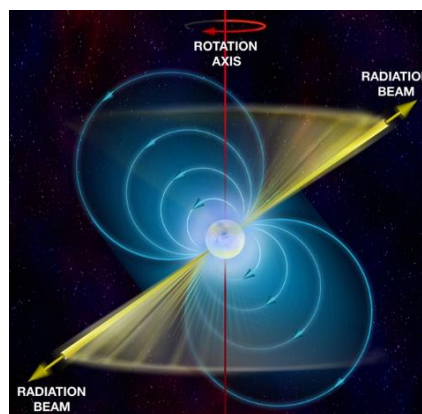
RADIOASTRONOMY CORNER: [led by OK1TEH]

Hi all, the radio astronomical corner is back. This time we would discuss famous Pulsars again. As everybody knows, Pulsars are rapidly rotating, highly magnetized neutron stars that emit radio waves from their magnetic poles due to the star's rotation, and are observed on Earth as a string of pulses. Due to the extremely high density of neutron stars, their rotation periods are very stable, hence the observed arrival time of the pulses are highly regular. These arrival times are called TOAs (time of arrival) and can be used to perform high-precision timing experiments. The stability of the TOAs from most pulsars is limited due to the presence of red noise, also called "timing noise". However, there is a special class of pulsars, called millisecond pulsars (MSP) that display little or no timing noise. Keeping track of the TOAs of different MSPs over the sky allows for a high-precision timing experiment to detect gravitational waves at wavelengths that the Laser Interferometer Gravitational-Wave Observatories (LIGOs) are not able to detect. This project is called PTA - Pulsar Timing Array. More about this interesting work can be found at http://ipta.phys.wvu.edu/files/student-week-2018/ryan_shannon_noise_ipata2018v2.pdf and <http://nanograv.org/> or https://www.astron.nl/wsrwiki/lib/exe/fetch.php?media=public:usersmeeting:europaean_pulsar_timing_array.pdf.



DL6SH's tracking controlled

During May, I added some additional ribs to the edge of dish to get better overall surface geometry. Additional information and pictures can be found at http://www.ok2kkw.com/00000104/info/dl6sh_info.htm.

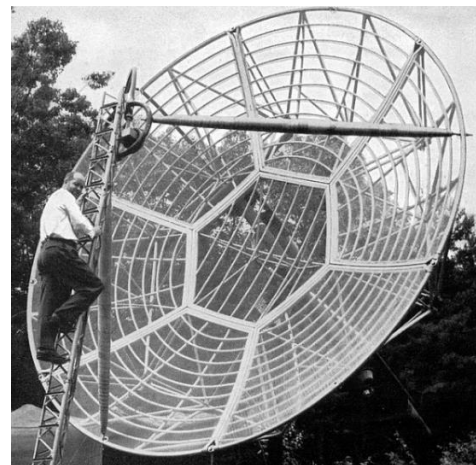


Pulsar Glitches and Microglitches

However not every pulsar has fully predictive signals, some behave really strangely. It's like they have glitches. Suddenly Pulsars can accelerate for apparently no reason and then slowly returns to normal speed. Astrophysicists are puzzled by this. It is not clear what causes these hiccups. Some experts suspect some internal processes in the pulsar, such as star tremors or turbulence in the extreme mass inside the pulsar. In addition, the hiccups of pulsars are not always the same. In some cases, the pulsar has only weak microglitches. However, their cause is not known, so any explanation is even more problematic. Physicist Innocent Okwudili Eya from the University of Nigeria and his colleagues recently offered a bold explanation. They suggest that these little hiccups of pulsars can be a trace of exotic hypothetical particles known as *strangels* or *weirdness*. Such particles would contain roughly the same amount of upper, lower and *strange* quarks, hence strangeness. According to the authors of the study, microglitches could be caused by the absorption of strangeness by the pulsar in question. These oddities can be material such as elementary particles, but also planets. The pulsar could no longer completely ignore such a collision. Today we know of about 2,700 pulsars. Most of them seem to be ticking like watches - crazy fast watches. Hiccups have been detected in about 190 pulsars, and experts have recorded just over 500 classic hiccups. We know even less about microglitches. They tend to be an order of magnitude smaller than classic pulsar hiccups. Some of them include a sudden slowdown, which we don't see with normal hiccups. At this moment, weirdness comes on the scene. They are still completely hypothetical. We have never reliably detected any such particle. According to some, they are a candidate for dark matter particles. In fact, as early as 2009, another team of experts hypothesized that microglitches could be a sign of the behavior of pulsars, which would actually be a whole gigantic oddity. They studied 299 recorded microglitches, and according to their calculations the events could be caused by strange nuggets colliding with the pulsars. If strange nuggets are indeed still hanging around, they could collide with other stellar objects. Pulsars would be good candidates for finding such collisions - they have a strong gravitational field, and their regular pulses would make the collisions more detectable than, say, non-pulsar neutron stars. The collision of a pulsar with a strangeness could cause both a sudden acceleration and a sudden slowing down of the rhythm that we observe in micro-glitches of pulsars. According to the authors, the consequence of such a collision could be a star shake of the pulsar or even a rupture of the surface crust of the pulsar. This whole theory is very theoretical and there are many opponents who disagree. At the same time, it's an interesting and intriguing idea, which is definitely fascinating. More can be found at [https://en.wikipedia.org/wiki/Glitch_\(astronomy\)](https://en.wikipedia.org/wiki/Glitch_(astronomy)) and <https://www.sciencealert.com/bizarre-pulsar-hiccups-could-be-caused-by-strange-nuggets>, also see *Can radio-astronomers detect Glitch? Yes!* That can be found at http://hawkrao.joataman.net/pulsar/daily_obs/index.html.

60TH ANNIVERSARY SINCE FIRST (1296 MHZ) EME CONTACT CONTINUED -- Project Moonbounce [1960]

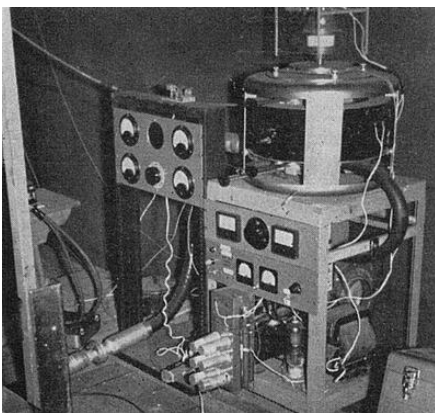
as seen from Rhododendron Swamp by W1FZJ: Moonbounce was the elusive goal of the RSVHFS for five years. Four years ago we heard our first weak and willowy echo on 50 MHz. Three years ago, our first echo on two meters using our rail road-track vertical 128 el array. But always the same problems. Weak and fading echoes on a sporadic basis. No one on the other end. Calculated s/n always marginal. Then came the parametric amplifier and the probability of using frequencies heretofore impractical from a receiver noise figure point of view. 1296 was chosen for the following reasons: 1. It is the first ham band where Faraday polarization shift becomes negligible. 2. Lowest ham band in which galactic and solar noise are at a minimum. 3. Highest ham band on which receiver noise figures of less than 1 dB are possible. 4. Highest ham band where tubes capable of a kW input are available. 5. The only ham band where we were definitely assured that a competent and reliable group would be duplicating our efforts on the other end. The aforementioned reasons were all important but the last was really the deciding reason. Three years of hearing an occasional echo of our own without one single schedule with another group convinced us that the biggest problem to solve was the guy on the other end. Having made the decision to go ahead, we then divided up the jobs among the various club members and sent out the word to all and sundry that all help would be gratefully accepted. **Big Problem No. 1** What do we use for an antenna? Our propagation expert, Gordon Pettingill (W1OTJN) gave us the minimum gain we could use to get practical results. A thumping 35 dB! Furthermore, the experts insisted on a polar mount for the then non-existent antenna. By a stroke of good fortune and the sterling efforts of our official procurer, Dana Atchley (W1HKK), we obtained the loan of an eighteen foot parabolic reflector from the D. S. Kennedy Co. Not only could we borrow it, but it could be easily dismantled for transportation. The transportation division, Fred Collins (W1FRR), Frank Vernon (W1EHF), and Henry Cross (W1OOP), lost no time scaring up a truck complete with several helpers and getting the dish transported from the seacoast at Hingham, Mass, to the mud flats at the RSVHFS.



Sam, W1FZJ with 18' dish

After an evening spent assembling the dish, I was appalled to discover that I had at last acquired an antenna too heavy

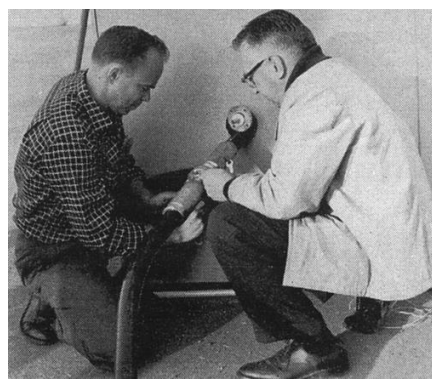
for me to lift. Not only was it too heavy to lift, but not a thing on the place was capable of holding it up and pointing it at the moon with anything like the degree of accuracy required. And so the leaves turned color and fell, and the cold winds came. Fall turned into winter and our aluminum white elephant lay on its back with its arms stretched toward the sky, daring us to prove ourselves worthy of its help. Amateur astronomer Larry Peavy (mechanical designer), and mechanical engineer Frank Le Baron, (W1TQZ), fought the battle of the drawing board. The rest of us argued the merits of el-az versus equatorial mount. Everyone had his own theory and nobody had a solution, which anyone else would agree was satisfactory. Imagine our surprise when our resourceful chief mechanical designer Frank Le Baron requested help in assembling and transporting the new polar mount, which he had secretly designed and built. Before first snow fell, the monster was mounted and ready to use. Mechanically, the problems were solved. Electrically, we were caught flat-footed. **Big Problem No. 2** How do you point the antenna at the moon and how do you know where it is? The only answer is with selsyns and motors. The rest of the winter was spent solving this single problem. Differential amplifiers, two-speed selsyn system, servo motors and hours and hours of calibration finally resulted in a system, which allowed us to point the dish at the moon with an accuracy of better than one degree. An automatic moontrack device then keeps the dish moving at the same rate as the moon. An optical spotting scope is mounted on the dish for calibration purposes. It has never been used to aim the dish for moon bounce purposes for the single reason that the moon is always behind a cloud!



Kilowatt klystron amplifier used in the 1296 moonbounce setup at W1FZJ/W1BU delivers 350 to 400 W output. Receiving gear is in rack in left foreground. The entire station is housed in a tent directly below the dish antenna, and remotely controlled.

Big Problem No. 3 Let's get it on the air! By the middle of May the only remaining problem was to get the project on the air. All the parts were available but getting them hooked up working was a time-consuming job. Help was scarce and many an unsuspecting visitor found himself stringing control wires or running power lines. The Sudbury Radio Club sent a delegation to borrow our generator for Field Day and ended up carrying power supplies and klystrons up to the antenna site. (They never did borrow the generator!) Ted Lanman and Wayne Taft (W1WID) of Tapetone Company stopped in to pass the time of day and

ended up spending six hours running power lines from the house to the transmitter site. The word was out! If you don't want to work, don't come over! And then it was done! The antenna pointed, the transmitter put out RF, the receiver listened, and if the moon was above the horizon, we could hear our own echo. Not sometimes, not maybe, but all the time. **Big Problem No. 4** Where's those guys in California? The answer to that question was a month in coming. But when it came, it was in the form of a signal on 1295.976 via the moon. A five-hour battle seemed to prove that signals could be transmitted and received both ways but not quite well enough to make a contact. The goal had been achieved, however. Signals had been sent from CA to MA via the moon on 1296. Four days later signal reports were exchanged both ways. A month from now we expect readable phone signals (SSB). Meanwhile, we are open for schedules anywhere in the world.



Pretty tough to work fast break-in with this TR ant switch at W6HB!

The full story and more pictures can be seen at : <http://www.ok2kkw.com/eme1960/eme1960eng.htm>

FINAL: Coming up in a about a month is the 13 cm up, microwave part, of the ARRL EME Contest (12/13 Sept) – what a great time to try EME on one of more of the MW bands! And a week after that is the ARI's fall EME Contest weekend.

▶ There is some excellent technical information mixed in with the reports. In particular see the OK1KIR group's report for info on using FT4F versus QRA64D that is shown in bold. It is worthwhile reading for those operating digital on the microwave bands.

▶ Coming up very soon (days!) after this NL arrives is the MWAU for 9 and 6 cm. We hope to find many of your signals of the Moon for this event.

▶ TNX to DL6SH sending the info and pictures of his dish. Seeing the evolution of Slawek's antenna is very instructive and hopefully encourages all of us to improve our systems. We plan to include more material that focuses on different stations in the future.

▶ We try to edit the reports to keep them short and often eliminate the many "thanks for the terrific QSOs". You should know that your signals (and presence) off the Moon are greatly appreciated – even if we do not repeat the many statements of appreciation in the reports. Both of us are preparing for the upcoming Autumn ARI and ARRL EME Contests. We will be looking for you off the Moon! 73 and stay well, Al – K2UYH and Matej – OK1TEH.