432 AND ABOVE EME NEWS
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THE NL WEB VERSION IS PRODUCED BY W6/PA0ZN AND AVAILABLE AT <http://www.nitehawk.com/rasmit/em70cm.html>

CONDITIONS: 70 cm has the spotlight this month with some truly excellent conditions and good activity – see G4RGK's and K1FO's reports. 23 cm was far from dead with plenty of activity there as well. New stations IW2FZR and K6JEY helped increase 1296 activity levels this month. There were also new stations on 432. The presence of UT2EG was a pleasant surprise – see UR5LX's report. JT65 is also starting to generate significant activity on 70 cm, but also controversy – see G3LTF's guest editorial. The SSB contest is scheduled for Feb and will hopefully spike 23 cm activity – see announcement below. The full rules were in the Jan NL.

1296 EME SSB CONTEST: The contest runs from 19 Feb at 1200 to 20 Feb at 1200. SSB to SSB contacts are 2 points and SSB to CW 1 point. The exchange is your Sector (IO, JM, etc.). Let's get everyone possible on!

CORRECTION: AD5RY will be putting New Mexico on 23 cm EME not 70cm EME as noted under the picture at the start of the last month NL. To add to the confusion AD5RY also has a new call K5SO, which he will use in the future.

Progress at K5SO on bring 1296 EME to NM

HIGH ARRL EME CONTEST SCORES: On 432 OH2PO appears to have grabbed 2nd place with 88x36 [see report] from N2IQ with 84x36. HB9Q remains first with 95x40.

EME CONTACTS USING DIGITAL MODES – GUEST EDITORIAL BY G3LTF: The release of the latest versions of JT65 has renewed the controversy about how digital modes are used in EME. I would like briefly to review where we are and make some suggestions for a way eventually to remove the controversy. Since EME began, everyone has grasped eagerly at the latest technology to improve their systems. Front ends started with parametric amplifiers then Germanium transistors and so on to FETs and HEMTs. We now have very much better Tx/Rx stability. In antennas too we have used the commercial developments of improved feed efficiency and powerful yagi modeling software. There were some early experiments in signal processing; in 1964 the "K2TKN Synchronous Detector" and in 1968 the use by WB6IOM of simple coding with very narrow band filters and long integration. (See K1RQJ Net Notes, Jan 23rd). We can use Spectran to help us find weak signals. Most recently, thanks to the work of K1JT, we have been able to experiment with the use of modern coding schemes implemented on a PC.

As soon as more than a handful of people had EME capability the question of what counted as a valid contact emerged and, as generally signals were very weak, the T,M,O substitute for RST became the norm. We eventually arrived at the "EME Operating Procedures for 432MHz and above" edited by Ian, G3SEK (see W6-PA0ZN website). These have been argued over at conferences and in newsletters and are now accepted as the standard by which the question "What counts as valid QSO?" is settled. In the end of course, it is up to the operator himself to decide that he really did copy the required call signs and report. For many years now, we have had widely accepted EME score tables of initials and DXCC scores based on this standard.

The current procedures contain nothing about digital signaling methods, the acceptable exchange for a valid digital mode QSO, or about assistance during a QSO, for example by using an Internet chat room. Dealing with this last point, helping an EME novice to make his first QSO and thereby become "hooked" is surely not the issue, but does using a chat room more or less continually through a QSO affect its validity or not?

Turning now to Digital Modes (DM), these can be helpful to us in two respects, firstly because they can help recover very weak signals and because CW is disappearing as a license condition and inevitably fewer operators will be proficient in it. I personally have no problem with the use of digital signal processing (DSP) on a computer as an aid to reading weak signals, and following an agreed standard for what information is to be exchanged. However, I do want to be absolutely sure that the display reflects what is coming in over the air and is not in any way being influenced by the presence of information about any call sign in the computer. Consider the situation where an operator receives an encoded transmission on his computer and looks at what is decoded and displayed on the screen and, without any prompting of that computer with the expected calls, sees both calls. He can make the judgment that he is receiving the correct information, or not, and then when he does see the correct information he can then enter both calls and add a report, and send those and so on to completion. Because the 432 and 1296 EME frequencies can sometimes be pretty congested, (certainly on CW), we should send callsigns with the report to ensure that the exchange is with the correct station.

I recognize that the above may set a limit on the signal processing gain that could ultimately be achieved. Should we trade signal-processing gain for a wider acceptance of what constitutes a valid DM EME QSO? We must be absolutely sure that the structure and the partitioning of the program is such that there was no possibility that the transmit side of the program could interact with the receive side by accidentally transferring callsign data. As soon as you incorporate callsign detail in the same program as the DSP, it raises some concerns that this might occur.

Perhaps though we should just use anything that comes available in the DM area that enables some sort of EME exchange and abandon the idea of a set of agreed operating procedures? Alternatively, should we now try to get some agreement on what can be generally recognized as a DM QSO? If so, we could then incorporate this agreement within a revised "EME operating procedures for 432 MHz and above".

Keeping the argument completely general it seems to me that it would be useful in the longer term to develop a standard for the way in which a single program DM system for EME should be designed and built because in the future surely we shall see other DM systems emerge. The content of the standard could include such things as the criteria for a valid contact, the message content, the amount of encoding, the program structure and the partitioning. We might want to have an independent audit and/or testing mechanism, perhaps ARRL and DUBUS could be useful bodies to co-ordinate work on this.

At present we have a compromise on the issue of how initial and DXCC lists should be published in that those entries with digital contacts are to be asterisked. In order to avoid the undesirable outcome of two separate lists and a

split EME community, we should put real effort into reaching agreement amongst ourselves on what is acceptable for a digital QSO. The foregoing is my personal position on DM and the issues it raises and is not intended as any criticism of Joe, K1JT; he has certainly shown us an interesting path to EME contacts with lower power budgets. I am grateful to Al for the opportunity to put these thoughts before you.

DL9KR: Jan Bruinier@t-online.de is organizing a fund to EME Dxpeditions on 70 cm -- DL7APV, DL8HCZ (DUBUS), HB9Q, PA3CSG and I have been discussing a future dxpedition fund quite successfully. Financial administration will be provided by DUBUS. There is consensus that money will be given to the respective expedition before it starts. Participation of at least one knowledgeable and experienced EME operator is a must. Only expensive equipment will be insured (such as El/Az rotor, SSPA etc). One of the remaining questions is who should be on the committee, which decides over the respective financial or equipment support? Bernd, DL7APV is one suggestion for EU (and willing). We're also looking for VK3UM's participation. We would like to have one or two fund supported events per year. On the operating side at DL9KR QSOs were made on 2 Jan with K5JL (589/589) - after both of us heard nil from M0EME, on 21 Jan partial N8CQ on sked, NC1I (589/589) rag chew - it's great to have Frank back in full glory, 22 Jan RK6MC (559/0) #815 - tailending K5JL's sked, N8CQ (0/0) for initial #816 - somewhat difficult due to PA problems on Gary's side, and unexpectedly a wildly drifting (1.5 kHz) UT2EG (559/449) #817. UT2EG is in KN67, but other details are unknown.

EA3BB: Josep (EA3DXU) ea3dxu@urcat.org last month sent news on a 23 cm test on 2 Jan for a planed expedition to C31 next summer. Here is a report on their results – We heard HB9BBD with FB sigs, but no QSO and W7BBM near .010, and nil from K2UYH on CW or JT65C. Activity seemed very low. Many times we listened up and down the band, but heard nothing. We discovered several things to be improved. We measured only 70 W in the shack, our preamp needs to be improved, and correct pointing to the moon was not easy. So we have some work to do. We have started work on new 250 W PA. We hope to be QRV for a new test during the DUBUS/REF EME Contest on 16/17 April.

EA3BB Test Team with 23 cm 8 Yagi Array

F1EHN: JJ jjm_f1ehn@wanadoo.fr is working on the next version (V5.1) of his EME tracking/control system. He would very much appreciate hearing from you about ideas for improvement and your personal needs. Please e-mail him. You will find the planned updates on his web site http://www.f1ehn.org.

F6CJG: Louis reports he had a good time on the moon during the ARRL EME Contest with calm WX and many initials. He worked 55 x 28 on 1296. Although Louis worked many stations, he still feels activity was down from the past – especially from NA.

G3LTF: Peter g3ltf@btinternet.com says he does not a lot to report this month -- I seem to be plagued with equipment faults at the moment. On 17 Jan I was on 1296 and worked K9SLQ, G4CCH and LA9NEA. There was aurora on 144 at the time and my echoes were definitely lower in strength than normal. On the 22nd I worked N2UO and later that night on the 23rd VE6TA, LA8LF, PY5ZBU, W7BBM and NA4N. Greg had a much improved signal and was easy copy. I decided to change to 432, but the drive belt on the HA motor broke. It took me 3 days to get a spare. (I now have 3!) On 27 Jan I went on 432 looking for K8CQ, but I had a number of problems with the receive system. Although I was getting good echoes, I was about 3 dB down in sensitivity. I'm still trying to sort out why? I moved my 4CX250B 432 driver into another rack and it didn't like that at all! So I really have *gremlins* at the present, which is stopping progress on work for the higher bands. For these reasons I was not able to be QRV over the 29/30th weekend. I will get it all sorted by the next AW.

G4RGK: Dave g4rgk@btinternet.com found condition to be excellent over the Jan (22/23) AW – It has been many years since I have experienced conditions this good. Unfortunately I was only able to operate for a few hours due to other commitments. I worked NC1I, K1FO, SV1BTR, KL6M, K5JL and UA3PTW. Heard were DL7APV, UT2EG, DL9KR, G4ERG, RW3PX, K0RZ, N8CQ and EA3DXU. It was nice to hear a bit of activity for a change!

GM0ONN: Iain iain.gm0onn@virgin.net is becoming active again on 23 cm EME – I have been working in England for over a year now - hence no radio activity. My family is still in Scotland with me traveling home whenever I can. With regard to 23 cm EME, I have destroyed my 1.8 m dish and acquired a 4 m 0.37 f/d dish. But this project is in limbo until I can move permanently back to Scotland. Meanwhile I have collected a brand new 2.4 m dish. I hope to be QRV with it and 200 W by late spring. I plan to switch to Septum feed, but will start 1296 operation with my VE4MA/hybrid feed. 3 cm operation may also be a possibility in the not too distant future. Please note my new e-mail address.

IW2FZR: Dario dario296@virgilio.it is a new station on 1296 EME. He is using a 4 m dish with 150 W PA and 1 db NF LNA. Dario notes that his CW is not very good, but that he is working to improve it, and asked that you send slowly – hi. Dario has worked number of stations (in some case with the help of his friend IK2MMB). His web site is http://xoomer.virgilio.it/iw2fzr. He is interested in skeds.

IW2FZR, Dario with his 4 m Dish

JH1KRC: Mike jh1krc@syd.odn.ne.jp reports on his Jan AW results on 1296 -- The 22 Jan Eur window was fruitful for me. I QSO'd SK0UX (559/559), LA8LF (559/559) for initial #39, OZ4MM (579/559), OH2DG (569/559), IW2FZR (O/529) #40, HB9BBD (O/O), but without SK. OE9ERC (589) had a

booming signal as usual. On 23 Jan my sked with PY5ZBU produced no signals at either end. The 4-6 deg EL was probably the reason. This window seems to be very difficult. Neither was there any early risers (or late keepers) heard from NA. My window is disturbed at Moon elevations below 26 degs by bush and pine trees 20 -50 m away from the dish. BTW the foliage attenuation of the EME signals can be estimated using information from the following papers: http://www.utexas.edu/research/mopro/chapter02/chapter02-3.htm#Table%202-2:%20 and http://www.utexas.edu/research/mopro/chapter02/chapter02-9.htm#ITU-R. This information shows that the several pine trees in front of my dish will easily mute 1296 EME signals. (Thanks to Takeyasu JA6XKQ/1 for this info.)

K0YW: Bruce k0yw@frontier.net reports on his Jan 23 cm AW skeds results – I nearly missed my early skeds on 22 Jan because they are on Friday afternoon local time. I was on, but didn't copy anybody except W5LUA on .050. Then I realized that I was on the wrong frequency. I thus blue my LA9NEA sked - my apologies to him. That put me into my IK2RTI sked, but nil heard. I heard WB5AFY instantly and we exchanged (569). Dan was loud but chirpy. With a little time to cruise around, I heard LX1DB, K2UYH and VE6TA all on SSB, and OE9ERC and K5GW on CW. I then heard K5AZU calling CQ, worked him (559/559) for state 28 and an initial (gotta count em up agn). Skeds with W4SW and W6YX were nil - W6YX had something blown up. I also heard both ends of K2UYH's 2 way with K6JEY (O/RO, actually in Al's case OR's - hi hi). K6JEY was (529) copy here with a good stable signal. I also heard that UR5LX was not on because his dish was full of snow.

K0RZ: Bill k0rzeme@aol.com was active during the Jan AW, but had frustrating results. The first night, (Friday local) he was on calling CQ for 3 hours, but only QSO'd NC1I. The next night he called SV1BTR several times, but only received QRZs in reply. Bill says that calling CQs does not seem to work anyone. He called G4ERG, but received no response. He could have worked K1FO, NC1I and DL9KR as they were calling CQ. He will be QRV again in Feb.

K1FO: Steve steve@lunarlink.com sends an EME report for Jan 05 – I chose to spend my available operating time on 432 EME instead of the ARRL Jan VHF Contest. This decision was rewarded by absolutely phenomenal EME signals over the weekend. My echoes were stronger than they've been in 2 years. Predicted EME conditions were not great, near apogee and mediocre sky noise. This shows that the predicted conditions should be used as a guideline only and not a hard decisions whether to QRV. Over the weekend more stations were heard than worked. Recent QSOs are on 9 Oct DL0GER for initial #615 and SK0UX #616, on 5 Dec S53RM #617, on 7 Dec VK4AFL and N8CQ #618, on 21 Jan K5JL, on 22 Jan NC1I, RW3PX #619, G4ERG, SV1BTR #620 (new QTH), UA3PTW, on 23 Jan G4RGK, UT2EG #621, G4ERG, and on 24 Jan K5JL. Conditions were still great on Monday night local. Stations QSO'd on 25 Jan 25 were WA4NJP, K4EME, N8CQ and N9AB. My initial count may actually be 2 or 3 higher as I need to go back though my log for the last year.

K5JL: Jay cliebman@ionet.net was active during much of the month on 70 cm. Pre AW, he listened for M0EME, but heard nil. During the AW worked quite a few, but was especially surprised during the post AW to work 6 stations: SM3BYA, UT2EG, NC1I, N9AB and DL7APV for initial #776. Jay says he will be changing his feed back to 23 cm soon.

K5SO: Joe (formally AD5RY) K5SO@direcway.com has new call sign and email address. Joe continues to make great progress on becoming QRV from NM in a big way. He now has his 28' Kennedy dish assembled and working on the mount. He also has a VE4MA feedhorn and is working on combining PAs to get higher power. Joe's website is www.k5so.com.

K6JEY: Doug dougnhelen@moonlink.net has now completed his first 23 cm EME QSO – I made my contact with K9SLQ. After some fussing around and adjusting we were able to exchange (M/M) for a completed QSO. Later I made a 2nd QSO with K2UYH. The rig is a 7' dish with a Hi Spec PA with about 150 W out, although I have had it up to 250 W, driven by a 30 W driver amp and a TS790. My preamp is from HB9BBG and the septum feed is from Mike KL6M. All seemed to work pretty much as expected. I am going to fine tune the dish with better visual tracking, adjust for a bit better sun noise and work on the amplifier. It has been a long project but well worth it. We are open for schedules and we will be on during the contests this spring. Thanks to KJ6HZ for helping out here and K9SLQ for being on the other end of my 1st contact.

K7XQ: Jeff k7xq@elite.net is back on 432, but didn't think condx were all that good during the Jan AW. He has a new array of 4 x 9 wl yagis working, but didn't hear much activity. N9AB was worked on JT65B in a 10 minutes QSO and was the loudest signal heard. W7AMI was copied on JT65B, but no QSO completed. Also copied on JT65B were 7M2PDT and DL7APV, but no QSOs (DL7APV was off frequency by 1 kHz). KL6M was detectable on CW, but again not good enough for a contact. Jeff also heard some weak CW on 432.020, but could not copy the callsigns. He notes that some of his problems maybe due to antenna aiming. He feels signals should have been much stronger with his new antennas. He was having power supply problems with 800 W PA and may have had only 100 W out much of the time.

KE7NR: Don ke7nr@cox.net is QRV on 70 cm EME from DM33 near Phoenix, AZ. He is primarily interested in JT65 operation and has worked a number of stations including K2UYH using this mode. He is running 2 x 28 M2 yagis with a Luner KW PA. Don is interested in skeds.

KM5A: Steve stephenwheaton@isp.com reports that he has been QRT for quite a while due to some storm damage, but that he is now QRV on 70 cm EME again. Steve also notes that he has a new e-mail address - shown.

LA8LF: Anders' LA8LF@tiscali.no EME report – So far we have had mild WX with no snow. I worked on 23 cm on 29 Dec OH1NVQ for initial #158, G4CCH and ON7UN, on 22 Jan F1ANH, F2TU, SK0UX, JH1KRC #159, G4CCH, WB5AFY and VE6TA, and on 23 Jan W7BBM, G3LTF and PY5ZBU. All were on random. NA4N called me, but I got only
A4N and after my 2nd QRZ A4N, F2TU called and worked him. NA4N never came
back to me despite my calling him for 30 minutes. I am off for EA8 on 8 Feb for 6 weeks. I found a 3 m solid 12 GHz dish and will bring it to my house (in EA8). It is in 4 sections and I intend to use it first on 3 cm EME, later on 6 cm. I will bring my 3 cm feed, 0.6 dB NF WG LNA and transverter to do some testing in RX mode. When I am ready I will e-mail some of the active 3 cm stations to see if they can give me a signal to check my RX capability. In the fall I hope to have ready a PSU for my 50W TWT for 10 GHz operation.

LA9NEA: Viggo la9nea@online.no in JO59dx is working to improve his 1296 EME system – I have added a DB6NT transverter and expect to receive a new DB6NT LNA any day. The station consists of a 4.3 m dish with VE4MA feed, GI7B PA (200 W) and ATF54143 LNA followed by two MGF1302s. A second GI7B PA is almost ready for a smoke-test. So when the hybrids are in stock, I will combine 2 x GI7B's on TX for some more power. Look forward me during the AWs!

N2UO: Marc (lu6dw@yahoo.com) was active on 1296 during the Jan AW – I worked on 21 Jan (Friday night local time) G4CCH, G3LTF (Peter dragged me off G4CCH's frequency by sending dots, like on HF, HI!), K5GW, LX1DB, K2UYH and K9SLQ. I did not operate during the remainder of the weekend because the weather was nasty, with a lot of snow and wind. Also, the ARRL January VHF Contest took place that same weekend, but I had my dish ready for the snow and used my yagis on 2 m and 23 cm for a bunch of terrestrial contacts.

N8CQ: Gary gabercr@nc.rr.com has to erect and dismantle his 8 yagi 70 cm EME system every weekend he operates – see picture in the last NL. He was active during the Jan AW and made a couple of QSOs. Gary reports of a lot of stations hearing him, but that he did not hear as well he expected.

NC1I: Frank's frankp@gcq.net activity report – I am finally back on 432 EME after more than three years. Back in the fall of 2001 my azimuth prop-pitch seized after more than 20 years of service. It had been taking on water for years and I knew it was only a matter of time before it failed. About a year and a half ago I acquired a replacement prop-pitch and built up new brackets to mount the prop-pitch on the side of the tower and utilized sprockets and #50 roller chain to drive the mast. I did not really like the arrangement, but it made it much easier to protect it from the weather and remove it for future service. Last Jan I installed the new drive system (in sub-zero F weather!) and was operational for two days before a 50 mph wind snapped the chain's master link allowing the array to free spin... That obviously led to all of the control wires and flex lines being destroyed. The Precision pots used for azimuth readout were also causalities. In early Jan I built up new components to mount the prop-pitch in the tower like a conventional rotor (that's the way it was originally). The trick was the weatherproofing. I ended up having a local sheet metal shop make up some nice custom stainless steel shields to protect everything. I think the weatherproofing problem has been solved. In the days before the Jan AW I installed everything (with the assistance of KA1QFE) and miraculously everything seemed to work as good as when I put the array up in 1994. I have a couple of minor issues that still need attention. The polarity rotation seems incredibly slow at about one second per degree. I don't remember it being that slow before, but it probably was. I guess I am getting less patient as I get older! Due to the size of the array and inertia achieved it is probably not wise to speed it up to much, however I do think a modest increase in speed will be OK mechanically and helpful when conditions are not reciprocal (most of the time).

I am also experiencing a lot of interference. Most of it peeks between 45 degs and vertical. Some of it is S9 and the bottom 10 KHz of the band is not usable. I may need to go above 432.020 to avoid most of it. I will need to look at this closer, but it was not a problem 4 years ago. Even though I am hearing reasonably well, I feel that there is plenty of room for improvement. I suspect I am down a couple of dB from optimum on receive. Some of this is related to the interference and some of it may be related to my current preamp. I will continue to work on this over the coming months. My moon window is not as good as used to be. In the last 3 years they have built 5 houses right at my moon rise window. I am now limited to + 15 degs or so at moonrise. My moonset window will not change, good to about +2. It is already clear to me that 432 activity levels are not close to what they were years ago. I believe 432 EME peeked in the mid 90's. I am going to be as active as I can over the next several months in an effort to help spike activity. My antenna (48 x 15 el FO with rotatable polarity) and amplifier (8938) have not changed. I am now trying a TS2000 vs. the old TS850S and transverter I used for many years. My initial impressions are that the TS2000 is better than expected, but I need to go back and compare it directly to the TS850. I may even go back to the R4C and a 125 Hz filter. I worked on 20 Jan at 0209 K4EME (CW & SSB), 21 Jan at 0314 N9AB, 2223 K5JL, 2250 W7AMI, 2300 DL9KR (15 minute rag chew), 2320 K0RZ and 2337 K2UYH, 22 Jan at 0440 KL6M, 0653 JA6AHB, 0750 KL7HFQ, 2110 K1FO, 2118 UA3PAW, 2140 RW3PX, 2148 G4ERG, 2240 UT2EG and 2352 G4RGK, 23 Jan at 0036 RK6MC, 0051 S53RM and 0102 EA3DXU, 24 Jan at 0304 KL6M and 0345 N8CQ, 25 Jan at 0403 N9AB, 26 Jan at 0435 KL7FH, 29 Jan at 0339 UT2EG and 1233 VK4AFL, and 30 Jan at 0601 K5JL. I received four 589 reports! I intend on being very active next month.

OH2PO: Jukka (OH6DD) oh6dd@sral.fi belatedly sends in ARRL contest score information -- I activated Matti's station again with OH2HYT. In the first weekend we scored 65x29 on 432. I thought we weren't hearing too well and Matti's measurements with Cassiopeia showed that the system had clearly degraded. For the 2nd leg Matti rebuilt the feed amongst other things and the measurements showed that it paid off. In the 2nd weekend we worked a few more stations and ended the contest with 88x36. All QSOs were made on random CW. We were also monitoring on JT65, but did not work anyone.

OH6NVQ: Tomas tomas@multi.fi is now QRV on 1296 EME – I have taken my first steps on 23 cm EME, after getting things up and running on 13 cm! I made my first 23 cm EME QSO on 26 Dec with OH2DG. My feed is a prototype circular WG with a septum transformer inside fitted to my deep 3 m dish. It is not performing especially well. The antenna had very high sidelobes, and I had only around 4 dB of CS/G noise. I worked a few stations using this setup, but never heard my echoes. For the Jan AW I decided to add a choke ring to the open wg, with quite amazing results! My CS/G went up to 5.5 dB and I heard my echoes at once! So far I have only worked 8 stations. I need to get a better preamp and manufacture a nice feed from Aluminum. QSO on 23 cm are marginal with 3 m dish and only 150 W. All equipment except my HF rig is HB/modified surplus. Skeds are most welcome!

OZ/OH33MCK: Petrri petri.kotilainen@nokia.com is still available for skeds from his work QTH in OZ. He recently found a bad connector in one of his phasing cables, which has improved his performance. He is running a 2 yagi array and about 200 W and available for both JT and CW skeds.

OK1CA: Franta ok1ca@ges.cz writes – I sent two reports about my EME activity in Oct and the end of December but the reports did not appear in the NL. [I'm not sure what happened. Possibly they were lost by my SPAM filter. I have since eliminate this filter and now live with the SPAM!] In the second part of the ARRL Contest I was QRV on 1296 MHz only at Sunday. I finished with a 1296 contest score 62x37. Initials were ZL1KA (my last QSO for WAC!), 9H1ES (first OK-9H QSO), ON7UN, I5MPK and LA9NEA to bring my total #132. I am afraid that I missed at least 10 stations in the Contest.

OZ4MM: Stig vestergaard@os.dk has a short report this month – On 21 Jan I had a sked on 432 with N8CQ, but he didn't show up. I found high SWR here, so I went QRT after I checked 1296 and heard K9SLQ with a great signal. On Sunday 22 Jan I worked on moonrise on 1296 JH1KRC, OH2DG, SK0UX, OE9ERC, G4CCH and F1ANH. I had planned to be QRV this past weekend, but unexpected work showed up. I plan to be QRV for the next AW in Feb, but need time to check out my system beforehand.

SV1BRT: Jimmy jimmyv@hol.gr 70 cm EME contest report correction -- What was stated in last NL is wrong. On 70 cm I have worked on CW 33x23 for 22 new initials and to bring me up to #87. (On 2 m I worked 95x40, all on random CW). I was also active on 432 only on Saturday during the Jan AW and worked on random VK4AFL, EA3DXU, RA3PHX, UA3PTW (twice - on a CQ and later on his CQ), K1FO, RK6DC, G4RGK, K5JL and possibly N8CQ on sked. He is not sure about N8CQ because another station jumped in sending a report at the very end. He also had a partial with UT2EG, but the QSO was lost due to QRM.

UR5LX: Sergey ur5lx@vhf-dx.net writes on his 1296 activity – In Jan I only made one QSO on 23 cm EME with WA6PY for initial #29. I heard nil in sked with K0YW, but did copy VE6TA. UT2EG's op is Vlad and I believe he is using 16 yagis and about 500 W from KN68.

VE6TA: Grant ve6ta@telusplanet.net reports – I final gave up on my 4 x 7289 1296 PA, I decided to get 2 x GS-15 PAs up and running. I had ordered a pair of cavities from Mats back in the spring and had not focused on getting them fired up. I read the Dec QST article by W6PQL and decided to use his power supply as the basis for the new amp. The only hitch proved to be the bias system. I have duplicated the bias boards and attempted to separate them as much as possible, but still find the finished PA bias to be linked somehow. I managed to get the first single GS-15 cavity running on 16 Jan and worked G4CCH and K9SLQ. The single amp puts out as much power as my 4 x 7289 PA with no strain or thermal drift. It was really a joy to operate. By 22 Jan I had the second cavity up and running and combined using a pair of N6CA ring hybrids. With 600 W out of the combined set-up, I see less than 1 watt on the dump port of the combiner. I am quite happy with the outcome. Echoes are a consistent S-3 here, which is a real treat. I worked the following with the new amp, 22 Jan LX1DB, K9SLQ, LA8LF and OZ6OL, 23 Jan G3LTF, WA6PY, G4CCH, PY5ZBU for an initial #93, DF3RU and OE9ERC, on 24 Jan K9SLQ and OE9ERC, and on 30 Jan OE9ERC, WA6PY, W6YX with 20 W #94 and WB5AFY #95. I am looking forward to the SSB contest.

W7AMI: Terry (formally KJ7F) w7ami@cableone.net is now W7AMI. Hr also has a related new email address. Terry was active during the Jan AW on 70 cm. Please note contacts with W7AMI do not count as initials if you previously worked KJ7F.

W9IIX: Doug iix1@comcast.net reports 1296 QSOs during the AW with K9SLQ, G4CCH, HB9SV and LX1DB. Doug is still working on amp problems. The rcvr died in his xvtr during the AW and the week before he said "he could have been hit by lightening"!

WB5AFY Dan wb5afy@wb5afy.net has his PA all fixed and stable now. He worked during the Jan AW on 1296 W5LUA, K0YW, G4CCH, LA8LF and OE9ERC. The bad news was that the water pump failed, but it is now fixed. Dan added VE6TA during the post AW.

ZS5Y: Derek derek.gravett@siemens.com in KF59jr is now QRV on 23 cm EME. Hi station consists of a 3.7 m TVRO dish with 60 W in the shack and an LNA by ZS6AXT. Derek is interested in skeds. He also has 2 x 9 wl M2 yagis on 70 cm with 100 W PA. More station details can be fund at www.zs5lee.co.za. Skeds are welcome.

ZS5Y's 3.7 m Dish for 23 cm EME

K2UYH: I had an excellent time EME wise until the snow arrived and prevented operation during the Jan AW. I QSO'd on 432 on 11 Dec at 1512 N8CQ (449/549) on CW for initial #684* despite tree blockage due to the low declination, and on 31 Dec at 0500 KE7NR (O/O) on JT65C #685* peaking at

–14 dB and 0545 AE6EQ (O/O) #686* peak –16 dB. This second QSO was I believe my first random contact using the JT mode. It was truly a random contact as I do not use a logger when on the moon and leave my shack to connect to the Internet. Both KE7NR and AE6EQ were audible and could easily have been copied on CW. I worked on 2 Jan on 1296 at 0644 ON7UN (559/559) on CW, 0730 nil EA3BB on sked – tried both CW and JT65C and 0805 W7BBM (55/33) on SSB. On 3 Jan on 432 I ran a sked with S53RM. At 0800 nil was heard on CW, but at 0830 he was worked (O/O) on JT65C for initial #687*. His JT65 signal was strong enough that I should have copied him on CW. On 15 Jan I had 2 JT65C skeds on 432. I received nil on both. The 1st with ZE5LEE was not confirmed and I suspect that Lee was not present. The 2nd was with OZ/OH3CMK, who discovered a problem with his system. We easily worked the following day (O/O) for initial #689*. After giving up with Petri, I was called and worked at 1950 I5CTE (O/O) on JT65C peaking –14 dB, 2012 DL7UAE (O/O) on JT65C, 2030 DK3SE (O/O) on JT65C #688 and 2058 DL3UAE partial (33/45) on SSB. Tom called on JT65 and asked to try SSB. Although calls were heard both ways, we never exchanged Rs. This was on .048, which is not a frequency I would expect a lot of random activity on. All these QSOs were made totally on random with no help from the Internet. On 16 Jan besides OZ/OH3CMK on 70 cm, I QSO'd on 1296 at 2006 OZ6OL (559/569), 2018 G4CCH (569/549) and 2030 IW2FZR (O/O) on a CW sked for initial #232. I contacted on 17 Jan on 1296 at 0215 W7BBM (55/55) on SSB, and on 432 on 21 Jan heard at 2300 nil from SV1BTR and at 0000 the same from RK6MC. The 70 cm birdies were very bad and my polarization rotator was frozen (-15 deg C). DL9KR was on the same frequency as RK6MC calling N8CQ. It did not appear that Jan was having much success, but it made copy of RK6MC near impossible! I gave up after a couple of periods rather than see both of us miss a contact. I did work NC1I around 2340. It was good to hear Frank back on with an excellent signal. Later in the evening I switched to 1296 and connected with K6JEY #233 to give Doug his 2nd 23 cm EME QSO.

NETNEWS BY G4RGK (BASED on K1RQG's Netnotes): **W2UHI** was kept off the Moon during the AW this month due to –18 deg F temperatures and high winds too! **NA4AN** had 40 mph wind gusts and 10 deg F temperatures, but did work on 1296 W5LUA and OE9ERC for initials and a few of the regulars. He will be getting another GS15B amp to increase his power. **K4EME** reports he worked NC1I on SSB on 70 cm the Wednesday night before the AW. During the AW he could not complete with N8CQ. The noise and condx were just bad on RX. **RN6MT** has finished a GS23B PA and is QRV on 432 with 2 x yagis with 6 m booms. He will add 2 more soon. **RK6MC** has 8 x 26 el BV yagis and a GS35 PA operating. He is be QRV on 432 from KN97lc. **K9SLQ** has a webcam running at http://www.parlorcity.com/k9slq/ccam.htm. During Jan Wayne QSO'd on 1296 K6JEY, UR5LX and IW2FZR. **K7LNP** now has the support structure in place and is now waiting for the WX to improve before he can mount his array. A 23 cm cavity is on the way. **DL7APV** was active on 70 cm during the Jan AW and worked UT2EG for an initial (#) and made a few contacts on JT65. **LX1DB** made several contacts on 23 cm on 9 Jan prior to going on vacation. Stations worked included F2ANH and DK7LJ on SSB. Willy can hear his echoes with 1.5 W of cw on 23 cm and with 20 W has Q5 SSB echoes. **KY5R** is interested in getting on 23 cm EME from NW Alabama. Tim is looking for info to get started. **OK1DFC** has a new e-mail address ok1dfc@seznam.cz. **RW3BP** reports his 47 GHz TWTA is not doing well. **NU7Z** is working on getting back on 13 cm. Rick has completed PA chain and now has 120 W output. **WW2R** has acquired 10' dish and is making septum feed for 23 cm. Dave was listening during the AW and copied LX1DB. **W5LUA** is rebuilding his 23 cm xvtr after 20 years of use. **WA4NJP** reports in Jan he worked K5JL on 432 SSB random with only 100 W. **S59DCD** was QRV during the Jan AW on 13 cm EME. Ray rajko.vavdi@intertrans.si is interested in 13 cm skeds. **W1QC** reports problems with 4 tube 7289 K2AH PA - low output power. **G4ERG** has a new e-mail address g4erg@g4erg.karoo.co.uk. **W7MEM** also has a new e-mail address W7MEM@MSN.com. **SM2BYA** was QRV on 432 under the call SM3BYA from his farm in JP81nx the weekend of 29/30. **K7ND** is reported to be now running a DEMI PA on 70 cm with 600 W out. **KL6M** reports a great time on 70 cm in Jan and picked up 4 new ones. He is now at #145. He plans to be QRV on 12/13 Feb and 19/20 Feb, but is not sure on which bands. **WD5AGO** is basically ready for 13 cm EME with 2.4 m dish and feedhorn, 180 W solidstate PA and LNA. **VE4MA** is still working on TWTA for his 47 GHz EME system. **RW1AW** is now located in KP50da and has new e-mail address rw1aw@skylink.spb.ru. He is working on becoming QRV again on 432 with 8 yagis. **DL1YMK** lost his 70 cm 3cx800A7 PA. The HV supply bypass blew and vaporized other components. **M0EME** still has not completed a 2 way QSO on 70 cm, but should be QRV during the Feb AW and will move his 100 W brick to the feed of his yagi.

FOR SALE: **DL4MEA** is selling his 70 cm array consisting of 6 x 8 m long 33 el BV-OPT70 yagis (the older style) with parallel wire feed consisting of 4 mm double enameled wire and final transformer with bazooka, ending in a 7/16 male plug. The H-frame with support wires can be seen at http://www.qsl.net/dl4mea/antennas/pwirefed.htm. Not included are the rotators. They are located in Langerringen, nr. Augsburg, Munich, Germany. **VE4XC** is looking for RF chokes for use in the conversion to 432 of an AM-6154. **DL8YHR** is looking for an array of 4 x 432 9 wl yagis. **UR5LX** is looking for ATF54143 for his 23 cm LNA. Contact Sergej at ur5lx@vhf-dx.net. **N8CQ** is looking for 5 m or larger dish. **(W2DRZ** reports that New York state is auctioning off 6 dishes, about 15' in Albany on E-bay. Tom says the bid was about $20. Seller name is NYSSURPLUS). **VE1ALQ** is looking for 3 possibly 4 Frequency-West Bricks. They do NOT have to be operational. I do not even need the internal boards. I do prefer them with the bottom plate, and side cover, but could use without them as well. Because of shipping costs, perhaps someone State Side or Canada has 3 or 4 junked bricks they would part with? Contact Darrell at ve1alq@nbnet.nb.ca. **KA8ABR** has information on two 30' dishes and two 16' dishes that are available Contact Mike at 937-235-1820 or murph@erinet.com. (Mike will be hanging on to one of the dishes for himself). **WA1JOF** has a 1296 rectangular horn feed for sale. **K7LNP** is looking for stacking info for FO22 yagi clones. **K5CBL** has some heavy duty pumps (1/6 HP) for water cooling for sale. Contact Troy at tmartin@miswaco.com or tel 405-753-9111. (**W9IIX** recommends these pumps - look at www.thermaltake.com and click on products to view their liquid cooling systems. They are nice quality, especially the radiator/fan assembly, although the liquid capacity appears small.) **VE6TA** has for Sale 2 X 7289 cavity and 4 X 7289 cavity PAs. The amps include 3CI Bias boards. **CT1DMK** hopes to be QRV on 6 cm band soon. Luiz says his foot is improving, but that it still will take a few more months for total recovery. **F5VHX** plans to be QRV on 1296 for the Feb AW. **G4ALH** should be QRV during 19/20 Feb on 70 cm. **S52CW** is still not QRV from his new QTH. His antennas and equipment are still at his old house.

TECHNICAL: W2DRZ writes about US DIGITAL Absolute encoders -- There has been a question about using the AB encoders in hi res. setting. The W2DRZ controller is able to be run in 16 bit res. for the AB encoders. SW1 switch is changed on position 1 switch to "on" and boot the controller. This will change the AB encoder read to 16 bit read of the AB encoders. I do not see any advantage of this, but it is there to do if wish to change from 12 bit to 16 bit read of the encoders. The encoder's must be programmed for hi res. (16 bit) to be used in the new mode. (Even though you can set the resolution of our absolute encoders to Values higher than 4096 (12 bits), they are only accurate to 12 bit).

WSJT TEST JT44/65A-B-C BY DJ9YW: I was interested how the new version of WSJT works and started extensively investigations. Here the results of more than 100 transmissions: I have set up the test equipment to improvise a weak two way QSO on 70 MHz to compare the modes JT44 and JT65A/B/C. The sensitivity of JT65C and JT44 seemed to be comparably good and JT65A was the worse. I compared the time that is necessary to decode the text of extremely weak signals. The result for decoding full call´s [DL3OCH DJ9YW} were:

JT65C	2/2	3 min
JT44	5/5	4.5 min
JT65B	3/3	5 min
JT65A	2/4	7 min

Surprisingly the JT65 signals showed a very high QSB of about ±5 dB, JT44 had just ±1 dB. The different modes are not compatibly to each other. Both stations have to use the same mode, which makes sense. But you can sometimes see that there is something moving in the Synch and Level (dB). So do not worry if nothing decodes. You may find out the used mode by watching the spectrum or just listen since the different modes do not sound the same. I had to be aware that the time is still correct, because the time was jumping a few seconds whenever I changed the mode. Now the most surprising result was regarding the dynamic range. I put a weak signal (70 MHz) into the RX. JT65A/B/C showed most of the time synch 1 at –29 dB, compared to JT44, which showed synch 1 at –26 dB (with the same TX level). We had already observed this effect during EME QSOs on 23 cm. JT44 did not show any weakness with strong signals that were easy to hear in the speaker. I increased the RF level up to 60 dB and JT44 still worked and showed synch 11 and –8 dB. This was not so with JT65. As soon as the signal became higher than 29 dB above the weakest signal to decode a text, it did not decode anymore and came up with a "bad data" message. But these signals were still far from being really strong. The level was equal to a CW signal that might read (449). This effect could cause difficulties if you have QSB during the QSO. Lots of strong data could get lost. Do these results mean that JT44 is still the best? To be certain I plan to do some additional tests off the moon on 1296 MHz. The test in my lab did not investigate how the modes handle the Doppler and short time frequency drift from the transceiver. [Since conducting these tests, Heinrich (and Bodo, DL3OCH) has found that the frequency has to be more stable for JT65. They

have ordered a TCXO for their IC706s that both are using. They tried some EME tests, but were not satisfied with the results and promise more results to follow.]

FINAL: Joel, W5ZN joelh@centurytel.net and Al, W5LUA al_ward@agilent.com are compiling the ARRL EME Contest results and the write up for ARRL Web page and QST. They want to encourage everyone to go to: http://www.arrl.org/contests/soapbox/ and enter your comments, photos, etc., so they can have plenty of material to work with. You need to do this ASAP as their deadline is only a few days away. Also there may still be time for you to express your thoughts on the best dates for next year's ARRL EME Contest. Remember 3 dates are needed, two for the regular weekends and a 3rd for the microwave contests. Send your thoughts to Joel.

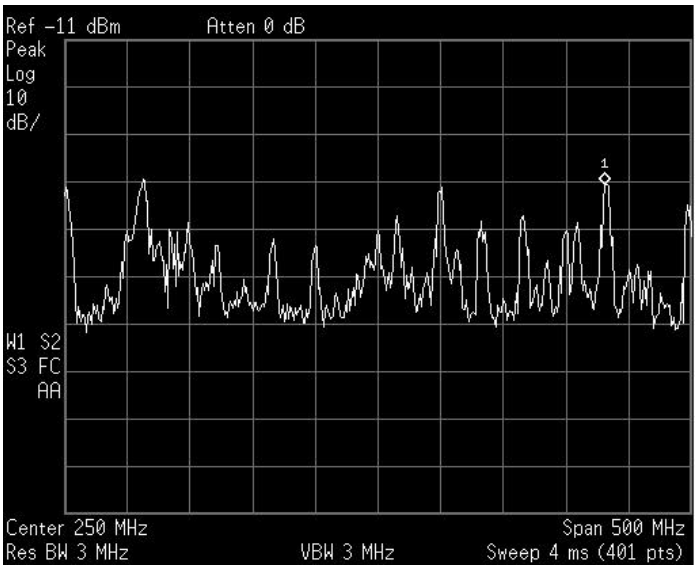
If you are wondering why K1JT has not released another version of JT, it may be because he is busy as reported in the NY Times: "Dr. Joseph Taylor, K1JT, testified for the US Congress in the matter of the maintenance mission for NASA's Space Telescope". Joe's latest version includes a list of calls to be searched by the computer in trying to identify the calling station and has generated quite a controversy as discussed in G3LTF's editorial. I must admit I have not kept up with JT developments and still have version 4.7 on my computer. I need to load the new version and evaluate it before could express an opinion.

Although we missed the date this year, next year will be the 60th anniversary of "Project Diana," the first-ever successful moonbounce experiment conducted January 10, 1946, by the US Army Signal Corps. An article on the Project Diana accomplishment, "A DX Record: To the Moon and Back--How the Moon-Radar Feat was Accomplished," appeared in the April 1946 issue of QST.

I have HB9Q's top (10) list in this NL. The list shown does not include asterisks to indicate the inclusion of digital contacts. Dan is working on restructuring his list to include both a CW/SSB, digital and combined listings with asterisks. He plans to have this new format up on his top web page shortly and it will be the standard for future listing that appear in this NL. Also please note that Dan requires that you check into his web page to up date your listing – so some of the station totals shown are out of date, mine among them. Please keep your totals current.

That's the news for this month. Please keep the info coming. I actually have a backlog of technical material, but we can still use more! My dish has been filled with snow for two weeks, but the weather has been improving and I expect to be QRV again before the SSB Contest. CU off the moon & 73, Al – K2UYH

NOTE ON 70 CM COMPUTER NOISE BY K4EME: I started with changing the frequency in the bios. I did think about trying to trim the crystal, but did not go that far. I was not sure which oscillator to start with not having a schematic. I did go as far as putting more bypass caps in the power supply and Ferrite beads on all input and output cables and supplies. This did lower the response by over 10 dB with the case closed. I tried all the easy thin gs, and then just went shopping and found one that has a much lower noise signature on 432. Is is made by MSI, KT6V Series G52-M7021X1 Version 1.0. This motherboard does have a weak birdie at 432.070 MHz, but the broadband noise falls above 434 MHz. I think with this MB installed in a metal case with ferrites on all external wires and cables, I should be in much better shape. Maybe I will be able to run JT without being covered up by computer noise.



HB9Q's Top Ten List – Top of next column

Pos.	Callsign	Initials
70 cm		
1	DL9KR	813
2	K2UYH	662
3	K1FO	613
4	N9AB	414
5	DK3WG	404
6	G3LTF	386
7	SM2CEW	382
8	SM3AKW	369
9	UR5LX	367
10	OK1KIR	358
23 cm		
1	OE9ERC	290
2	W5LUA	223
3	OZ4MM	215
4	K2UYH	214
5	F2TU	213
5	HB9BBD	213
6	G3LTF	211
7	G4CCH	199
8	ZS6AXT	191
9	OK1KIR	189
10	SM3AKW	188
13 cm		
1	OE9ERC	64
2	W5LUA	53
3	OZ4MM	42
4	OK1KIR	41
5	F2TU	35
6	SM3AKW	34
7	ZS6AXT	32
8	JA4BLC	30
9	WA6PY	24
10	GW3XYW	23
3 cm		
1	W5LUA	50
2	F6KSX	40
3	AA5C	34
4	F2TU	29
5	I5PPE	26
6	OK1UWA	25
7	CT1DMK	22
8	OK1KIR	19
8	G4NNS	19
9	PA0EHG	17
10	I4TTZ	16

FEB SKEDS

FEB 19

Time	1296.040	1296.050
2200z	WB5AFY-LA9NEA	VE6TA -UR5LX
2230z	WB5AFY-UR5LX	
2300z	WB5AFY-W9IIX	VE6TA -NA4N
2330z	WB5AFY-NA4N	VE6TA -W4SM

FEB 20

Time	1296.050
0000z	VE6TA -W9IIX