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: The SSB EME Contest had the smallest turn out in years. I think the biggest problem was WX. This is one of the risks with having a contest in Feb. Many stations in Eur could not operate because of high winds and generally poor WX. The WX was bad in many parts of NA as well. The late hour of the moon window did not help, but there is not much choice in the preferred weekend this year. These same conditions prevailed on 70 cm as well. 432 activity will have an up turn in March with first part on the European World Wide EME (EWWEME) Contest scheduled for 6/7 March on 70, 13 and 6 cm. There is also a 70 cm dxpedition scheduled, 3B9C, Rodrigues Island from 20 March to 13 April – see the Feb NL for more details.

1296 EME SSB CONTEST HIGH SCORES: The truth is I do not have full scores from any of the big guns this year. I suspect that OE9XXI has the top score with 19 QSOs (18 on 2-way SSB), but I do not have Peter's full log. HB9BBD, K5JL, G4CCH and K5GW were all active with big signals. Last year's leader HB9Q did not concentrate on the contest and only QSO'd 8 stations this year.

9H1ES: Fortunato, fbonnici@hotmail.com is interested in skeds for 1296 EME. Since the end of NL and 20 m skeds, he has not had a schedule, nor made a QSO. Fotunato has only a 2.4 m dish with 500 W into the feed, and has never received his own echoes. Fortunato prefers that the station skedding him TX first. When he skeds a station, he puts his TX frequency (not the echo) on the same frequency as he hears the other station, and depends on the sked station to correct for the RX Doppler and find his signal. Fortunato also notes that his CW is not the best and thus prefers skeds. He asks stations working him to be patient. Skeds can be made with Fortunato by email.

DL0SHF: Chris (DF9CY) eme@df9cy.de activated the DL0SHF club station on 23 cm with the intention of operating the SSB Contest, but after 3 hours of increasing wind speed was forced to QRT. Before he quite, he worked on CW K5JL, VE6TA and OZ6OL.

DL3OCH: Bodo Dl3OCH@T-Online.de ran into some unexpected difficulties during both his EA9 and ZB2 dxpeditions –- I had a lot of fun during the dxpeditions, although it was a very long drive of 2300 km from Weingarten to Gibraltar. Everything seemed to work fine until I tried to make some EME QSOs on 9 Feb. I set up the antenna and tried to QSO DJ9YW. The "Guardia Civil" (local police) showed up and wanted to see my permission. They took my passport and my German license and checked everything. I started to operate, but they became upset because I had to start my car engine to have enough power. They thought I was pulling their leg when I pointed my antenna to the moon. It was very hard to explain. They did not speak English or German and my Spanish is just enough to order something in a restaurant. We did not have to wait long for more police to come to see what was going on. After about 30 minutes there were 9 policemen. Fortunately I was able to complete with Heinrich. Then the boss arrived and I had to turn off everything and take down the antenna. Some of these guys wanted us to stop and some of them thought that it was ok. They nearly had a fistfight. The wrong group won, and I had to go to the police department. After a while, somebody who seemed to know something about radio came. He looked at my equipment and asked me about the frequencies that I used. They all came to the conclusion that I could continue. That was good, but the moon was gone. I tried to rearrange the skeds and I was able to work OE9ERC and K2UYH the next day. The WX turned very bad and it was not possible to make any other skeds. I had to wait 2 extra days because the ferry was not running as a result of the storm. We eventually could make it to Gibraltar. There, somebody from the intelligence services showed up, but it was easy to explain what I was doing and he left. At times I had problems with bad QRM on the sked frequency, but was able to move some of the skeds around and completed 3 QSOs with DJ9YW, OE9XXI and OE9ERC. I was also briefly QRV on EME from Spain (EA7) where I QSO'd DJ9YW, OE9XXI and OE9ERC. I made 5300 QSOs on HF and now have to fill out lots of QSL cards. More trips are planned for the future. Heinrich is developing a circular yagi that should give me 3 dB more gain. I hope to use this new antenna next summer. Special thanks goes to DJ9YW and OE9ERC for their support of the dxpeditions and to Andreas who assisted with the driving and setup. See Bodo's webpage at www.qsl.net/dl3och/zb2.htm for additional pictures and details

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ZB2/DL3OCH's 1296 EME operating position in Gibraltar

DL1YMK: Michael DL1YMK@aol.com tried to make it on for the 1296 EME SSB Contest but was curtailed by the WX – We had gale force winds with speeds up to 120 km/h. The next day the winds peaked to 140 km/h, so we were not active during Feb. Fortunately the dish survived. We hope to be QRV both legs of the DUBUS Eur EME Contest. We have done considerable dxpedition activities, but all so far either on HF (C6, KL7, XF1) or microwave (LA, HB0, GM..), but no EME up to now. However, this will change as Monika and myself are evaluating the possibility of going to very remote places with a portable dish for 23 and LD-MOS-power in 2005. We are planning to be in Trenton for the EME2004 Conference and hope to see everyone there.

DL4EBY: Klaus tklaus@snafu.de reports that he has made some changes to the 432 and Up EME Directory on the web in order to minimize the SPAM each of us receives – I replaced the "mailto:" links with JPEG files containing the email address. This has one drawback, the load time increased, as a few hundred JPEG files have to be loaded with http://www.dl4eby.de/eme_dir.htm. I'd like to hear about any problems. Also, I want to encourage people to check and update their directory details, so that they are current for the coming contest season. I will change and upload the data immediately when I get corrections. I sure would like to attend the EME conference this summer and will try to make it happen. [Klaus and I have discussed adding a list of just the calls of active stations, similar to the list that appeared in the last Nov NL, to his directory].

DL4MUP: Dave dave.powis@redknee.com was QRV in the SSB Contest but found activity very low -- I worked OE9XXI, HB9BBD and G4CCH on SSB and HB9BBD and G4CCH on CW. I heard OE9XXI work GW3XYW in SSB, and I saw G4CCH and GW3XYW in JT44 QSO. This was all on 7 Feb before 0300. I stayed in the station until after 0400, when the moon was visible across the entire US - but heard nobody else on the band! I was in the station again on Saturday night, but could not find my echoes! After checking visually, I found

that I needed to put a very large elevation offset in to get the dish on the moon - I think it was due to a combination of very strong winds and the direction they were coming from. Once I found the moon OK, I got good echoes - but there was no-one on the band at all! Where was everyone? Normally, even when there are high winds in parts of Europe there are stations on from NA, at least. I don't think I have ever heard the 23 EME segment so quiet!

DL7APV: Bernd DL7APV@t-online.de is working on a new antenna design for 70 cm EME -- I have an idea for a phased array that could be used on 70 cm EME. The idea was born when we had a big storm during the 2002 ARRL EME Contest. Instead of using 8 or 16 long yagis on high towers, I envisioned using 16 "shorties" on a very small mast close to the ground. Such an array has the big advantage of less wind problems, and could use cross yagis for switching polarization. Of course, one tiny 16 yagi array is nothing compared to DL9KR's 16 long yagis, but if 4, 8 or even 16 of these antennas were combined as a phased array, it would produce a big signal. Thus far I have finished 1 array with only horizontal pol to mechanically test the concept. Unfortunately I have not made to much progress lately. My 16 x 14 el long yagi array has survived all the storms and still looks good. And my new job has kept me very busy. I hope to have a 2nd array with the phase shifters and computer controls finished this year. This would make a fine presentation for the 2004 EME Conference, but only if it is finished and tested. I hope to be able to attend the conference, but this is not certain because my wife's mother is very ill and needs our assistance.

EX3DXU: Josep ea3dxu@urcat.org has completed the first ever 2 yagi to 1 yagi 432 EME QSO -- I QSO'd OK1DFC on JT65B. The contact was made on OK1DFC's moonset and quite easy. Only 3 integration periods were needed to get complete calls and O reports. After the QSO was completed, I was able to copy Zdenec's CQ looking for other possible contacts. The best signal level was -23 dB. The equipment here was 2 x 38 el M2 yagis and GS23B PA. As OK1DFC was using a single 38 el M2 yagis (with a 1500 W PA), I feel certain this QSO qualifies as the first 2 yagi to 1 yagi 70 cm EME. During Feb I found CW activity was very low on 432 and only connected with HB9Q (559/539) on random CW with FB sigs.

F2TU: Philippe f2tu.om@guideo.fr sends his SSB Contest log – I QSO'd on 7 Feb at 0225 HB9BBD (55/55) in JN, 0231 G4CCH (55/55) in IO, 0236 K5JL (55/54) in EM, 0251 K2UYH (54/55) in FN, 0308 W7BBM (43/55) in DM, 0346 VE6TA (43/43) in DO, 0416 K5GW (55/55) EM, partial 0507 WA6PY (43/52) in DM, 0528 OE9XXI (57/55) in JN, 0557 WA6PY (43/52) in DM, 1930 HB9Q (57/54) in JN, 2004 DK7LJ (55/44) in JO, 2038 HB9SV (55/56) in JN, 2240 OZ6OL (54/54) in JO and 2300 F1ANH (43/44) in IN for a total of (14x2)x8x100 = 22,400 points. I will be QRV for the first leg of the Eur World Wide EME Contest on 432/2304 MHz (2304.1+/- and listen on 2420.1). I will also be on 5760 on 7 March between 0300 and 0500. I have a new version of my EME Doppler Control software completed – see http://www.qsl.net/f2tu/EmeDoppler.htm. It now has a Doppler error < 20 Hz at 10 GHz; Can be run without connection to a transceiver; allows in the same window - Fast tuning by digits; Information from TCV; Button for TX /RX; and includes a sequencer with automatic transmission of CW messages; and a link with tracking. It is compatible with Uthost by G4XBF and Ulti-track.

F5SE: Franck kozton@easynet.fr reports that his dish project is taking longer than anticipated, but that he is making plans to attend the EME2004 Conference -- For the EME conference, I would like to give a lecture about "High accuracy Doppler shift computing". I have already written a kind of tutorial on the computing theory and related software to show the relative motion of the Moon, the Earth and an observer located on the Earth, which could be used for the lecture.

G3LQR: Simon G3LQR@aol.com had WX problems during the SSB Contest and Feb AW -- WX was bad again this weekend and I could not get on except for a half hour at 0000 on Saturday. I heard on 23 cm only OE9XXI (55) and some others weakly on SSB. I did hear weak echoes from G3IRQ, and somebody running JT44, but I am not sure who as my WSJT software will not work on the shack computer. It keeps wanting for a OLEAUT.DLL file update. G3IRQ and me plan to increase our dish size a little. I have a Septum feed under construction sized to fit hopefully the smaller f/d of .35. This project will have to wait for better WX. G4DDK is progressing as well with his small dish and should be ready for tests on 1296 in March. My 8 yagis on 432 now giving 13/14 dB of sun noise at 110 flux. So I'm still a bit short on gain. My 4.2 m dish on 1296 is giving 16 dB with same flux, which is about right. I hope to be on in March for the EWW EME contest providing we get some better WX.

G3LTF: Peter 100633.1656@compuserve.com also had WX problems -- The WX in the form of gales totally disrupted operation over the AW. I was not able to unlock the dish until Sunday evening when I called CQ for a while, but the only taker was G4CCH and we had a good CW chat. I've been checking the linearity/dynamic range of my EME systems on 23 and 13 cm. I have reduced the front-end gain and adding band limiting filters in order to be sure that I make accurate measurements of wide band noise sources. I think I was near to limiting or at this point before I applied the attenuators. Now Moon noise on 13 cm is 0.7 -0.8 dB. Unfortunately I shall not be able to be on for the March contest weekend. Otherwise I am happy to run tests or skeds on 70, 23 or 13 cm at anytime when the moon is > 5 degs dec. I am working on 3.4 GHz system that I hopes to have QRV this year on both US and Eur bands.

GW3XYW: Stu gw3xyw@thersgb.net reports on the EME SSB Contest -- as I was QRV too early for the start of the contest, I QSY'd to 1296.044 and called CQ on JT44. After a while I was pleasantly surprised to get a call from OE9ERC and we completed a QSO. This was followed by a call from DJ9YW and another QSO (Sync 7 and –11 dB). Tones were barely audible and I was running at about 30/40 W. In the SSB Contest I worked OE9XXI (55/54), OZ6OL (33/54), G4CCH (45/55), K5GW (56/55) for an initial. At this point an inhibit relay in the PA gave up and I was QRT. Since RX was OK, I decided to look for the SETI beacon on 1296.000 with WSJT on JT65B and the " Big Spectrum " display, as detailed by Cor (VE7BBG) in the NL. A small peak was seen on the red graph after 1 min at 0115, 0120 and 0125. No peaks were seen after any other min intervals. Nothing very positive was seen during the CW ID period. Unfortunately, after repair of the TX, high winds prevented a return to the contest.

GW4DGU: Chris gw4dgu@blaenffos.org writes -- I've not been too active over the last three months. A combination of ill health, work pressures, and a PA that has been a bit more difficult to get going properly than I'd anticipated. I have to track down phase errors across an array of 8 individual amplifiers. The work itself wasn't too much of a problem, but making space in my lab was an issue. The problems with the PA led me to write a technical note, which may be useful. [See the TECHNICAL at the end of this NL].

HB9Q: Dan (HB9CRQ) hb9crq@hb9q.ch continue to add initials with small stations on 70 cm – 432 Conditions seemed to be only fair, but it was a pleasure to work 7 initials, most of them with QRP stations! We also tried to work JT65B, but with no success. Even though we could hear the stations on the speaker we did not get proper decode. Then we tried JT44 where it was no problem to work the stations. So we will continue to work on JT44 in future. New stations worked were SP2OFW (O/O) with 8 x 22 el yagis and 50 W on CW, JG2BRI (O/O) with 16 x 17 el yagis and 50 W on CW, VK3FMD (O/O) with 2 x 27 el yagis and 120 W on CW, VK7MO (O/O) with 1 x 17 el yagi and 200 W on JT44 – his first EME QSO ever, VK3HZ (O/O) with 1 x 21 el yagi and 200 W on JT44 - his first EME QSO also, and ES6RQ (O/O) with 200 W on CW – antenna unknown. We found extremely low activity on 1296 and only spent a few hours working 8 stations on SSB out of which only one was an initial. We will be QRV during the DUBUS EME Contest.

JG2BRI: Misa bri@cac-net.ne.jp ran 5 sked during the Feb AW and completed on 3. One contact was with K2UYH and another was with HB9Q. Misa is running 16 x 17 el yagis and 50 W. All contacts were made on CW. He is interested in additional skeds.

JH1KRC: Mike jh1krc@syd.odn.ne.jp sends news that the next issue (#109) of the Japanese Ham Journal published by CQ Publishing Co. will feature EME high power amplifiers. It is written all in Japanese, but some of the picture and diagrams maybe of interest! There will be articles by many well known Japanese EME operators. Mike wrote about his experiences with some military coaxial cavity amplifiers. He describes a cavity using a 4X150G final (tested with 4CX250K). This PA was purchased $US75 some ten years ago, and with a little effort produces 500 W. He also describes a cavity he presently uses on 432 with a 7213 (or Japanese 7F13R). It was used originally for 220-400 MHz. It will produce 1 kW in class AB1 with 45 w driving on the 70 cm band. He has 2 of these cavities installed in a 19' cabinet, but only drive only one. One came from JA9BOH, and the other from K5JL. Mike spent many hours reworking the front panels to match his shack. He used Collins color spray paints. First Zn-Cr yellow spray after sand papering scratching on the surface, and then St. James gray spray. Both were dried by high temperature in a carton box above a gas range. A good-looking amplifier was finally made. JA regulations require all 432 harmonics must not be higher than the level of –60 dB. These PAs employ a quarter-wave cavity filter and a quarter-wave coax trap made of RG-393/U to bring the 2nd harmonics at -67dB, and the higher harmonics well below –70 dB.

K0YW: Bruce k0yw@frontier.net writes that he has had lots of snow this winter, but has not been QRV recently because of a persistent computer problem that messed up his RS-232 port and shuts down his dish tracking system. He had hoped to have it fixed and be on for the SSB Contest. [I do not think he made it].

M0EME: Paul m0eme@qsl.net is now QRV on 70 cm EME. He now has 1 yagi and 400 W so far, but hopes to expand to 4 yagis soon. He has been working for 2 years to get on 70 cm EME and is interested in the design of a 70 cm preamp using HEMT devices.

N2UO: Marc lu6dw@yahoo.com reports on his 1296 activity -- During the SSB contest I worked K5GW, G4CCH, HB9BBD and K5JL. All were of them were worked on sideband both ways. I did not stay up late so I missed others like OE9XXI. The following day (Sunday) I worked K5JL and K2UYH, both on CW. I also heard Matz, KD5FZX on CW and DK7LJ on SSB. This last station was very strong, but later I discovered is the same as DL0SHF, running 1 kW into a 9 m dish. I called him on SSB with 3 dB less power and he copied my call sign, but we could not complete. He was 6 dB above the noise on my receiver. Unfortunately he can't copy CW; otherwise I could have worked him.

OE9XXI: Peter's riml.peter@aon.at Feb EME report -- I had a lot of nice QSOs on Feb 7 during the SSB Contest on 1296. My contacts included two way SSB QSOs with VA7MM (43/56) and VE7BBG (43/56) for a total score of (18x2+1)x?x100. On 8/9 Feb unfortunately I missed the moved sked with EA9/DL3OCH, but worked Bodo on 13 Feb as ZB2/DL3OCH (O/O) on JT44 for an initial and new DXCC. [Peter also wrote that he has had very serious medical problem for about a year that has hampered many of his activities. He is trying to be positive and says that he will not give up, despite this problem!]

OK1DFC: Zdenek ok1dfc@karneval.cz had an excellent QSO during Feb on 70 cm using his tropo yagi on the horizon with EA3DXU on JT65B. Josep's sigs peaked at –19 dB and were audible at times from his headphones. He also tried again with K2UYH on JT65B, but was only able to achieve a partial QSO. Full calls were heard, but no final Rs. Zdenek has produced a tutorial on JT44/65 in Czech that is available on his web page at http://www.ok1dfc.com/EME/JT65B/JT65%20cesta%20k%20EMEsoubory/frame.htm.

OZ4MM: Stig vestergaard@os.dk wasn't able to be active in the 1296 SSB EME Contest -- I had limited time for EME this weekend because of family activities. I was only able to listen on 1296 for a few minutes in the morning and heard K2UYH and OE9XXI in a SSB QSO. Instead of staying on 23 cm, I used my limited time for a few 432 skeds that had been arranged via email. I worked on 432 CW YO4FRJ (549/459) for initial #250, LU7DZ (549/O) #251 and DXCC 44, N9AB (339/O) on random (he was running QRP) and finally through tree blockade PA5DD (O/O) #252 with 1 28M2 yagi and 800 W.

PA3DZL: Jac Jac.de.Bruyn@12move.nl in JO21 added more 70 cm contacts with his modest system. Last month he QSO'd EA3DXU (O/O) for initial #128. He worked on 30 Jan at 2300 KL6M (O/O) in BP51cc on CW #129. The QSO with EA3DXU was his first 2 yagi to 2 yagi QSO and his first on 70 cm with JT65B. He says JT65B is more difficult on 70 cm than on 2 m due to the Doppler and frequency drift.

UR5LX: Sergey ur5lx@vhf-dx.net in KO00wk sends his log for the 1296 SSB Contest –- I QSO'd on 7 Feb at 0322 HB9BBD (53/539) JN, 0330 K2UYH (53/549) FN, 0337 K5JL (53/549) EM, 0433 K5GW (54/554) EM, 1852 HB9Q (54/529) JN and 2057 OE9XXI (55/449) JN for a contest total of (0x2+6)x100x3 = 1,800 points. I also heard and called DK7LJ and JA6CZD. My station consisted of a 3.2 m dish with a 150 W PA and FHX35G LNA.

VA7MM: Mark's va7mm@rac.ca moonbounce team was QRV on 1296 during Feb AW, but only made a limited number of QSOs. The Station is a 3 m dish, 200 W at feed with a 0.4 dB NF LNA and JT-44 capability. He is looking for schedules or random QSOs and can be reached by email.

VK3FMD: Charlie ibnkarim@bigpond.com corrects the last NL. His antenna is 2 x 27 el yagis on 432, which he plans to expand to 4 over the winter. During Feb he added a CW QSO with HB9Q on 432. [We plan to try 1296 next.]

WA7MIC: Larry wa7mic@earthlink.net was active on 432 EME more than 10 years ago with a large dish from WA is getting back on the moon and writes – I am finally getting my station back together. I have some welding to do on my tower and should have it done.

WE2Y: John johnff1@ix.netcom.com writes -- I have not been on EME lately, but I plan to get my ant working properly again this summer and hope to be QRV then.

YO2IS: Szigy yo2is@yo2bt.ampr.org sends the following belated report on the 2003 ARRL EME Contest – I was glad to run the contest again, this is my 14th in a row! I am proud to show my friends all the nice ARRL EME Contest awards I have received. As usual, I had to wait until the Moon reaches 40 degs elevation and comes over the roof of a nearby house, where dozens of cheap PCs are runnin g full time. I found myself again an unequal fight with the PC carriers/noise and CATV QRM in this downtown area. It's easy now to count the sidelobes of my 432 antennas, when it's turning around... hi. It is even worse on 144. The first leg was quite bad for me, despite the pleasure of an initial and new DXCC with JW/SM2BYA. I made only 5 QSOs and a few more CWNRs. Few stateside stations were heard, despite the good signal from K5GW. I seemed unable to hear many of the midsize EMEers (< 8 yagis). I was pleased to see on the DX-Cluster the 70cm EME reports from YO4FRJ. Maybe some day we will succeed in first YO-YO 432 MHz EME QSO. The second leg was more successful. Conditions improved and I was able to hear several times my own echoes up to a couple of dBs - not bad for more than a decade old K2RIW 70 cm PA! I missed again some of the multi's as N9AB, SM2CEW, OE9ERC and JH4JLV. 70 cm EME activity seems to have declined compared with 1992 when managed to work 45 stations. My total of 16 QSOs is less than a half, and the perspective is not the best. I only made 6 initials an received 4 QSLs in the last 3 years, but logged my 727th 70 cm EME QSO! The easy ways of communication (Internet, cellular phones) seems to catch the youngsters more than EME. If all goes as planned, I will be QRV as usual for the next EME contests.

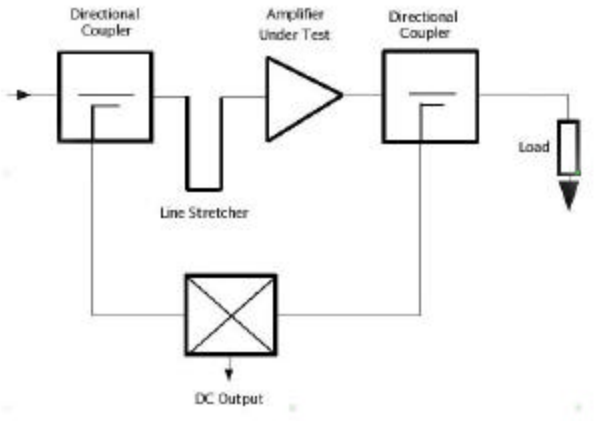
ZS6AXT: Ivo zs6axt@global.co.za was not QRV in Feb because of his lightning disaster, but is making progress – I managed to get ICs for the EL sensor, replaced these and it works - saving > USD500. I should be able to move the dish again soon, then I will repair the stuff in the feed.

K2UYH: I a.katz@ieee.org had both good luck and bad this month. The WX has been pretty terrible this winter, but warmed up enough just 2 days before the SSB contest to get the snow out of the dish and allow AW operation. The bad luck was when I turned the 1296 PA on the fuses blew and this delayed my operation by several hours and reduced my power. Activity seemed down from past years. Part of the problem was bad WX in other areas. We had a heavy rain and local flooding the night of the contest. Despite the problems, I worked on 7 Feb at 0239 HB9BBD (57/57) in JN, 0251 F2TU (55/54) in JN, 0255 K5JL (58/57) in EM, 0257 W7BBM (56/55) in DM, 0302 G4CCH (55/55) in IO, 0328 UR5LX (539/54) in KO (CW-SSB), 0343 VE7BBG (549/44) in CN (CW-SSB), 0410 VE6TA (44/44) in DO, 0421 K5GW (58/57) in EM, 0539 WA6PY (55/52) in DM, 0539 OE9XXI (59/56) in JN and 1040 JA6AHB (559/55) in PM (CW-SSB) for a score of (9x2+3)x100x8 for 16,800 points. The next day on 1296, I worked at 0445 K5JL (579/55), 0355 N2UO (449/559), 0420 KD5FZX (55/52), 0517 DK7LJ (57/44) in JO54 – thought this might be an initial but found that I had worked him several years before and 0552 NA4N (449/559) for initial #221. On 432 I added on 8 Feb at 1130 JG2BRI (O/O) for initial #674 – Misa was running 16 yagis and 50 W, and 1200 JA6AHB (559/559). I was also on for DL3OCH's 1296 dxpeditions. We succeeded in working on 9 Feb at 0630 EA9/DL3OCH (O/O) on JT44 from Ceuta (IM75) for initial #222 and DXCC 46, but ran into problems with ZB2. We had only partials on 13 Feb at 0800 and 15 Feb at 0930 with ZB2/DL3OCH (T/-) on JT44. Bodo received little copy from me on both skeds. I received nearly full calls the first sked and a little less the second. Because the moon was near minimum southern declination, we had low moon elevations <15 degs for most of the sked time. DJ9YW thinks that increased atmospheric loss due to the low elevations may have been the cause. I used linear polarization set at the geometric polarization for the skeds. I theorize that the increased atmospheric paths may have caused the Faraday rotation, which is normally assumed negligible at 1296, to increase and caused the poor copy. Possibly the problem was a combination of both effects. Interestingly I also had a partial with OK1DFC on 70 cm on 21 Feb at 1800. Although full calls were exchanged both ways, I never received Zdenek's final Rs. Copy was very spotty and during most of the sked nil was copied at both ends, despite Zdenek's excellent results with smaller stations.

NET/REFLECTOR NEWS BY G4RGK (BASED on K1RQG's NET NOTES): **VE6TA** is now QRV on 2304 with 90 W n shack. He is looking for skeds ve6ta@telusplanet.net, but notes that the VSWR is a bit high on his scaled down feedhorn. **W2UHI** has been ill and on medication. He is making slow progress, but all EME systems are running. WB7QBS is interested in 432 EME. Frank reports he is very happy with the DB6NT xvtr for 1296. **NA4N** is working on GS-15 cavity. **G4ALH** has not be active on EME recently. **K2DH** has a 12' dish and has acquired a K2AH 4 tube PA for future use on 23 cm. **N4PU** reports he is getting 100 W out of a 7289 PA on 1296. **G4RGK** ran with LU7DZ on 432 in Feb, but heard nil. **SM2CEW** is still active on all EME bands and will be QRV during the EWW EME Contest in March. **W4AD** is still busy working 10 GHz EME, but failed to make it on during the ARRL EME Contest. **KF4HR** is interested in 23 cm EME. Butch can be reached at skyprod4@direcway.com. **LU7DZ** is fully operational on 432 now with 4 good yagis and 1500 W. He is actively looking for skeds now. His email is lu7dz@yahoo.com.ar.

FOR SALE: **LU6KK** needs the copper anode for a GS35B. Does anyone have a burned up tube or an extra anode available? He has the tube without the anode. Contact Fredrico at lu6kk@wsehringer.com. **N4PZ** has 3 Siemens RWNH89 power supplies and 2 RW89D TWTs he doesn't need. All work fine. The TWTs produce 42 dBbm or better (18 W at 5.760 GHz). He needs a power supply for his 10 GHz TWT (RW 1125D) and will trade all his 5.7 stuff for one good RWNH 120 power supply or equivalent. Contact Steve at n4pz1@juno.com. **I5WBE** is looking for a UHF PA SSB TLA 432-100 or TLA 432-200 by SSB Electronic. Any seller or info should email Enrico at i5wbe@i5wbe.it.

TECHNICAL: GW4DGU sends -- A simple technique for phase-matching power amplifiers: Having made a conscious decision to keep my station entirely solid-state this time around, I've been faced with the problems of combining numbers of amplifiers to get EME power levels. One of the problems I've encountered with this has not been the design of the combining networks – it's been relatively easy to make both in-phase and quadrature hybrids with low losses and surprisingly good phase performance using standard cables. The real problem has been to make amplifiers with reproducible phase performance. This has been particularly true at 432 where I've been using coax matching net works and baluns. The FET parameters force the loaded Q of the networks to be relatively high. It's less of a problem at 144, where the intrinsic phase errors are smaller, and is also likely to be less troublesome at 1296 and above when most of the matchin g is printed. I have a group of eight 120 W DMOS amplifiers that were modified for 432 from 220 MHz SSB trunking PAs. Each looks identical, but performs in a very similar manner with regard to Po, efficiency and gain. The forward transfer phase (the angle of the large signal S21, if you believe in large signal S-parameters!) varies between them over a bit more than 90°! I'm lucky enough to have a network analyzer, but I'm reluctant to use it around big PA (unless someone is paying me to!), so I devised a very simple jig to make phase comparisons. I don't claim originality, but I guess it might be of interest to other people. As I wanted to make measurements at just one frequency, I had control over power levels. I was also not interested in trying to measure absolute phase, so a conventional double balanced mixer can be used as a phase detector without regard to calibration. The test set-up looks something like this:



With inputs to the mixer of a few mW – say +5 dBm on each input, the dc output will be of the order of a few hundred mV symmetrical around ground. The line stretcher will allow adjustment of the phase at the mixer so as to get zero volts – which is my choice, as it gives best sensitivity. This could also be accomplished (with patience!) by cutting a cable. Once I'd set-up the system on a reference amplifier, I left the line stretcher alone, and substituted the other amplifier, setting its output level to that of the reference. The phase response was adjusted by adding and subtracting to the lengt h of cable between the line stretcher and the amplifier under test input until the dc output of the mixer was close to zero. Rather than chop-up cable, I used stacks of M/F SMA adaptors, so the notation in my notebook describes the phase response of my amps. in terms of the number of adaptors required to equalize the phase! There is a hazard using this technique. A simple ring modulator exhibits a 180° phase ambiguity, so it would be possible to set-up two amplifiers to give zero volts, and yet be in phase opposition. This could be expensive in output hybrid balancing resistors! It's worth checking amplifiers against the reference amplifier using simple two input/output combiners (either in-phase or quadrature).

TECHNICAL: G4RGK sends the following info on Modifying Bird Slugs for 2,5 kW: Regarding the search for the 2.5 Kw slug´s - I repeat the simple modification to extend the reading to x2 and x2.5 without destroying the instrument box. All you need is a small 1/4" switch with a center position and 2 PCB potentiometers and a bit of wire. The modification is that the voltage from the diode is feed to the midpoint of the switch and from this point directly to the instrument. This is what happens normally and corresponds to x1 position. From the two other positions, a PCB multiturn pot is connected to the point where the instrument is fed. As I recall a 5 or 10 k pot is required. To calibrate, start with the switch in the center position (x1). Using a 1 kW slug, apply 1 kw to the power meter, then switch to the x2.5 position and adjust for the 1 kW point on a 2.5 kW scale. Secondly, switch to the x2 position and adjust for the 1 kW point on a 2 kW scale. If you have a 500 W slug, you can follow the same procedure with 500 W applied to obtain 1250 W and 1 kW scales. This modification has been used at OZ1EME with a Bird meter for many years. It is now also in use with a DIALECTRIC version I have. Theory is that you are applying a maximum of 2.5 volts on the diode, and it can easily handle this "over voltage".

EA9/DL3OCH 59 el, 19.7dB yagis pointed at the moon!

FINAL: Very good news this month. K1RQG is again controlling the 20 m 70 cm UP EME Net and producing his Netnotes. Welcome back Joe you were greatly missed!

You may have noticed on the masthead that we have a new call as for NL distribution by email. W2WD, Warren has agreed to try taking over this task from KD4LT, along with maintaining the 432 UP Email List. Scott had handled the email distribution of the NL from the very beginning and has done an outstanding job over the years. I know his efforts are greatly appreciated not just by myself, but by all who have received the email version of the NL. Tnx Scott and tnx to Warren for agreeing to take it over. There may be some errors as a result of this transitions. If you know someone who should be receiving the NL, but is not or vise verse, please let Warren or myself know.

One of the problems today is SPAM. Klaus, DL4EBY, has modified the 70 cm Up EME Directory to try to minimize the use of the directory for lists. Rein, W6/PA0ZN, plans to do the something similar for the web version of the NL.

EME2004 – N2UO reports that the conference web page at http://www.qsl.net/eme2004/ has been up dated - (Please use the refresh or reload button, if you recently visited the page to get the latest version). The registration form is now available and can be sent to the US address, if the payment is made in US dollars, or to HB9BBD, if paying in Euros. The technical sessions are starting to take shape. A number of interesting papers have been submitted. The topics cover all areas, including RF design, power amplifiers, antennas, digital modes, dxpeditions, portable stations, etc. Please send your registration as soon as possible so we can plan all the events in advance knowing the number of people attending. The contact email for the Conference is info@eme2004.com.

Another correction – the trustee/operator of the SETI EME beacon is WA2IKL, not WA2ILK as indicated in the last NL. Richard rcf@eventide.com will be making a presentation on the beacon at the EME2004 Conference and is willing to provide a tour to anyone who wishes to visit.

The 2003 ARRL EME Contest results should be appearing on the ARRL webpage about the same time as you receive this NL. My friend K2TXB is doing the EME Contest write up this year. Russ tells me that K5GW has set a new all time high multi operator, multi-band score. On 70 cm HB9Q has the highest score with 119x40, but DL9KR has the highest single operator score with 106x38. On 1296 K5JL will get the prize with 82x32. Other high scorers were HB9BBD with 75x32 and G4CCH with 69x24. OE9ERC has the lead score on 13 cm with 15x13 and F2TU on 3 cm with 14x12.

I am still looking for ideas and dates for a Microwave EME Contest.

Please keep the reports and technical information coming. I will plan to be active during EWWEME Contest and hope to hear all of you on. 73, Al – K2UYH.