432 AND ABOVE EME NEWS
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CONDITIONS: The focus this month was on 1296 with the SSB Contest. Unfortunately the WX in Eur was bad. This reduced activity on all bands. Conditions on 1296 seemed excellent producing good SSB copy for those who could make it on. In March the situation will change and the majority of the activity will be on 70 cm for the 1st part of the DUBUS/REF EME Contest. This part of the contest also includes the microwave EME bands – see ZS6AXT report for suggest times to congregate on the 13 and 6 cm bands. With successful EME on 24 GHz, interest is moving to 47 GHz. See the reports by RW3BP, VE4MA and W5LUA for news of 47 GHz.

ON4UV SILENT KEY: ON4KNG has sent the very sad news that our good friend and long time EME operator Marc, ON4UV has died. The following is Peter's report: With deep regret I have to announce that ON4UV passed away a week before the Feb activity weekend. Marc was licensed for more than 50 years. His passion for the radio led him towards moonbounce. He made his 1st EME contact in 1985 on 432. In 1991 he switched to the 23 cm band. Not being a DX hunter, he always preferred to experiment, which lead him in 1996 to start the assembly of 3 m dish suited for 10 GHz EME. One year later, he announced he was ready for the 1st tests, but health troubles caused delays, postponing the project. Although the station was just about ready, he was not given the chance make his 1st QSO. Marc left us on 17 Feb at the age of 82. As long as the moon will shine, we will remember him.

SSB CONTEST HIGH SCORES: We have far from a complete picture of the contest at this time. Among the higher reported scores are HB9Q with 410 points, F2TU with 374 points and K2UYH with 315 points.

SETI EME BEACON BACK IN OPERATION: Seven months after being shut down for upgrading, W2ETI is QRV again and beamed to the Moon on 1296.000 MHz with ten times more power. Beginning on 17 February 2002, the W2ETI 1296.000 MHz EME beacon began operating experimentally at 150 W, key-down during the 1st full minute of every 5-minute clock interval (followed by two cycles of 5 WPM CW ID). Reception reports via e-mail to station trustee Richard, WA2IKL rcf@setileague.org are solicited. For further details on the beacon, including operating schedule updates, see http://www.setileague.org/eme. It operated for 4.5 months at a modest 15 W, before being temporarily shut down in late July for the addition of a 150 W amplifier. K5JL has reported reception of the beacon, which uses only a 4 Helix array.

AL7EB: Ed al7eb@ptialaska.net writes about new 1296 Moon activity from Alaska -- Mike, WL7BQM, and myself are joining forces to build a 1296 EME station at his Sterling, Alaska home (BP40). Mike has several acres available and is building a new "ham shack" to sit below the EME antenna. I have decided to contribute my 16' dish as it has sat for 4 years in my barn. Mike already has an FT-736R (Mutek mod) with 1.2 GHz module he uses for uplink to AO-40. He just purchased a 160 W DL2AM solid-state amp and a preamp from Down East. I am suggesting that he place both at the feedhorn to eliminate feedline loss. He has ordered a VE4MA-IMU feed from VE1ALQ. I think this should make a decent station. [Definitely!] Mike is retired and has both the time and means to make this happen. Knowing him, he will be chomping the bit before the snow is gone to get on with it. I am lending my expertise(?) and some parts to the project, but Mike is the prime mover. He wants to expand to higher bands after getting 23 cm going. I think the commercial TVRO dish will do 5670. Unfortunately, I will not make SETI Conference this year as my travel priorities have shifted to visiting a nice gal in NW Washington, and maybe QSYing QTH to CN88 sometime soon. My EME efforts will go into 2 m and maybe getting a 3 cm receive capability going on the 8' dish this summer.

DK3WG: Jurgen DK3WG@nexgo.de was on for his Feb skeds but copied nil on all of them. He did hear on random K1FO, UT3LL and K9SLQ.

VK3UM QTH AND ANTENNAS – SEE DOUG'S REPORT

DL4KG: Gerald znoyek@t-online.de writes – After a quite successful year in 2001 with several initials, I am now fighting an unknown noise source that keeps me off EME. The noise is about 3-4 S-units above the normal noise level and disappears from time to time (sometimes for several days). It drops on frequencies above 432.050 MHz to a normal level. Maybe it is from a neighborhood computer. As this noise has been present for several months, I am thinking about moving to 23 cm. I will have to start from scratch. I have no space for a dish, so I will have to use yagis. Are 4 yagis (25 dBd) sufficient to have regular EME contacts on 1296? [The big problem with yagis are their linear polarization. I don't see why you cannot use a small stress dish. It does not have to be any larger in size than your yagis. Several smaller dishes can be phased, but this means you need to build multiple feeds. Possibly a temporary arrangement you roll out on SWs and store at other times.] Any hints are welcome. For details about my present setup please have a look at my Web page at www.qsl.net/dl4kg.

DL7APV: Bernd DL7APV@t-online.de writes – I do not yet have my 432 EME array back in operation. I have cleaned all contact points so far, and most of the open feed lines are mounted back on the array. I will be QRV for REF/DUBUS Contest. I have also booked for the Prague 2002 EME Conference.

F/G8MBI: Graham was not on 1296 the 1st night of the SW, because his preamp died. He got it going again for the 2nd night, and heard JH0YSI, but had WX problems that limited his operation. He is working on a new 23 cm PA and hopes to be at 250 W soon. He is at initial #32 (71 heard) with only 50 W.

F2TU: Philippe's F2TU@guideo.fr SSB Contest results and suggestions for the Eur EME Contest follow: QSO'd on 23 Feb at 1413 HB9Q (55/41) JN, 1419 OZ6OL (54/42) JO, 1452 JH0YSI (539/O) PM, 1525 OE9ERC (55/54) JN, 1612 ZS6AXT (559/55) KG, 1824 IK2MMB (52/52) JN, 2021 OH2DG (42/33) KP, 2027 GW3XYW (53/43) IO, 2118 K5JL (55/45) EM, 2139 W2UHI (53/42) EN, 2149 I0UGB (53/53) JN, 2155 OZ4MM (55/55) JO, 2203 OE9XXI (56/55) JN, 2220 K2UYH (55/55) FN, 2249 K4QI (53/53) FM, 2345 LX1DB (56/56) JN, 0000 W7BBM (43/55) DM and 0003 K0YW (55/55) DM for a total of (16x2+2)x11 for 374 points. Wavefiles of my SSB contacts can be found on my Web page at http://www.qsl.net/f2tu/. For the 1st part of the Eur Contest, I suggest operation on 13 cm be concentrated on Saturday 23 March and on 6 cm activity on Sunday 24 March. I shall be also on 70 cm. I always have the 70 cm

feed in place, but with the 13 or the 6 cm feed in place. I plan to call CQ on 2304.100 MHz (listening also on 2320.100 and 2424.100) on 23 March between 0000 and 0030 (NA window) and from 1300 to 1500 (Asia window) and 2100 to 2330 (NA window). I plan to call CQ on 5760.100 MHz on 24 March from 0000 to 0130 (NA window), 1400 to 1500 (Asia window), and 2200 to 2400 (NA window).

F5SE: Franck kozton@easynet.fr has had to revise his plans -- I spent some time computing the mechanical resistance of my future dish and supporting structure. It appears that my project maybe mechanically unsafe. During Feb we experienced several storms with winds up to 80 km/h. Unfortunately at that speed my computer said the tower would have collapsed. So I have to revise my plans. I still have in mind the construction of a large dish, but it will have to be built in another place, where a properly mechanically designed mount can also be erected. My sister owns the right place, about 10 miles from Reims (grid: JN19XH). She agrees to "give" me a couple of acres to rise up my "crazy frying pan" - more about this later. In the meantime, I have come back to my former project and am presently finishing my tilt-up tower. I hope to have it up this month. I experienced unexpected problems with the automatism of the tilt part of the tower (winch drive and safety lock systems), which refused to operate properly. These problems are now solved. I will 1st rise the tropo antennas, and if 70 cm is relatively quiet, I will appear back on EME later this year, with a "traditional" F9FT yagi array. Plans for Prague are also coming along.

F6CJG: Louis sends a belated report on his ARRL EME Contest activity – I enjoyed the contest very much. WX was fine during both legs and copy seemed pretty good on 1296 where I was active. The only problem was a family gathering during the 2nd weekend that limited my radio time. Several new stations were contacted. Among these were WA6PY, IK2MMB, DL1YMK, LU8EDR, F5HAY, F/G8MBI and VE9DW [same VE1ALQ], My score was 69x31. I plan to be in Prague this summer for the conference and meet many EMEers.

G4CCH: Howard g4cch@lineone.net had WX problems during the SW -- I was hoping to be QRV in the 23 cm SSB Contest but very bad weather made this impossible.

G4DZU: Doug doug.parker@btinternet.com is QRV again on 23 cm EME -- After a nearly a year of playing with my toys following early retirement, I am active again on 1296. The station consists of my 10' Andrews dish + VK3UM controller, VE4MA feed and DJ9BV air hybrid, 400 W YD1336 PA and WD5AGO LNA. I was looking forward to the SSB contest, but the WX in the north of England was too bad to be QRV. I did managed to get the dish on the moon for a few minutes, but did not go on transmit as I would have got carried away and tried to be on all night, which would have resulted in damaging the AZ/EL drives. In the few minutes, I did hear OE9XXI, K2UYH, W2UHI, HB9BBD and HB9Q - all on SSB at a good strength. WX permitting, I will be active on random for the next SW. I am also looking into the possibility of changing my VE4MA feed to one with an integral polarizer. This change should give an additional dB or so of sun noise. My home page is www.doug.parker.btinternet.co.uk.

GM0ONN: Iain iain.gm0onn@tinyworld.co.uk despite the bad WX was able to be on for his skeds but had RX problems – I heard nothing. I spoke to Mark, GM4ISM, on the phone and could hear his copy of many 23 cm stations. (He blew up his PA and so was not QRV either). I think my receive problem was due to the ring I add to my VE4MA feed. I thought all would be well, but it apparently caused too much blockage on my small dish - 2 dB of it. Removing the ring brought me back to square one. Then with the sun up high enough to measure, I moved the feed and got an extra 1 dB of sun noise. I now have between 6 and 7 dB of noise. Not too bad for a small dish! This is the best it has performed and all seems to be working ok again. I completed with G4CCH and will be on for the March SW on 23 cm. After, I will be in Orlando, FL with my family on 31 March for 2 weeks.

GM4ISM: Mark dc2light@cableinet.co.uk reports – During the SSB contest I heard many good signals including OE9XXI, OE9ERC, HB9Q, K5JL, K0YW, W2UHI, LX1DB and K2UYH - all Q5 copy. W1ZX was (529) calling GM0ONN, who had RX problems. Unfortunately I had TX problems. My new LNA with a 0.35 dB NF worked fine – Hi. On Sunday I repaired the PA (again).

HB9Q: Dan's hb9crq@hb9q.ch SSB contest report – 23/24 Feb was again very windy - up to 80 km/h. Activity from JA and Eur was very low. We were QRV for the SSB EME contest an tried to defend our title of last year. However we made less QSOs then in 2001. Never the less it was a lot of fun! We got a very interesting SWL report from G8VR. He copied our CW CQ off the moon using a single 23 el Tonna yagi with a 0.3 dB NF WD5AGO LNA right at the feed point. QSO'd were on 23 Feb at 1407 OZ6OL JO65DJ (41/54), 1414 F2TU JN38LG (41/55), 1446 JH0YSI PM85VJ (419/O), 1624 HA5SHF JN97MN (429/52), 1700 OH2DG KP30CK (41/42), 1712 IK2MMB JN45PQ (55/55), 1719 I0UGB JN62BO (54/57), 1938 GW3XYW IO71XR (54/55), 2011 IK3COJ JN65BL (539/54), 2027 ZS6AXT KG33VV (549/56), 2113 K5JL EM15 (57/58), 2151 W1QC FN42HU (55/55), 2153 KD5FZX EM12NP (55/55), 2156 K2UYH FN20OF (54/56), 2200 OZ4MM JO55GH (55/56), 2224 W6HD CM98PF (54/55), 2230 K4QI FM06JA (53/56), 0019 N7AM CN87 (O/O) CW only, 0022 K0YW DM67EM (57/57), 0028 LX1DB JN39EO (58/58), 0048 W1ZX FM18LG (54/54), 0129 OE9ERC JN47VL (55/56), 0214 W7BBM DM42MB (419/55) for a total 41 x 11 = 451 points. We also spent a couple hours on 432 working VK4AFL and JA6DZU to bring us to initial #176.

JA4BLC: Yoshiro ja4blc@web-sanin.co.jp sends the following info on the status of JA EME stations -- JS3SIM js3sim@ma5.seikyou.ne.jp is interested in weekend skeds on 432.070 to avoid local QRM. JJ1NNJ BYD01531@nifty.ne.jp can be QRV on weekends. PSE contact him to confirm the skeds via e-mail. JR9NWC jr9nwc@po.ttn.ne.jp is often away on business travel overseas. It is best to confirm any skeds via e-mail. 7M2PDT 7m2pdt@pop01.odn.ne.jp can normally accept SW skeds. PSE contact him to confirm the skeds via e-mail. JA6AHB ja6ahb@nifty.ne.jp can be QRV on 432 and 1296. He prefers skeds by personal e-mail. JH3EAO jh3eao@pop01.odn.ne.jp is not presently active on 432, but can get on 1296 and is working on 13 cm. Takao's webpage is http://eme.dokidoki.ne.jp. JA2KRW is not QRV until further notice due to radio interference. JO3RNL has a small antenna. JH1XUJ's antenna is broken. JR1RCH is very busy at work. I have no way to contact JH7PAV. JR1EUX is not active. JA6DZI can be reached via e-mail but has not replied to my e-mail concerning his status. I (JA4BLC) can accept skeds on only 13 cm, not 432 or 1296. [Many JA stations also receive the NL by postal mail. Among these are JA2JRJ, JA6CZD, JA7BMB, JA8ERE, JA9BOH, JH4JLV and JR1RCH. Others have the NL e-mailed directly to them.]

JH0YSI: Toshio's group is not presently QRV on 432, because their big yagi array was badly damaged in a storm. They have no plan to make repairs. They are QRV on 1296 with a single 2C39 PA giving 100 W. They hope to get better tubes and more power soon. Their dish is manually controlled. They are not interested in skeds until they automate their tracking. [What is the dish size?]

JA6AHB'S DISH

K0YW: Bruce is working on his the Az drive and reports that his sun noise correlates to W2UHI's plot of SFI – see Frank's Website. During the pre-SW he worked on 1296 he had a 4-way with W2UHI, K5JL and W4OP on SSB. During the SSB contest Bruce worked 15x7 for 105 points. He also QSO'd N7AM on CW.

K4EME: Cowles missed his 432 sked with DL4KG - got the e-mail too late, and did not hear RA3LE due to tracking problems - 10 degs off. Later he worked VE6TA and K5WXN.

K6JEY: Doug dougnhelen@moonlink.net writes -- I have been very busy with my job, but I did do some listening on 432 during the SW. Conditions did not seem very good. I did hear K1FO, but not at his usual signal strength. However, I put in a DCI bandpass filter after the antenna preamp, and it made a big difference. I had fewer birdies and quieter noise floor. I hope to be more active in March.

K9SLQ: Wayne had a fun on 70 cm during the SW. He QSO'd RA3LE, YO2IS, OK1KIR and WB0GGM. There were a few misses. He heard 7M2PDT.

KL7HFQ: Roger rkh@alaska.net reports that gremlins have been at work in Alaska --- I finally moved my shack from my rec room to a room next to the my garage and hooked everything back up. I don't know why but the pol rotor now works and so does the el rotor. I think that the problem with the el rotor is the starting capacitor in the control box. I was measuring voltages in the box and when I put the voltmeter across the starting capacitor the array started move. Maybe the voltmeter recharged the cap, I don't know, but it's been working since. After I got the array aligned and the computer moved down to the shack, I was back on the moon. I heard during the SW the following stations UA3PTW, YO2IS, K1FO, KU4F, K9SLQ(?), S5? and of course KL6M. I made no QSOs, but later worked KL6M. I could hear his echoes 3 characters at a time, and he could hear my characters as I was sending them with no breaks or stopping.

KL6M: Mike melum@customcpu.com was active on 432 during the SW – I worked OE3JPC (O/O) for initial #112 and JS3SIM #113. JS3SIM is vertically polarized I don't think the Italians showed up. I was surprised I didn't hear KU4F in there either. Maybe he forgot.

KU4F: Thorton had 0 for 6 score on his Feb 70 cm skeds. He did work JA6DZI with an outstanding signal. In general he found Feb activity low.

LX1DB: Willie had an excellent signal during the SSB contest. He worked W1ZX, WA1JOF and others on SSB for a total of 16. Willie was unable to work F/G8MBI due to snow static. He stopped at 2 in the morning! Willie is now QRV on 9 cm with 120 W.

N1BUG: Paul paul@n1bug.net is active again on 70 cm -- February was a good month. New ones worked on 70 cm were N4GJV, WA4NJP, K2UYH and VK4AFL. I'm now at initial #23 with a single yagi. W7MEM reports hearing me. I heard K5WXN one day and Dan heard me the next, but no QSO yet. I am quite pleased with the results as I only expected to work a half dozen of the biggest stations when I put up this little yagi. I plan to be active during the March perigee and welcome skeds. KS4YT is handling QSLs and sending a request to Bridget is the quickest way to get a card from me.

N7AM: Jack jackriggs@attbi.com made his 1st 1296 QSOs during the SSB Contest (on CW) – This was a really enjoyable weekend. QSO'd were HB9Q, LX1DB on SSB/CW, K2UYH, K5JL, K4QI, K0YW and W2UHI. We were able to keep the dish on the moon for a solid 6 hours. This was the 1st time we have been seeing the dish be on the moon with 0.2 deg accuracy. The work replacing the drive shaft and 1956 Chevy universal was very fruitful. We also replaced the pot on AZ with one that is enclosed in oil and is submersible. These 2 things got us better tracking allowing us to stay on the moon. Randy, W7HR, was instrumental in writing the program to allow the computer to control the dish, and has been very helpful in doing the small soldering jobs. Bruce, K0YW, has been most helpful in advising me to get the station upgraded. I am very thrilled to work the stations this weekend and can't remember enjoying this Hamming hobby as much as this EME weekend!

OH2DG: Eino's oh2dg@sral.fi 1296 report -- There were quite bad condx during the last SW and SSB contest. We had a snowstorm and strong winds the whole day and evening. I was a bit afraid to unlock the dish during storm. Signals were not stabile because I could not keep my dish directed to the moon at all times. I did make 6 SSB QSOs with HB9Q, GW3XYW, F2TU, OZ6OL, K5JL and OE9XXI. My power was 100 w to the dish. I could use some help. I am testing a HB YL1050 PA for 23 cm based on the design published in the March 93 DUBUS. The resonant points are clear in input and output cavities. I tested 3 different tubes. They are not new, but have not flashed over. They all operate about same: Ua = 2400 V and Ug2 = 500 V, idle current = 300 mA. The gain is only 6 dB. With an input power of 70 W, the output power is only 300 W. DC input power is 1900 W! The efficient is only 15%. The input and output probes are at the optimum points. The output probe is quite close to the inside screen line. The vertical position of the tube is optimum also. The tube location has an affect on the efficiency. If anyone has any ideas as to what I have to do to get better results, please contact to me.

PA4PF: Frank pa4fp@planet.nl reports on his Feb activity – I wasn't able to be QRV for my skeds during the SW. We had high winds here in Eur, up to 120 km/hr. I hope to be QRV next SW. PSE keep the skeds coming!

RA3LE: Valeri worked on 432 during the Feb SW K9SLQ and UA9FAD for initial #165, but did not complete with JA6DZI, JJ1NNJ and JR9NWC. Nil was heard on all other skeds.

RW3BP: Sergei rw3bp@co.ru has joined W5LUA and VE4MA in receiving Sun and Moon noise on 47 GHz -- I tried to do my 1st noise measurements on 47 GHz and achieved the following results: On the Sun I received 4.9 dB at 24 degs, 3.5 dB at 12 degs and 0.6 dB at 3.5 degs of el. I also heard from the Moon 0.3 dB at 50 degs. I used a 2.4 m offset dish, but only partially illuminated (effectively only 1.5 ~ 1.6 m) with 8 dB NF DB6NT diode mixer in DSB mode (no LNA and no filter). My goal for now is to complete my 24 GHz rig and accomplish EME by the end of March. I do not have a good WG switch and plan to use mechanical changing of TX and RX feeds, same as I used on 3 cm. Cooling of the TWT by thermal contact with a water-cooled Aluminum plate. All parts of PS are ready (including 6 kV and 12 kV transformers and rectifiers), but are not tested. The next step is to assemble and hope to adjust. The TX driver for the TWTA is ready - thanks to Vladimir, RA3ACE. I hope to see you all in Prague.

OH2DG's New 70 cm PA

SM2CEW: Peter's sm2cew@telia.com Feb SW report – I was only QRV on 432 this SW except for a brief listen on 1296. Conditions were good, but the weather was terrible, so I could only spend a few hours on the moon. The following stations were worked: VK3UM, JJ1NNJ for initial #382, JA6AHB, RA3LE, UA3PTW, S52CW, UT3LL and I5CTE. I called W4ZRZ on our proposed sked, but he was not there. A new station heard with good signals on 1296 was JH0YSI. I will be active on both 432 and 1296 during the next SW, and open for skeds.

VE4MA: Barry ve4ma@shaw.ca writes regarding his 47 GHz efforts – I did some tests with my 8' offset dish in Nov and was seeing 4.3 dB of Sun with a 9 dB SSB NF at about 20 degs elevation, which based on 24 GHz will be impaired

by the atmosphere. I have recently got my NF down to 6.5 dB, but have not rechecked the Moon Noise. I have been playing with my Varian TWTA on 47 GHz and I have 9 W out. I am still lacking enough drive.

VE6TA: Grant was QRV on 70 cm during the Feb SW. He worked UA3PTW, UT3LL, SK0CC and K4EME. He is interested in 432 skeds.

VK3UM: Doug tikaluna@ycs.com.au now has a special high power permit -- This month I received approval from the Australian Communication Authority (under the new licensing conditions in VK) for a high power permit for both 70 and 23 cm. This followed considerable (and detailed) measurement procedures and independent accreditation of radiation levels under the Australian Standard AS2772. The permit is for celestial experiments only and allows me 1500 and 750 W output on 70 and 23 cm respectively in association with the dish gain and other fixed losses. It is the 1st (and currently only) high power permit issued in VK. During the SW on 432, I managed to get on from 1200 to 1345 UTC on the 23rd and worked (all random) RA3LE (559/559), partial S52CW (549/-) - he disappeared after coming back, SM2CEW (549/569) and SP6OPN (439/559). I heard HB9Q (559) calling ZL1IU for ages (nothing heard here also) as well as OE5JFL (569) and JJ1NNJ (339). Faraday seemed consistent (about 80 degs) with noticeable librations at about 10 degs El. I almost fell asleep at the key and I subsequently gave way before my moon set. I came on for moonrise at 0825 on the 24th and only worked JA6AHB (559/549). We both called CQ with no response and gave it at about 0900. Pretty quiet for an activity weekend, but I guess the WX in Eur was not very good and of course it was pretty dark (early in the morning) on the other side of the pond for my moon rise. [There have been some questions on Doug's initial status. He is in the same grid square as his previously location (QF22) and thus does not count as an initial for those who worked him in his old QTH. Distance wise he has only moved about 65 km.]

VK4AFL: Trevor benton@acenet.net.au was active on 432 during the Feb SW and worked HB9Q with a big signal, VK3UM and JA6DZI with good signals. Nothing else was heard on Saturday. 50 to 60 degs of Faraday shift was observed. Trevor is looking for advice on aligning an W2IMU 1296 feedhorn. [See comments on feed alignment by K2AH in the Feb 97 NL and on modification for better VSWR by G3LTF in June 98 NL].

UA9FAD: Viktor was active on 70 cm during the Feb SW. He had initials with RA3LE and S52CW.

W2UHI: Frank reports he worked on 23 cm W4OP prior to the SW. He also QSO'd K5JL at 2-3 w level and compared copy with hi power signal. Frank was able to copy Jay at S3. During the SW Frank QSO'd F/G8MBI on random. He also worked several on SSB during the contest, but had to shut down due to high winds. [See the Technical Section for info on Frank's Website.]

W4OP: Ben, W4SC reports on the SSB Contest at W4OP in NC -- I was at Dale's for the 23 cm SSB party. We had very good conditions. The WX was perfect, RX perfect, but we had bad AMP problems. Dale worked ZS6AXT (for a new one I believe). He then called W2UHI on CW and the AMP "blew up"! We could not TX, so we listened. The following were heard on CW: WA1JOF (559), N7AM (329) and HB9Q (579). The following heard on SSB: W1ZX (54-5), W7BBM (33), F2TU (56), K0YW (57), OE9ERC (55-6), K4QI (55), K5JL (57), HB9Q (57), K2UYH (56), W2UHI (56), LX1DB (58+), W1QC (55) and KD5FZX (55). LX1DB had a BIG signal with excellent audio, peaking "S9" on the meter at times. W1ZX had a "pile up" at one time with I believe OE9ERC, K0YW and F2TU all calling at the same time. Dale will be working on the AMP to resolve the problem.

W5LUA: Al al_ward@agilent.com writes on his 47 GHz system -- I am making a bracket to mount my 47 GHz receiver and feedhorn in the same place that my 24 GHz EME feed was located. I don't want to undo all my efforts in making the 24 GHz stuff work. So I am keeping the 24 GHz waveguide relay in place and just attaching the 47 GHz waveguide switch in front of the 24 GHz w/g switch. My 24 GHz feed was nearly 3 plus inches in length. I am trying to mount the 47 GHz stuff in the same space as occupied by just the 24 GHz feedhorn. My NF is around 5 to 6 dB, so the big question is how well is the Andrews 3 m dish going to work on 47 GHz?

W7MEM: Mark w7mem@juno.com is located in DN17nt in DN17NT, Idaho. He is QRV on 70 cm with 8 x 432 9 wl yagis and 700 W. He QSO'd several stations during the Feb SW including N4GJV, WA4NJP, K1FO, K5WXN, WB0GGM and K2UYH. On 1 March he added VK4AFL. Mark also has a 1296 xverter and 12' dish but nothing is up and the MMT 1296 needs work.

WA1JOF: Don is back in operation on 1296. He fixed his feed horn and replaced his receive feedline. Don worked during the SW K5JL, W2UHI, IK2MMB and LX1DB. He also heard lots of SSB. During the post SW Don added W7BBM (559/559) for initial #55, and says that maybe there is an improvement on receive.

WA6PY: Paul is planning to be QRV in DUBUS Contest on 432 in March and on 1296 in April with his small 2.4 m dish -- I need addresses for QSLs to KU4F and K5GW. I am working on modifications to my SRC-584 pedestal. The pedestal has selsyns (synchros). I would like to use them instead of converting to expensive absolute digital encoders. I need help and/or suggestions on how to digitize the selsyns output. I heard that Analog Devices has an IC, which does the job, but so far I can not find any info on this IC. Any help and suggestions will be very much appreciated.

WA7RED: Bob viking@pacifier.com sends info on 1296 kW+ PAs -- I'm in the process of building a 1296 MHz linear amplifier using a design by KD5FZX. The design uses the Russian GS-23B/4CX1600U tetrode. With approximately 100 W input, he is getting as much as 1.5 kW output with little or no thermal drift. Mats tried to copy RW1AW's GS-35B amplifier, but he had very poor results. The amplifier max'd at 600 W output with very poor thermal stability. Details of Mats amplifier are available at www.nd2x.net/KD5FZX.html. Another tube that shows great promise is the GS-15B tetrode. They are cheap and each one is capable of around 250 W. Matts is working on a 4 tube GS-15B amplifier for 1 kW output. The GS-15B makes a great intermediate power amplifier for driving the larger tubes because it only requires about 5-10 W drive to produce 100-200 W. Other work with the single GS-15B tube was done by N8OU. Some of it is published on ND2X's website at www.nd2x.net/gs15-tbl.html. This is exciting stuff since the GS-23B tubes do not all make the grade at 1296, whereas the GS-15B tubes all seem to work. I've been purchasing GS-23Bs out of the Ukraine for $150 delivered. I know that Paul Goble, ND2X, has a couple that won't work on 1296, but will operate just fine at 432.

WE2Y: John is coming back on 70 cm, but still does not have his VSWR problem fixed -- SWR is 2.5/1, so I don't want to put high power into my ant yet. I now have pol rotation back. During SW I heard a few stations: KU4F, W7CI, UA3PTW and EA8FF. The net Faraday seemed to be near zero, but the libration seemed to be playing tricks on the sigs. Fading was extreme on 432. I am trying to build a 432 transmatch, so at least I won't destroy my 3CX. I won't get to cleaning my ant connections until spring.

ZS6AXT: Ivo zs6axt@global.co.za is finding that excellent 6 m conditions are interfering with his EME activity -- I had quite a clash with 6 m operation. We had some openings here, after long dry period. I have been operating on 23 cm with the 6 m RX running all the time. On 23 Feb I worked on 23 cm JH0YSI for initial #178. This was quite a surprise since JAs have been rare lately. Then I QSO'd HB9BHU, F2TU CW/SSB, GW3XYW, HB9Q CW/SSB, W2UHI, F/G8MBI, W4OP, K5JL CW/SSB, I0UGB CW/SSB, OE9XXI 2 x SSB [I thought you could not run SSB?], OZ4MM CW/SSB and K2UYH CW/SSB. Heard were IK2MMB and W1QC. On 24 Feb, I added OH2DG, G4CCH, OE9ERC 2 x SSB and K5JL. Heard were W2UHI, W1QC and WA1JOF. No answers to my CQs and no others were heard, so closed down after midnight. Conditions were mostly good with some fast QSB on occasions. Weather here was perfect. I am looking forward to the March Contest, and will probably be only on 13 cm. I am not sure whether I will manage to do necessary finishing touches on the 6 cm equipment. If so, it will be announced on MOON-NET.

K2UYH: I a.katz@ieee.org was on 70 cm on 23 Feb (Friday evening) for my sked with N1BUG. We had a partial N1BUG (-/O). Otherwise 432 activity seemed very light. I made QSOs at 0137 K1FO (569/559) and 0140 K5WXN (559/559). The next day on 23 cm, I had a great time at the beginning of SSB contest. Signals and conditions seemed excellent. The SSB copy of many of the bigger stations was perfect - better than 20 m! We had good WX here, but apparently this was not the case in Eur. Many regular Eur stations were missing. After the moon set in Eur things got very quiet and I took a break. I came back on for the JA/VK window, but heard nothing except my own echoes. After an hour of CQs with nil results, I discovered that my 726 had jumped a MHz and that I was on 1297 not 1296! By this time the moon was at 16 degs and blockage a real problem. I went down to 1296, and called for another 15 minutes with similar nil results. This was very disappointing. QSO'd in the contest on 23 Feb were at 2155 HB9Q (56/54) JN21, 2200 OE9XXI (56/56) JN01, 2204 OZ4MM (57/56) JO20, 2207 OZ6OL (55/56) JO20, 2211 I0UGB (55/53) JN, 2218 W7BBM (54/55) DM42, 2221 F2TU (55/55) JN, 2225 W1QC (55/33) FN42, 2234 K4QI (55/54) FM06, 2238 ZS6AXT (559/35) KG, 2302 W2UHI (55/53) EN19, 2307 K5JL (58/57) EM, 2313 IK2MMB (55/55) JN45, 2318 W6HD (55/55) CM98 and 2343 K0YW (57/58) DM67, and on 24 Feb at 0002 LX1DB (58/57) JN39, 0008 OE9ERC (57/55) JN47, 0050 N7AM (449/329) for initial

#199 but no contest points and 0116 KD5FZX (55/53) EM12. My contest score was (17x2+1)x9 for 315 points. I switched back to 432 on Sunday night and QSO'd on 25 Feb at 0200 N1BUG (O/O) for initial #650 and 0330 W7MEM (339/O) #651.

TECHNICAL: 1) See PA0PLY's VSWR Saga at the end of this NL. 2) Also see WA7RED's report with some interesting information and Web page links on 1296 PAs. 3) Take a look at W2UHI's Website at www.w2uhi.com. Frank has a program for predicting sun noise. Put in the solar flux, dish size, etc and it yields the expected sun noise you should see.

NETNEWS BY G4RGK: **W2WD** has a new e-mail address wbutler@comcast.net. **K5PJR** trbickel@earthlink.net is thinking about putting MO on 1296 EME. Tony wonders if there would be any interest? He has a 13' dish. **W4RDI** has a new e-mail address w4rdi@amsat.org. **WA9FWD** is working on a new 23 cm amp. **W2DRZ** is off 23 cm EME until the spring. **W6WE** is working on his 70 cm system and may be back on in March. **WB5APD** is taking 432 skeds with 1 Yagi and 2 kW. **W7CNK** is working with W2UHI on solar chart. Chuck is trying to determine how SFI is measured and if it is corrected to polarization affects. **K1FO** worked WB5APD on 70 cm. **K9SLQ** is now up to initial #32 on 432. **K5JL** during the SW worked about 25 stations on SSB and added N7AM (449) on CW. On Sunday he worked GM4ISM again. **K5WXN** hear nil from N1BUG during their 70 cm sked, but did work W7MEM. **W1ZX** worked LX1DB and others on SSB on 1296 in Feb. He also heard GM0ONN on 2 transmissions. **KG6FCB** is working on 23 cm EME. He has finished an IMU feed and now working on preamps. **NU7Z** is not QRV at this time. **N2HLT** is not active, but still interested in 70 cm EME. His 8 x FO22 yagi array needs to be rebuilt and put back up. **W7DSA** (CN76) is trying to get on 23 cm EME. **DL1YMK** hope to be on next SW. **UR5LX** hopes to be QRV in summertime 4 yagis on 70 cm. **W7SZ** back on 3 cm. **WB0GGM** worked 4 new ones during the Feb SW on 432. K0RZ will be QRV on 70 cm for the DUBUS/REF Contest. **WA4NJP** worked on 70 cm in Feb K9SLQ and VK4AFL.

FORSALE: **WL7U** (ex-AL7JM) mbennett@ak.net is trying to get back on 1.2 GHz EME after a few years off due to son's college commitments and other expenses. Mike is looking for a 1.2 GHz transverter or a IC-1271. A transverter that has a 144 or 432 IF would be great. **WA7RED** viking@pacifier.com is interested in buying 2 KLM 432-30LBX yagis to complete his 8 x 432 EME array. **WB2GLW** mkulyk@optonline.net has for sale -- Mini-Circuits, ZFSC-2-10G 2way splitter (has 3, new price $70) 2 GHz-10GHz, 1 dB insertion loss above 3 dB split, 12 dB isolation typical for $US35 each, K&L Transfer Switch TS-15-F-SMA-I-SD-DE9P-C+ (has 6, new price was $316) DC to 18 GHz Coax Transfer Switch Failsafe Actuator with suppression diodes and indicators, 15 VDC, 9 pin D sub-min interface, 0.5 dB insertion loss max, Power Handling: 400 W @ 100 MHz, 175 W @ 1 GHz, 60 W @ 10GHz for $US150 each. **OH2DG** <oh2dg@sral.fi> is looking for a 23 cm solid-state amplifier with about 10 dB of gain and an output power of 100 W with a 13.6 or 24 V supply voltage. **KG6FCB** is looking for a 23 cm PA. **JA2KRW** is looking for HV feedthrus. **K0YW** has info on DUBUS subscriptions for NA. **W5LBT** is looking for an RMS voltmeter for noise measurements. [Radio Shack sells one.]

FINAL: • Our wishes for a speedy recovery to Lionel, VE7BQH ve7bqh@shaw.ca. Lionel had my quad heart bypass on 14 Feb. He is now back home and on the mend.

• HB9Q has his upgraded our EME Initial Top List at <www.hb9q.ch>. He now includes all EME bands from .05 to 48 GHz. Dan asks your help in keeping the list up-to-date.

• I believe registration for the Prague EME Conference is now above the 80 make. You need to sign up, if you have not done so already at the WEB site www. emeconference2002.cz.

• Please keep the tech material and reports coming. They are needed! I plan to be active on 70 cm in the REF/DUBUS EME Contest and shall be looking for you off the moon. 73, Al – K2UYH

SKEDS

23 MARCH			
Time	**432.040**	**432.045**	**432.070**
0330z			**7M2PDT -K9SLQ**
0430z			**JJ1NNJ -WB0GGM**
0500z			**JS3SIM -WB0GGM**
2100z	**WA4NJP -DK7LJ**	**K9SLQ -SK0CC**	
2130z	**SK0CC -RA3LE**		
2200z	**G3HUL -RA3LE**		**W4ZRZ -G3LTF**
2230z	**K4EME -RA3LE**	**WB0GGM -G3HUL**	**K9SLQ -G3LTF**
2300z	**WA4NJP -PA4FP**	**WB0GGM -W4ZRZ**	**WA6PY -G3LTF**
2330z	**W7MEM -K0RZ**		
24 MARCH			
Time	**432.040**		
2200z	**W1IPL -DK3WG**		

23 MARCH			
Time	**1296.050**	**1296.070**	**1296.080**
0400z		**JA8IAD -WA4NJP**	
2030z			**G3LTF -GM0ONN**
2100z			**W2UHI -GM0ONN**
2130z			**K5JL -GM0ONN**
2200z			**K0YW -GM0ONN**
2230z	**OH2DG -WA1JOF**		**W5LUA -GM0ONN**
2300z	**W5LUA -F5FEN**		
2330z	**W5LUA -F/G8MB**		
24 MARCH			
Time	**1296.050**	**1296.080**	
0000z	**W5LUA -N7AM**		
0030z	**OH2AXH -WA1JOF**		
0100z	**NL7F -WA1JOF**		
1900z	**OK1CA -DL1YMK**		
2200z		**VE1ALQ -GM0ONN**	
2230z		**K2UYH -GM0ONN**	
2300z		**W1ZX -GM0ONN**	

The VSWR Saga by PA0PLY

Optimising your antenna is a good task to improve your readability of signals. Particular adjusting the standing wave ratio (VSWR) will help a lot for the transmit part of your system. It might help for the receiving side as well, but not necessarily, since it depends on the characteristics of the pre-amp and the fact that low noise figures is almost a synonym for high VSWR ratios. The VSWR is the ratio between forward and reflected power a shown in below formula:

VSWR = [1 + SQRT (RFL/FWD)] / [1 - SQRT (RFL/FWD)]

In amateur terms a VSWR of 1: 3 represent a factor of 25% reflected power. Keeping the VSWR below say 1: 1.5 ensures only 4 % is returned from your antenna. So far most radio ham's will have identical experiences. It turned into a different story when I set-up my 8 x EME Yagi system, using 3 couplers. Carefully adjusting each antenna prior to final mounting showed a good VSWR down in the shack for the entire array. However after some period of time I found stations became weaker and weaker. However the amount of reflected power from my array did not ring the alarm bells. At 400 mW instead of less then 200 mW with 20 Watt of forward RF power seemed reasonable for me. Since the situation didn't improve over a period of time I decided to inspect each individual antenna. Spending a day on the roof, of course in the wintertime, is not my favourite free time activity. I

found the hairpins were rusted and some of the dipole boxes were filled with water. Since it was impossible to measure each antenna's VSWR, I decided following alternative method. Disconnect one antenna; use a long piece of coax and measure the amount of RF power, at the coaxial cable end, which was initially connected to the antenna. This ensures the couplers are working. After replacing the hairpin, the dipole box was re-installed and VSWR was checked for improvement. Although this procedure did result in a little improvement, it did not result in the good performance gained at the time the array was erected. Since springtime had arrived, a scaffold was erected aside the mast for easy assessment to the entire array. Now I was able to measure the VSWR for each antenna, while mounted on the mast. To see what actually happens, I executed VSWR measurements at various locations in the entire chain of coaxial cables down to the Power amplifier as well as to the transceiver location. The results were dramatic at each antenna, but not at the feed point down in the shack! That's why I decided to publish the results of spending many hours to complete the measurement and re-adjustment of my antennas. Below you find an overview of the VSWR figures measured. While figures at the feed are not dramatically bad, the individual antennas are really bad. Now each antenna was re-adjusted for best VSWR. Both the hairpin and the dipole length were optimised for best VSWR. From this experience, it turned out, that particular the length and thickness of the hairpin contributes to a good VSWR. Final results are show in the figure as well. In conclusion, it can be said that in multi-antenna arrays one should pay extremely good attention to its VSWR in the shack. Each little change may be an indication of a dramatic change somewhere up the line. In my case, it was caused by replacing the hairpins with a different diameter wire without the ability to check out each antenna. After this experience, I have confidence in my array, but will keep a sharp eye on changes in the reflected power. Using multiple couplers in the chain between an antenna and the RX/TX location can hide bad conditions.