

EVN TOG Meeting

Max Planck Institut für Radioastronomie

Bonn, Germany

April 10, 2013

Minutes from the meeting

Participants:

<https://indico.mpifr-bonn.mpg.de/indico/confRegistrantsDisplay.py/list?confId=46> - results

by phone: Jon Romney, Walter Brisken (NRAO), Chester Ruszczyk (Haystack Observatory), Ed Himwich (NASA/GSFC)

Agenda (with presentations):

<http://www.radionet-eu.org/radionet3/wiki/doku.php?id=na:eratec:tog:tog-meeting-02:tog-agenda-apr2013>

1. Local Arrangements/Opening Remarks

(Michael Lindqvist, chair)

Lindqvist welcomes everybody, mentions that Pietro Cassaro was unable to come. He talks about the continuing growth of proposal pressure on the EVN, which bodes well for the future.

2 Approval and last minute additions to Agenda

No additions, Agenda was approved

3 Acceptance of minutes from last meeting, Onsala Space Observatory, June 27, 2012

Minutes were accepted without comments

4 Action items from Onsala meeting

1. Campbell to let friends know where to find relevant SCHED catalogue information. Note that there is a permanent action item, “stations should ensure SCHED catalogue information is up-to-date.”
 - Campbell explains that a lot of work is ongoing to accommodate all the new backends. Remove, new **ACTION** on Campbell: Make sure that the SCHED catalogue is updated when a DBBC (or other new equipment) is taken into production. Friends should send information to Campbell.
2. Szomoru to investigate if/how the number of ftp-tests could be increased, as a high time priority of the NEXPREs project.
 - Done, Szomoru will give update in his presentation

3. Lindqvist/Bach to circulate input from Graham concerning implementing of continuous calibration with the DBBC.
 - Done.
4. Lindqvist to make sure that the next TOW covers all topics related to checking out a VLBI station.
 - Done, with help by Quick
5. Lindqvist: investigate if extra money is needed for DBBC spare parts.
 - Done, with Tuccari, proposal on TOG wiki. Wunderlich has made list of parts, implies 2420 euro/station. Will be proposed to directors at next CBD by Lindqvist.
6. All: check out the spare part list on the wiki and make sure that each institute contributes. https://deki.mpifr-bonn.mpg.de/Working_Groups/EVN_TOG/EVN_spare_parts
 - Action remains, everybody is urged to take a look.
7. Bach: Send out information on the Effelsberg 22 GHz phasecal system.
 - Still being investigated by Bach, signal is injected in the horn, but there is a plan to build a new unit. Remove, new **ACTION** Bach/Alef: Look for new possibilities to implement phasecal
8. Tuccari: investigate if the DBBC 16 MHz band shape can be improved.
 - Was done, remove. If the band started at zero MHz the suppression of out-of-band signals would be degraded so to worsen in total the benefits coming from the additional part of band. Work done for DBBC3 can be carried over to DBBC2 on a timescale of perhaps 1 year to obtain improved performance.
9. Lindqvist: put script that transfer GPS-data to vlbeer on the wiki.
 - Done.
10. All L-and C-band stations: determine beam shapes at L-and C-band, if possible at different elevations. Send results, as well as the elevation intervals used, to Keimpema.
 - Remains, only very few stations have done this. Is urgently needed for wide field VLBI
11. Yang, Bach, Lindqvist, Himwich and Graham: discuss new ANTAB script, present conclusions at next TOG.
 - Done.
12. Lindqvist/Szomoru: get Haystack Observatory to send official invitation to Nosov so he can participate in the DBC comparison workshop.
 - Done.
13. All: Make sure that your station spends 7 keur/year on the purchase of disks.
 - Alef notes that only 2/3 of station follow this rule. Move action to **PERMANENT** actions.

5 RadioNet3

Lindqvist explains the set-up of ERATec and its budget.

- Presentation by Lindqvist: [ERATec](#)

6 Reliability/Performance of the EVN

- Reliability/Performance of the EVN (Yang)
- Pre-session checks, e.g., sampler stats, phase-cal, RFI ... (Yang)
- NME results (Yang)
- Feedback from last sessions (Yang)

- Presentation by Jun Yang: [*EVN Performance and Reliability*](#)

- Disk packs arrived late at Kvazar. Lindqvist asks about time of shipping, Campbell answers time was normal, depending on block schedule, various problems, all different
- Arecibo disk was inadvertently erased at JIVE, during conditioning, before correlation. Discussion follows on how to prevent this from happening again. Szomoru notes that disks should not be conditioned at JIVE in the first place. **ACTION** Leeuwinga: send information to stations on how to include the Mark5 command 'get_stats' correctly in the procedure file. **ACTION** Alef: send information to stations on conditioning code of Brisken. **ACTION** Verkouter: see if the conditioning code can be incorporated in jive5ab.

7 Amplitude Calibration

- Quality of calibration (Yang)
- Timely delivery of ANTAB-files? (Yang)
- DBBC ANTAB-files (Yang)
- ANTAB-files other new systems (Yang)
- DBBC Continuous calibration (Bach)

- Presentation by Jun Yang: [*EVN Amplitude calibration*](#)

It was noted that Noto is missing on the calibration-accuracy tables.

Gunn gave an explanation of the problems experienced at Jodrell Bank because of the commissioning of e-MERLIN, which has put the observatory in a state of flux. The 22 GHz system is not currently maintained because of lack of time and resources. Calibration at 6 cm of the Lovell suffers from hysteresis in the towers. The gain at C-band is not polynomial, which is a known problem but not easily solved (10 years already). Antabfs will not work, and nobody seems to know why.

New Antabfs will be implemented at Onsala, is used at Effelsberg, will be tested at Yebes.

ACTION Yang: write piece on phase errors and determination of accurate positions in next EVN newsletter.

ACTION all stations: install Burgess's script lgput to send logfile to vlbeer automatically.

ACTION all stations: send any information on any update of station position to Campbell and/or Yang.

- Presentation by Bach: *DBBC Continuous calibration*

Initial DBBC support included a temporary FS and associated antabfs script. The new FS 9.11.xx supports continuous calibration well, a script also exists to reformat cal data. It should be simple to adapt the antabfs script to accept also continuous calibration. Question is asked who will not implement 80Hz continuous calibration. All stations committed to this, except for Wetzell.

ACTION all stations (except Wetzell): implement 80 Hz continuous calibration.

8 Digital BBC-systems

- DBBC development and production status, (Tuccari)
- DBBC experience at stations (all)
- DBBC feedback from JIVE (Campbell)
- Operational issues with R1002 and CDAS (all)
- R1002 and CDAS feedback from JIVE (Campbell)

- Presentation by Tuccari: [*DBBC Production and delivery status*](#)

Tuccari explains that in the last production batch of Fila10G boards several boards were found to have defects. Analysis is ongoing, X-ray tomography showed no obvious errors in boards. Enough components are available for 4 boards, about 2 weeks are needed for assembly, but first the underlying cause has to be understood.

A new "astro2" mode has been implemented, used by Metsahovi, will be used at Shanghai and Noto.

Vicente mentions that Tsys is not stable in the channels, which is caused by an overflow in the total power reading, must be a software problem.

Onsala, Medicina, Metsahovi will try to use DBBC in parallel with analogue system in session 2, Campbell stresses that this needs to be known well in advance.

Campbell notes that the data from CDAS and R1002 are basically much better than from the previous systems.

9 JIVE

- Presentation by Szomoru: [*Technical Operations and R&D at JIVE*](#)

10 SCHED developments

- Digital BBC-systems, Mark 5C etc. (Campbell)
- New wide-band frequency standards, (Campbell)
- DBBC IF-channel naming convention in Sched (Campbell)

- Presentation by Campbell, no slides, a summary can be found [here](#)

11 2-4 Gbps observations EVN, EVN+VLBA

(This topic was covered after 12: Technical Priorities for the EVN, as Alef had to leave early)

- Tests at 2-4 Gbps (Bach)
- Boundary conditions for co-observing with the VLBA at 1-2 Gbps (Campbell)
- EVN stations without DBBC: how will 2-4 Gbps be done? (all)

Bach reports on the good results obtained with all combinations during tests, including the RDBE. Need to think about 4G test, what hardware is available, whether dual B+ or FILA10G should be used.

Lindqvist notes that a solution is needed for global observations after the legacy mode of the VLBA has shut down.

Campbell talks about the limitations of the tuning of DBBC vs RDBE, and the set of rules he came up with. A summary can be found [here](#)

Lindqvist says this will be tested in the upcoming session.

12 Technical priorities for the EVN

- RadioNet3 JRA DIVA Task 1: Low-noise wide-band integrated amplifiers for VLBI antennas (Alef)
- RadioNet3 JRA DIVA Task 2: DBBC3 (Tuccari)
- Mark 6, XCube, Flexbuff (Alef)

- Presentation by Alef: [RN3 - WP11 JRA DIVA](#)

- Presentation by Tuccari: [DBBC3: project progress](#)

- Presentation by Alef: [Mark5/6 - Xcube - FlexBuff](#)

Romney asks whether the DBBC3 will be capable of handling a larger bandwidth, Tuccari confirms this will be the case.

Alef stresses the point that the TOG and the EVN have to think carefully of what to decide about future recording systems.

13 Field System, status and new features

- Status report, new developments (Himwich)
- DBBC Tsys in PFB-mode (Tuccari, Himwich)

- Presentation by Himwich (via telecon): [Field System topics](#)

Bach mentions that the new FS is used for all observations at Ef, will be useful for finding eventual bugs. Lindqvist tells that Onsala is doing the same, no problems encountered so far.

Himwich would like feedback on gnplot, Bach replies that no problems have been found.

Lindqvist: Tsys is needed for PFB mode, Himwich will look at it after the June deadline.

Some more discussion about the overflow of the power levels follows. Tuccari tells that this has been fixed, but not yet released. Some discussion about versions, Quick says v103 is buggy and that it is better to wait for v104. Backwards compatibility of v104 needs to be tested though.

14 Haystack

Haystack status report (Ruszczyk)

- Presentation by Ruszczyk (via telecon): [Haystack status](#)

Interlude: AOB

Bertarini takes advantage of a pause in the presentations to talk about old disk modules at Bonn, namely the < 2 TB modules. She proposes to retire them from the EVN pool and use them for geodetic observing. If owners want them back, they will have to pay for transport themselves. It is noted by Campbell that 2 Tb packs are still being used. Matter will be settled via emails.

15 Mark5, 6

- Status: Mark 5A/B/B+/C, 6, software, firmware, SDK9 (Ruszczyk)
- Issues regarding the upgrade to SDK9.2 (Verkouter)
- New capabilities of jive5ab (Verkouter)
- Mark 5 problems encountered during last session, (all)
- Disk inventory and purchase status – 7000 € per station/year (Lindqvist, all)
- Disk throughput at JIVE, balancing with NRAO, Astro/Geo pool (Campbell)
- Mark 5 logistics (repairs, shipping rules, VLBA shipping requirements, boxes, labels, etc.) (all)

- Presentation by Ruszczyk (via telecon): [Mark5/Mark6 software status](#)

Verkouter complains about issues with the documentation of SDK9. Ruszczyk acknowledges this, says these have been fixed. Ruszczyk asks everybody to report bugs. **ACTION** all stations: report Mark5C bugs to Ruszczyk. Romney would like to be able to see bug list, has problems with access, Ruszczyk will look into this.

- Presentation by Verkouter: [Change is bad](#)

Verkouter explains the problems that have occurred when installing SDK9 in combination with new Linux kernel on Mark5.

Leeuwinga asks whether different Linux versions have been investigated. Verkouter answers that Conduant seems to use RedHat without any problems occurring, Rusczyk confirms the problem with tests at Haystack using yet another Linux.

- Presentation by Verkouter: [\\$\\$\\$\\$\\$\\$](#)

Presentation concerns using Jive5AB for all EVN operations.

Bach asks whether Jive5AB will be ready for the next May 2 e-VLBI session, this is confirmed by Verkouter. Quick suggests running it as a disk session, as a test. Gunn suggests more tests might be in order before doing a complete recorded EVN session using Jive5AB.

Rusczyk asks whether JIVE will take responsibility for all operational issues in case Jive5AB becomes standard, this is confirmed by Szomoru.

Rusczyk will continue support for Mark5 control code.

Questions are raised about the support for 2G by Yang (not yet supported), doing e without recording by Kuper (is possible). Discussion ensues about operational aspect, whether to do e-VLBI-only using a normal schedule (currently e-VLBI needs a schedule which has all Mark5 commands removed). The consensus is that it will be safest to keep mixed recording/real-time and real-time-only separate, through the use of the specially prepared schedule for e-VLBI-only experiments, as is the usage now. A decision is also made to use the test time of the next e-VLBI session for a multi-station Jive5AB test, including some bank switches.

Some discussion follows from the suggestion of Himwich to use automatic bank switching. Quick mentions that stations should upgrade their FS. **ACTION** all stations, upgrade any FS 9.11.x to at least 9.11.2 if they are using a Mark5B (fix of automatic bank switching).

16 NRAO

- NRAO status report (Romney)

- Presentation by Romney (via telecon): [Status Report on NRAO RDBE: PFB & DDC](#)

Brisken: tells about problems switching from DDC to PFB mode, not 100% reliable, in most cases initialization goes wrong, even after three tries.

All 12 Mk5C units use drs. Most problems are disk failures (1-2 per day!), caused by handling. Python as a control language is not really reliable enough. Two Mark5s at USNO are using something Brisken wrote instead of drs, maybe shift to that for all units.

SDK9.3 is 64 bits, could be useful at correlator, speed up of cornerturning for example. The Mark5As at the stations will be decommissioned by the end of the year, shipped back and added to correlator.

Campbell asks whether VLBA will be producing VDIF data from session 3 on. This is not clear yet.

17 Activities at EVN stations (all)

No comments

18 Activities at potential new EVN stations

- Presentation by Taehyun Jung: [Current status and activities of KVN](#)

19 Upcoming meetings (Lindqvist)

- TOW, Haystack, May 6-9, 2013
- 2nd International VLBI Technology Workshop, Jeju Island, Korea, 10-12 October, 2013
- ERATec, TWS, Calibration workshop, October 28-29, 2013

20 Date and place of the next TOG meeting

- Wettzell, December, 2013 or January, 2014