Minutes of the TOG Meeting, MRO, Helsinki, Finland

(21-22. June 2010)

Local Arrangements/Opening Remarks (Mujunen & Alef)

Welcome from A. Mujunen & W. Alef. The schedule of the day was presented. Alef gave an introduction of the background of the TOG meeting. Rottmann introduced the travel claim forms and boundary conditions for the travel claims. She asked participants to sign the participant's list.

1. Approval & last minute additions to the agenda [All]
   - A talk from P. Cassaro about the status of the Noto Antenna was accepted as an additional point of the agenda.
2. Acceptance of minutes from last meeting
   - The minutes from the last meeting have been accepted.
3. Review of Action Items from last meeting

1) Alef to ask Kus if Directors can donate money to purchase spare Mark 5 backplanes, and any other spare parts if needed.
   - Alef reported that the EVN directors agreed to provide extra money. However to set up the logistics, stations have to provide input on which parts are needed and should be stored as a spare part at a repository.
   - Alef noted that as soon as the DBBC will be available, DBBC spare parts will be needed.
   - An open-access wiki page will be created to manage a list of the spare parts.

➔ Alef will set up wiki page for the spare parts

2) Ruszczyk to contact W. Brisken to investigate how NRAO handles the Mark5A 'communication problem'. This refers to the Mark 5 having a tendency to be slow responding to requests.
   - Shifted to agenda item 11 → OPEN
3) Ruszczyk to investigate when SDK 9.x will be released.
   - Shifted to the agenda item 11 → OPEN
4) Stations to summarize TRACK related errors and send to Romney.
   - Stations have to be aware that track problems must be reported to NRAO
5) Alef to discuss with Tuccari about dBBC acceptance test.
   - Not yet done, see presentation below by Alef/Tuccari
6) Olnon (JIVE) and Walker to incorporate information on frequency agility in SCHED.
   - JIVE will name a person for this action
7) All friends to enter RFI-events in the RFI database.
   - The chairman has encouraged the station friends to take this seriously and follow this action, as it is an important issue. All RFI shall be inserted.
8) Szomoru to investigate if/how the number of ftp-tests could be increased, e.g., one before each user experiment.

- Campbell reported that the reliability of EVN has improved, it could be improved even further if the operators could give a quick feedback from the session about their performance
- The NEXPReS project will look for a solution of this action item.

➔Szomoru will try to schedule this task at the beginning of the NEXPReS project.

9) All friends should use Burgess script lgput (or something similar) to send the log directly to vlbeer after the experiment has ended.
   - Problems with the script were reported for of e-VLBI experiments. It is due to too short gaps between the experiments.

➔ Bigger gaps shall be scheduled to allow a proper use of lgput

➔ Stations should use Burgess script lgput (Recommendation)

10) The Russians stations should deliver gain curve, DPFU and Tcal-values at all their observing frequencies as soon as possible
    - Russian stations received all required help from JIVE

➔ Alef will report to EVN Directors that the Russians operators shall deliver the gain curves, DPFU and get a proper training.

SESSION PREPARATION:

Gunn will send email before to each session when the final versions of all schedules are ready for download.

All should check that Mk5 modules are placed squarely on a flat surface when received, otherwise connectors are easily damaged when bent 8packs get inserted in Mark 5 units.

All stations should condition disk packs if time permits, especially those which are to be used for 1Gbps recording. If a disk pack is found to be not suitable for 1Gbps recording, the label can be changed to 512 Mbps.

All stations, which do both astronomy and geodesy, should clearly distinguish between astronomical and geodetic 8packs and ensure there is no "leakage" into the wrong pool, as mixing pools can create problems for scheduling.

Disk packs should be shipped with one European and one US address on covers so they can be easily returned in case a shipment is lost in transit.

DURING SESSIONS:

All stations should look at data regularly with chchk program, use it to locate significant RFI and report the results to Polatidis and CRAF representatives, and use it to check phasecal throughout the session. The chchk program can be run in gaps, or for example on ftp data files.

All stations should monitor Tcal throughout sessions. This can be done by running ANTABFS and plotting the results.

All stations should forward FS error log files to Himwich in the event of a crash, including details of what the FS was doing when the crash occurred.
All stations should try to run the FS diagnostic tests and investigate the results.

All stations should ship disk packs as soon as they are full, at least once per week, following the Bologna rules.

SESSION FEEDBACK:

All stations should look at pipeline results available from the EVN data archive pages at JIVE, in particular amplitude corrections found by selfcal on strong, compact calibrators. JIVE support scientists should include a comment on the quality of amplitude calibration results, especially to indicate cases where a problem may have occurred and the amplitude correction factors are unreliable.

NME calibration files should be made available as early as possible. All stations should look at NME reports sent by JIVE. NMEs should be pipelined as early as possible and email sent to EVNtech when the results are available, to ensure feedback is provided well in advance of the next session.

Stations must aim to produce ANTAB and RXG files within 2 weeks after the end of a session. For eVLBI, RXG files from the previous session can often be used. ANTAB files for eVLBI experiments should be produced as soon as possible as rapid analysis is often a high priority for these experiments. JIVE should inform Alef of any problems, so that Directors can be asked to prioritise calibration if insufficient time is available at stations.

4. Reliability/Performance of the EVN (JIVE) –
see http://www.radionet-eu.org/fp7wiki/lib/exe/fetch.php?media=na:engineering:ew:jive_reliability2010.pdf

- Daily sampled gps data files are not available for Russian stations

➔ JIVE will send to Alef a list of what Russians stations shall do for the proper EVN observations. Alef will present this to the EVN CBD.

- MERLIN needs to improve the assignment of the limited MERLIN frequency bands to the sub-bands requested in each observation.
- Campbell mentioned that the FTP fringe tests increased the recording rate from 256 Mbit/s to 512 Mbit/s. With this recording rate JIVE can test 16 BBCs instead of 8 BBCs. This is a significant improvement.
- Ys has problems with 2 beams, one is broken and the other one has problems due to rust. This will be fixed within 2-3 weeks and the antenna shall be ready for the 3/2010 session.
- The reason for the significant sensitivity loss at Torun was found. Borkowski thinks that it could be due to an operator entering a wrong feed offset which caused the antenna to be off source.
- No feedback from UK antennas is possible due to controllers and not operators at the antennas. The controllers insert information into log files, which are extracted by Gunn as feedback. The purpose of the feedback was discussed. It is satisfactory to have the feedback in the Field System logs. JIVE has a tool that extracts comments from the logs.
- De Vicente mentioned that during the last session the correlator used a wrong setup for Ys and, as a consequence, no fringes were found at the beginning of the experiment. The correlator team however had assumed problems with the station equipment and requested them to check it and reboot if nothing could be found. A reboot was not necessary since the correlator noticed about their wrong setup and

fixed it before. De Vicente pointed the lack of a tool that helps the station to diagnose problems from the Mark5 if they happen. jivemark5a is started from the station but managed remotely by the correlator. Fmset is not available and hence the Mark5 timing synchronization can only be checked via NTP and stations do not know if this is enough. When using jivemark5 no log messages are available in the Field System log, as with dimino. He suggested that some verbosity in jivemark5a could help or, alternatively, an additional tool that helps the station say if the Mark5 is working and sending data correctly.

➔Some stations have poor sampler statistics, it is recommended to keep the BBCs in good shape until they will be replaced by e.g. the DBBC.

- Alef – reported, that Tr and Jb will not have a DBBC. Jodrell will have its own BBC solution. Torun plans to buy a DBBC still this year.

Comments to the report from the session 1/2010

- Nt – schedules were prepared for 2 different frequencies, there were 2 different set-ups instead of one. The problem shall be communicated to Ed.
- Antenna was not slewing for 27 hrs and nobody noticed it. This problem is not communicated by the antenna into the log, it can only be noticed via visual inspection.
- Jb telescope encoder failure – Gunn reported that it is a Lowell telescope problem. Due to antenna communication problems the antenna is forced to stop.

Comments to the report from the session 3/2009

- Tr no fringes – Borkowski commented that, it seems we have finally pinpointed the reason for lack of fringes to Tr in a few experiments of previous sessions and one ToO experiment. Apparently it was due to improper treatment of the FS lo= command in our local installation. In effect sometimes the LO frequency was offset by 1 MHz. In May 2010 R. Feiler prepared a software workaround that should allow smooth circumventing this problem in the future.
- Ys- started 8.5 hrs later due to no operator available.

5. Amplitude Calibration (JIVE)
see http://www.radionet-eu.org/fp7wiki/lib/exe/fetch.php?media=na:engineering:ew:jive_calibration2010.pdf

- Jb calibration is worse than for the other stations – according to Gunn this is mostly due to different receivers installed on the telescopes for each session and then not enough time to calibrate them.

Session *1/2010*

- Problems at Tr– due to a broken receiver
- Bad performance of the C-band receiver at Noto – reason unknown.
- Wb: one subband had lower amplitude. This is solved by repairing the adding hardware.
- Tr – K-band receiver is delayed due to illness of an engineer.
- de Vicente proposed to look for the opacity before and after the experiment.

ANTABFS

A standardisation of the Field System logs was discussed and the need for standards was agreed. Alef would like to form a small committee to discuss a different, more standard log format.

➔ The policy of sending ANTAB from the stations to the correlator will stay the same (2 weeks after the experiment)

- gain curves free of opacity corrections, status? (all)
  - to be discussed on 22. June 2010
- Continuous calibration with the DBBC (Tuccari, Graham)
  - According to Graham it shall be very easy to use, an implementation to the telescope will be needed afterwards.
- e-NME for quick calibration feedback (Lindqvist)
  - The latest e-session worked fine. Lindquist mentioned that the response on the calibration from JIVE takes too long. A possible solution could be a quick e-session (e-NME) in the normal session for the calibration purpose to have feedback of the station performance within 2 weeks. This solution does not apply to stations without fiber connection. JIVE needs at least 5 minutes of data.

➔ The TOG decided to put the 1st priority on NMEs at the correlator.

6. e-VLBI status (Szomoru)
   http://www.radionet-eu.org/fp7wiki/lib/exe/fetch.php?media=na:engineering:ew:szomoru_tog10.pdf
   - feedback from recent eVLBI runs held within the May/Jun disk session (all)
     - Bach mentioned that problems in the session are first deemed to be at the stations, although they could be a correlator problem. The advices from the correlator shall be more precise
   - How should the TOG deal with e-VLBI in the future? (all)
     - Not clarified, no input from the TOG members.
7. Sched Developments
   - Sched support at JIVE?
     - A new person is in charge for SCHED at JIVE and has established contact with Socorro about a week before the meeting. The KAVASR stations have to be added to sched (task on Campbel). VEX is not supporting Mk5B. Szomoru and Campbell cannot specify how much manpower will be allocated to this task.

➔ Please send updated information from the stations to JIVE for inclusion in the SCHED catalogue.

   - DBBC, Mark 5C etc.
   - New wide-band frequency standards
   - Support for real-time fringe checks for user observations
   - Vex working group status (JIVE, Brisken)
7. Field System, status and new features (Himwich)
   http://www.radionet-eu.org/fp7wiki/lib/exe/fetch.php?media=na:engineering:ew:himmwich_tog.pdf
   - Status report, new developments
   - Mark 5C, RDBE, DBBC, VDIF
     - K-5 System phasecal extraction works. New frequency setups eg.(wider subbands) implementation depends on the support of the hardware.
   - Log gui, tested at stations? (de Vicente)
     - De Vicente has positively tested it. However the program is not user friendly. De Vicente will use a standard procedure as suggested by Himwich instead.
8. Digital BBC status (Alef/Tuccari)
   - Development, production status (short summary) & future plans
     - WSRT & Jb (will) have a different system. WSRT has its own Backend, whether a DBBC will be needed for the non-APERTIF telescope is still unclear. Tr will buy

a digital BBC but details have not yet been decided. Metsähovi will buy a DBBC from Tuccari.
    - Romney commented that JPL develops its own system which is similar to Hstk/NRAO.
  - Test results (Graham)
    - The software will be done as soon as the hardware is finalised. The timescale for the firmware is end of June 2010. Graham will adapt the windows system as soon as the firmware is available. The timescale of the implementing the software is.

9. NRAO & Haystack status report (Romney/Ruszczyk) gave an overview on: http://www.radionet-eu.org/fp7wiki/lib/exe/fetch.php?media=na:engineering:ew:nrao-hstk.pdf
   - RBDE status and rollout plan (Romney)
   - Architecture PFB bit code (Ruszczyk)
   - Engineering trials
   - DDC Development
   - Other VLBA Upgrade optics
   - Mark5c
   - interoperability issues with EVN, e.g. Modes, VDIF vs. 5B
   - roadmap to higher bitrates
     - SDK9 will support disks larger than 1 TB.
     - The roadmap foresees a first demonstration of VLBA a mode in a few weeks.
     - Interoperability issues will be investigated.
     - It was agreed to have a monthly telecon of a small group (EVN+VLBA) to discuss those issues. They will be schedules when the DBBC and RDBE will are ready (presumably August/Sep 2010).

➔ Alef will schedule a monthly telecon EVN/VLBA on test of interoperability issues (EVN: Szomoru, Lindquist, Graham, Alef).

10. Mark 5
    http://www.radionet-eu.org/fp7wiki/lib/exe/fetch.php?media=na:engineering:ew:nrao-hstk.pdf
    - Status: Mark 5A/B/B+/C, software, firmware, SDK9 (Ruszczyk)
    - Upgrade path to SDK 9, discussion (all)
      - Alef has summarized that going into large disks we need to have SDK9 system. So first the correlator have to test SDK9 system first.

➔ Ruszczyk will send e-mail on EVNtech with the explanation of all details how to deal with SDK9.

  - EVN Mark 5A program: feedback d-VLBI/e-VLBI (all)
    - Although the script has been positively accepted, it is not widely used
  - Mark 5B/C in the EVN: plans and status (all)
  - Mark 5 problems encountered during last session (all)
  - Disk Pack problems (Leeuwinga, JIVE)
    (see http://www.radionet-eu.org/fp7wiki/lib/exe/fetch.php?media=na:engineering:ew:tog2010_helsinki_disk_packs.pdf)
    - Gave the current ‘Hospital’ status
    - There are problems with SATA Packs
    - Problems with some disks have also been noticed by NRAO. Dependence from a manufacturer was investigated.
    - It was recommended that the recording of a disk module shall be continued in

the bank where it was started.

➔ Stations shall upgrade SDK8.2 at once, when 8.3 is released has to be used for an upgrade (recommendation)

- Disk inventory and purchase status, future of small packs (Alef, all)
  - The issue of the disk shipment logistics were discussed. VLBA would like to have immediate shipping from the stations.
  - The problem will be target from JIVE by experiment.
  - Romney has talked about the disks retirement.
  - JIVE will be happy to received retired disks, since their responsibility is also to repair them. However, the disks retirement procedure is not clear.

➔JIVE will inform Alef about the retired disks so that they can be registered in track properly.
➔ Stations have to decide what to do with their broken disks.
➔ Alef will send e-mail to the owner of the broken disks at Bonn for a decision what to do.

- Disk throughput at JIVE, balancing with NRAO, Astro/Geo pool (Campbell)
  - Szomoru presented Mark5B issues, disk-based and e-based
  - Campbell gave an overview on processing factor 2/2009 – 1/2010. http://www.radionet-eu.org/fp7wiki/lib/exe/fetch.php?media=na:engineering:ew:pfgbps.pdf The processing factor of the 1/2010 session was quite high compared with the previous sessions due to playback problems during the session.
- Mark 5 logistics (repairs, shipping rules, VLBA shipping requirements, boxes, labels, etc.) (all)
  - Gunn has asked for a review of the disk inventory for the correctness.
  - A bigger disk capacity was discussed as a cheap solution.
  - Alef proposed smaller disks, since shipping is then cheaper.

➔ Stations are asked to update the page of the disk inventory. They should contact Walter for the access.

- Alef pointed out missing labelling of the disks from some stations.
- There is no need to send missent disk from JIVE to the Bonn correlator. Transfer of the data via Internet will be sufficient.

➔ Alef will clarify with Jive (e-mail) the sending of the Mark 5 data via Internet to Bonn.

- The stations shall continue buying disks. The new disks are compatible with the new software/field system and additionally they can replace the broken small packs.
- Shipping rules are not clear for the Chinese and Russians stations.
- A problem with faulty/non-existing VSNs in a given station's NRAO TRACK listings has been mentioned, e.g. Metsähovi has one mis-entry there and cannot delete it---since they don't have a disk pack at Mh with a faulty VSN. Metsähovi shall contact operators in Bonn to solve their problems with the VSN numbers.

➔ Alef will ask directors to constantly allocate budget for new disks, which will allow stations to have some buffer.
➔ Stations have been asked to put labels on the disks.
➔ SATA packs shall have VSNs with **“+” convention** ONLY!
➔ Stations shall communicate the disks space of new modules to Bonn for correction in track.
➔ Stations shall clean up dead entries of disk modules in track.

11. AOB
    - NOTO Station status (Cassaro)
      (see http://www.radionet-eu.org/fp7wiki/lib/exe/fetch.php?media=na:engineering:ew:cassaro_tog.pdf)

12. Time and place of the next meeting.
    Arecibo will be investigated as a potential TOG meeting place.

➔ Alef and Lindquist will discuss this possibility with the EVN directors

List of Action Items

1. Alef to modify and set up wiki page for the spare parts
2. Ruszczyk to contact W. Brisken to investigate how NRAO handles the Mark5A 'communication problem'. (This refers to the Mark 5 having a tendency to be slow responding to requests)
3. Ruszczyk to send e-mail on EVN-tech with the explanation of all details how to deal with SDK9.
4. Alef to discuss with Tucari about dBBC acceptance test.
5. Olnon (JIVE) and Walker to incorporate frequency agility information in SCHED.
6. All friends to enter RFI-events in the RFI database.
7. Szomoru to investigate if/how the number of ftp-tests could be increased, as a high time-priority task of the NEXPReS.
8. All to schedule bigger gaps to allow a proper use of lgput
9. Stations to use Burgess script lgput (Recommendation)
10. Alef to report to EVN Directors that the Russians operators shall deliver the gain curves DPFU and get a proper training.
11. JIVE to send to Alef a list of what Russians stations shall do for the proper EVN observations.
12. Stations to keep BBC in good shape until DBBC will come (Recommendation).
13. Stations to send updated information about the used SCHED catalogue.
14. Alef to schedule a monthly telecom EVN/VLBA on test of interoperability issues (EVN: Szomoru, Lindquist, Graham, Alef).
15. Stations to upgrade SDK8.2 as son as they back home, when 8.3 is release has to be used for an upgrade (Recommendation)
16. JIVE to inform Alef about the retired disks for the inventory purpose.
17. Stations to decide what to do with their broken disks.
18. Alef to send e-mail to the owner of the broken disks for a decision of their future
19. Stations to update the page of disks inventory. They should contact Walter for the access.
20. Alef to clarify with Jive (e-mail) the sending of the FITS instead of the disks to Bonn.
21. Alef to ask CBD for a constant allocation of a budget for the new disks what allows stations for some buffer.
22. Stations to put labels on the disks.
23. Stations to indicate the disks space on the new module.
24. Stations to clean up not used disks and update the TRACK system.

25. Alef and Lindquist to discuss with directors a possibility of the next TOG in Arecibo.

DECISIONS:

- The policy of sending ANTAB from the stations to the correlator will stay the same (2 weeks after the experiment)
- TOG puts their 1st priority on NME at the correlator
- SATA packs shall be noted with **+ convention** ONLY!