VLBI Operator Manual

Tasks before, during and after the session

— *Alexander Neidhardt 2015/03/05 17:10*

General overview

Tasks before the VLBI session

Tasks to start the VLBI session

Tasks during the VLBI session

Tasks after the VLBI session

Tasks to send the data of the VLBI session

Tasks for remote operations of VLBI session

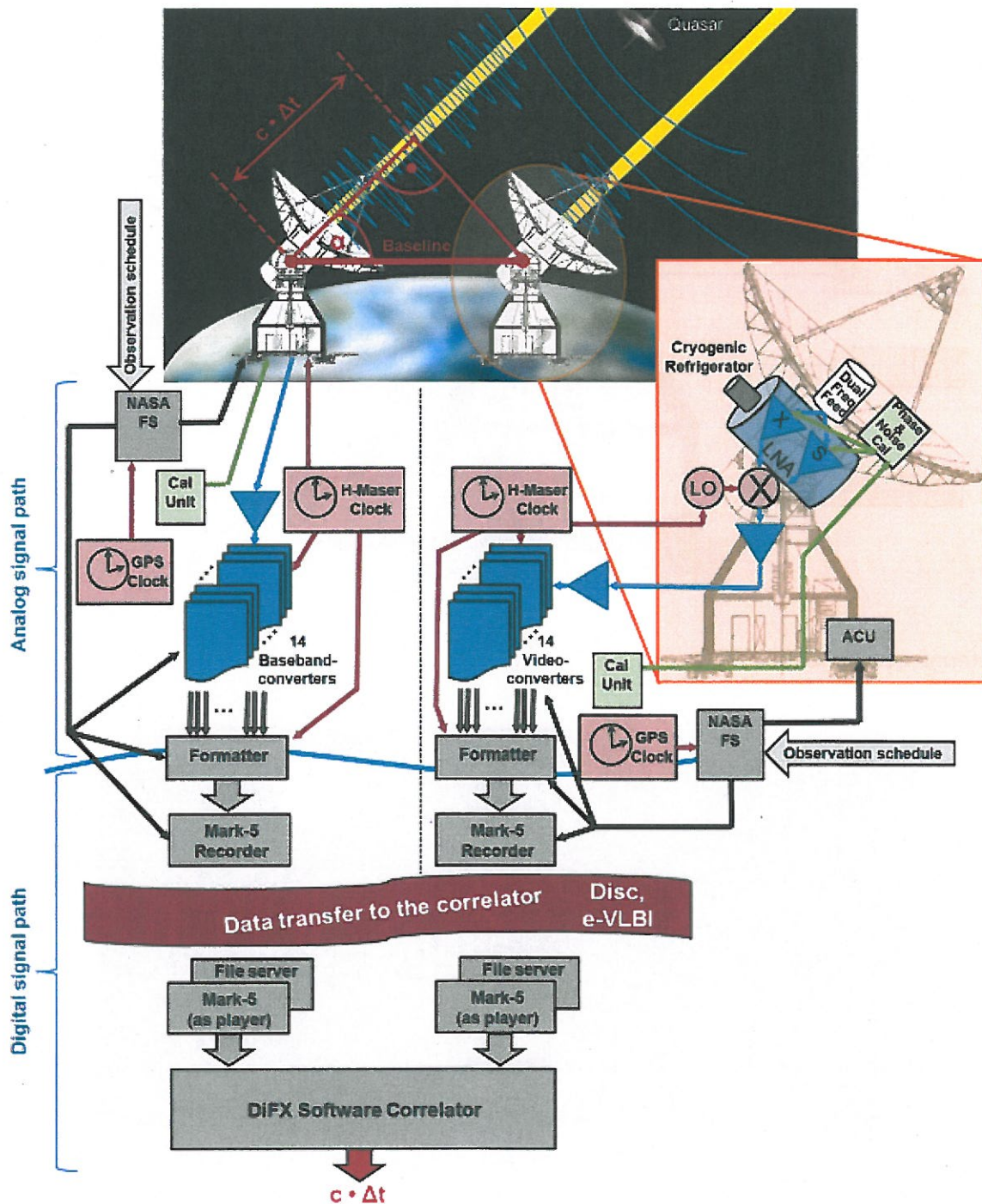Special tasks to fix bugs by operators from the observatory staff

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http://wiki.wtz/doku.php?id=vlbi:vlbioperations
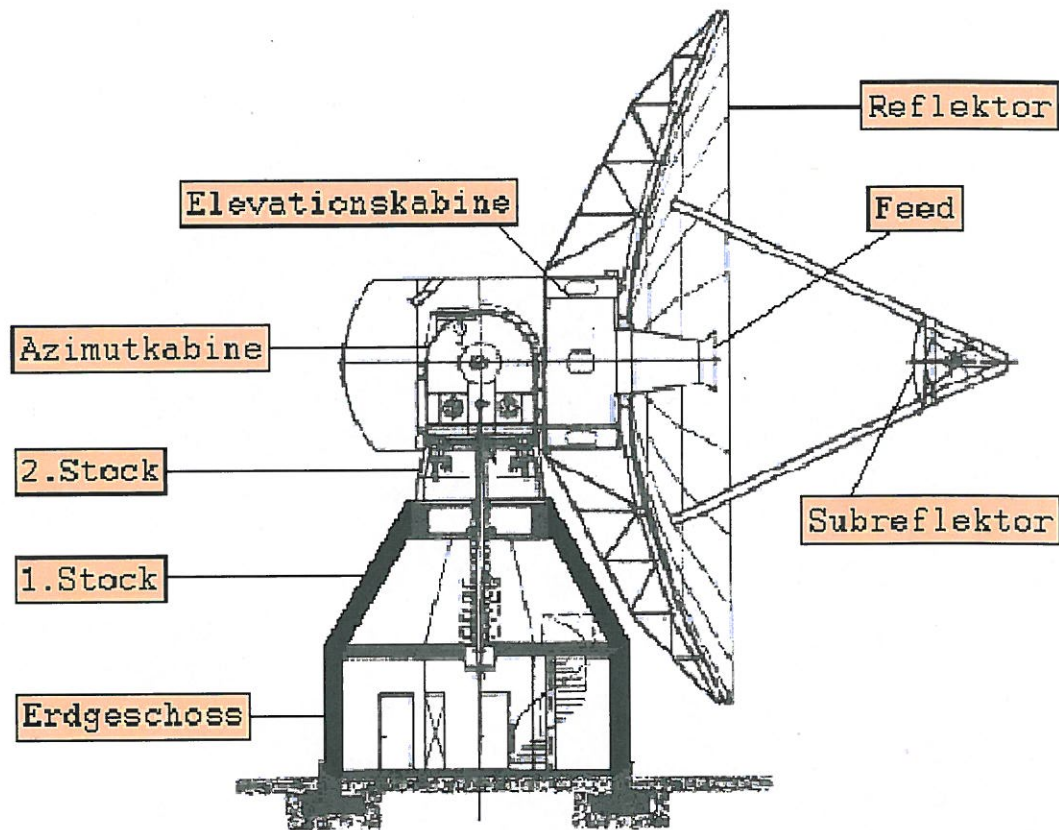
Last update: **2016/02/16 18:32**

Functional principle of VLBI

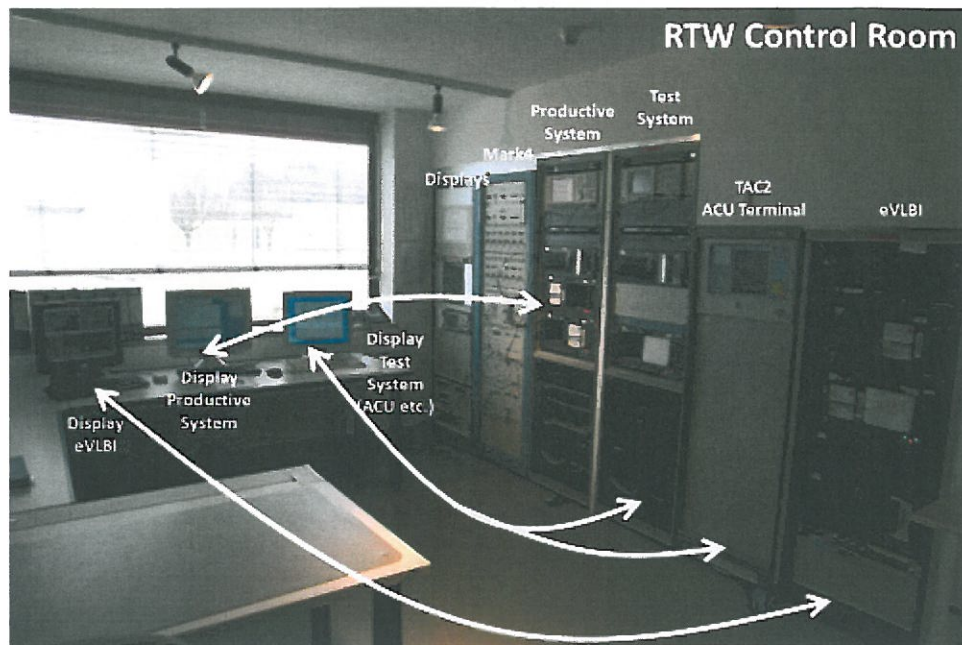# General overview 20m RTW

1) Antenna

- Antenna scheme

- Antenna control rack

2) Control center

- Control room

General overview 13.2m TTW

1) Antennas

2) Control center

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Tasks before the session

1) Check the IVS master plan

- A complete overview about the IVS observing program can be found here: IVS Observing Program Overview

- The master plan, e.g. for the 24h sessions in the year 2016, can be found here: ftp://cddis.gsfc.nasa.gov/pub/vlbi/ivscontrol/master16.txt
- The master plan, e.g. for the 1h sessions in the year 2016, can be found here: ftp://cddis.gsfc.nasa.gov/pub/vlbi/ivscontrol/master16-int.txt

- Even if the schedules are usually prepared for observations, you should **always check the IVS master plan**!

- A local copy as example is here for 2015:
    - RTW VLBI Sessions 2015 (ohne Gewähr!)
    - TTW1 VLBI Sessions 2015 (ohne Gewähr!)

2) Check the shift plan and the prepared schedules

- A monthly shift plan is published on the white board in the 20m RTW control room; each session is registered there in the rows INT, USNO, CORE, NASA, BONN; large blocks mark 24h sessions; vertical lines are 1h sessions; sessions together with the TWIN telescopes are marked with Wn or Ws
- Usually the sessions are already prepared on the Field System PC; if they are prepared, a summary print can be found in the drawer of the table on the left of the 20m RTW control room
- In any case you should check the IVS master plan and compare the local schedules
- If there are any doubts, you can also check the emails on the email PC (in the 20m RTW control room): see master file notifications
- If the schedule is not yet prepared, follow the next step

3) Download the schedule

- Change into /usr2/sched
- If the schedule session is not yet prepared, download the schedule to the currently used Field System PC:
    - fs1rtw.vlbi: Standard NASA Field System PC of the 20m RTW
    - fs2rtw.vlbi: Test NASA Field System PC of the 20m RTW
    - fs3rtw.vlbi: Second test NASA Field System PC of the 20m RTW (currently the production system)
    - fsttw1.vlbi: Standard NASA Field System PC of the 13.2m TTW1 (Wn)
    - fsttw2.vlbi: Standard NASA Field System PC of the 13.2m TTW2 (Ws)
- The suitable schedule for a dedicated session can be downloaded via FTP from CDDIS. Please follow the following instructions, where <year> must be replaced with the actual year of the schedule and <schedulename> must be replaced with the name of the schedule from the

master plan (the command "*ls*" can be used to print the content of the individual folder):

```
cd /usr2/sched
ftp cddis.gsfc.nasa.gov
User: Anonymous
Password: Anonymous
passive
bin
cd /vlbi/ivsdata/aux/<year>
ls (to see the content)
cd <schedulename>
get <schedulename>.skd (or also .vex for VEX-files)
bye
```

- Usually the schedules are downloaded and prepared by a predefined staff member of the VLBI group.

4) "Drudg" the schedule (conversion into a schedule version of the local telescope)

- The downloaded schedule must be converted into a locally usable procedure and SNAP command file, which can be done with (<schedulename> must be replaced with the real schedule name):
    - RTW

```
cd /usr2/sched
drudg <schedulename>
Wz (= station acronym)
11 (= check correct settings:
Rack=Mark4(7)/Rec1=Mark5A(10)/Rec2=none(1)/Start=none(1))
    3 (= create SNAP file with extension *wz.snp in the /usr2/sched folder)
    12 (= create procedure file with extension *wz.prc in the /usr2/proc
folder)
    --> use the default settings for TPI
5 (= print summary of the schedule)
0 (= exit)
```

- TTW

```
cd /usr2/sched
autodrudg.pl <schedulename>.skd
   (=> then everything runs automatically and a protocol will be printed)
```

- Get the summary print from the printer and put it to the other summaries or use it for the observation.

5) Adapt the schedule (change local telescope parameters)

- 20m RTW (Mark4): Edit the procedure of the schedule in the directory "/usr2/proc/" (usually procedure "setupsx"), which sets ifd and if3 including the attenuations, which are originally not defined by the schedule

```
cd /usr2/proc
nedit <schedulename>wz.prc
==> search "ifd="
==> replace "ifd=,,..." by "ifd=26,16,..." (attenuations defined on
2015/06/03)
==> replace "if3=,..." by "if3=9,..." (attenuations defined on
2015/06/03)
==> Save the file again with the menu "File"->"Save"
==> Exit the editor with the menu "File"->"Exit"
exit
```

- Check the correctness of the schedule by entering the following into the "Operator Input" (sometimes the name of the procedure "setupsx" can differ, e.g. "setup8f", but in most of the cases it is "setupsx"; you can check this in the above edited proc-file by searching for the "setup" procedure)

```
proc=<schedulename>wz
setupsx
valarm
==> wait until the antenna is on position
caltsys
```

- 13.2m TTW (DBBC): Check attenuations, using the defined "agc" (auto-gain control)
  - **Attention: If you have to move the antenna, check the human and system safety first!**
  - Move the antenna to 60 degree elevation (try to avoid RFI hot spots by moving the antenna in azimuth and checking the signal noise on the power level writers)
  - Run the following instructions in the "Operator Input" ("r4685wn" is the example name of the schedule)

```
proc=r4685wn
setupsx
caltsys
ifa
ifb
ifc
ifd
```

- The new attenuations can be found in the output if each if(a-d) command, which looks like ".../ifa/1,man,2,38000,59,43717", where 38000 is the reference value, 43717 is the actual value and 59 is the new attenuation value in the given example. The new attenuation value can then be used in the next step.

- 13.2m TTW (DBBC): Edit the procedure of the schedule in the directory "/usr2/proc/" (usually procedure "setupsx"), which sets ifa-ifd including the attenuations, which are originally defined with agc (auto-gain control)

```
cd /usr2/proc
```

```
nedit <schedulename>wz.prc
   ==> search "ifa=","ifb=","ifc=","ifd=",
   ==> replace "ifa=1,agc,1,38000" by the before derived value, like
"1,44,1,38000" (attenuations defined on 2015/01/07)
   ==> replace "ifb=1,agc,2,38000" by the before derived value, like
"1,54,2,38000" (attenuations defined on 2015/01/07)
   ==> replace "ifc=1,agc,1,38000" by the before derived value, like
"1,40,1,38000" (attenuations defined on 2015/01/07)
   ==> replace "ifd=1,agc,1,38000" by the before derived value, like
"1,36,1,38000" (attenuations defined on 2015/01/07)
   ==> Save the file again
```

6) Receive module shipments

- If you receive a shipment as real package from a courier service, take the module out of the box, screw the RFI shiled from the module (put the shield into the cabinet in the RTW control room) and put the cardboard box onto the attic.
- Register the module as described in the instruction in Receive shipment
- Erase the module
    - Put it into the not used Mark5
    - Enter the following in the NASA Field System

```
mk5=protect=off
mk5=reset=erase
```

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http://wiki.wtz/doku.php?id=vlbi:vlbioperations:001beforethesession

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Tasks to start the session

## 1) Check the hardware of the system

- In the control room
    - Check if all systems are under power
    - Check if there are unusual sounds (like a faulty fan) or smells (like smoke)
    - Check if there are red LEDs
    - Check if the PhaseCal signal is visible on the spectrum analyzer (a peak signal on the screen)
    - Check if all PCs are working, e.g. Field System, Mark5, maybe DBBC etc., by switching between the screens with "Ctrl"+"Ctrl" on the keyboard for the front monitors in the 20m RTW

- In the antenna tower
    - **Attention: Operators are just allowed to enter the basement of the tower and the first floor, where the cable wrap is located!** Personnel staff with the dedicated introductions are also allowed to climb up into the turning metal parts, if they follow the security and safety instructions.
    - Check if nothing is in the radius of the moving antenna (like man lift, tractors, etc.)
    - Check if you see defective elements on the antenna, which might be able to fall down.
    - Check if nothing is in the way of the rotating parts of the antenna in the interior (cable wrap etc.)
    - Check if the system is under power
    - Check if the Antenna Control Unit (ACU) is switched on and reacts on touches on the touch screen
    - Check if there are red LEDs or error outputs on the ACU
    - Check if there are unusual sounds (like a faulty fan) or smells (like smoke)

2) Check the ACU (and the antenna control)

- Check that the main power switch is on (just switch it on, if nobaody is in danger by moving the antenna; **always check first if people are in danger**) ⇒ **In any case of danger, it is possible to switch off the whole hardware, using this switch!**

- Check that there are no errors on the ACU and that it is running
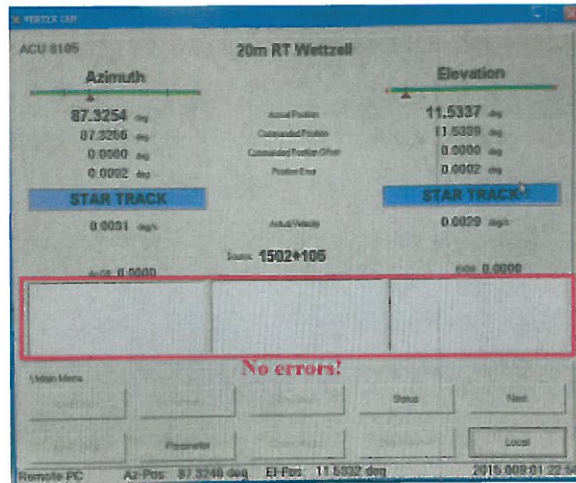
- Check that the ACU is in remote mode (the button on the ACU shows the label "Local"!!! or with the command in the NASA Field System, as shown below); if it is not in remote mode, push the button on the touch screen to switch to remote mode



```
antenna=status
==> Output:

...
2015.041.14:58:42.23?ERROR AN   -5 Error return from antenna.
2015.041.14:58:42.23#antcn#[ERROR] ACU: [FATAL] ACU cannot be
initialized (maybe in LOCAL mode or Etherne
...
```

- Check that the azimuth panel and the elevation panel are switched to "computer" mode

- Check that the safe key is not locked (only if nobaody is in danger by moving the antenna; **always check first if people are in danger**) and that no interlocks are active (emergency switches or door interlocks)
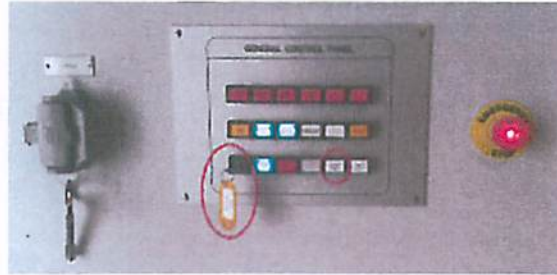
- In critical situations, there are "EMERGENCY STOP" switches (also in the control rooms), which will directly interrupt the movement

3) Start the Mark5 System

- If the Mark5 system is not running, start it (switch on power, wait for booting and until the login screen appears, login as user "oper" with password ⬛⬛⬛⬛⬛)
- Mark5A (currently used for 20m RTW in combination with the Mark4-rack)
  - Plug two Mark5-modules into the slots
  - Switch on the Mark5 hardware with the "Power" switch on the front panel
  - After the booting, login with user "oper" and password ⬛⬛⬛⬛⬛
  - Start the programm "*Mark5A -m 0 -f 1*"
- Mark5B+ (currently used for the 13.2m TTW in combination with the DBBC or ADS3000)
  - Plug two Mark5-modules into the slots
  - Switch on the Mark5 hardware with the "Power" switch on the front panel
  - After the booting, login with user "oper" and password ⬛⬛⬛⬛⬛
  - Start the programm "*DIMino -m0*" (or for older Mark5B: "*dimino -m0*")
- Change to another Linux screen with "Ctrl"+"Alt"+"F2", because the output on the screen with a running Mark5 software may influence the reaction times for requests from the Field System

4) Start the DBBC (if used)

- If a DBBC is used and it is not yet running, start it
- Switch the DBBC hardware on with the main power button on the backpanel
- Login as user "dbbc" and with password ⬛⬛⬛⬛
- Start "DBBC2 Control DDC v104_2.exe" by double-clicking on the symbol on the desktop
- Reconfigure the DBBC by entering "y" (for yes") after the program start
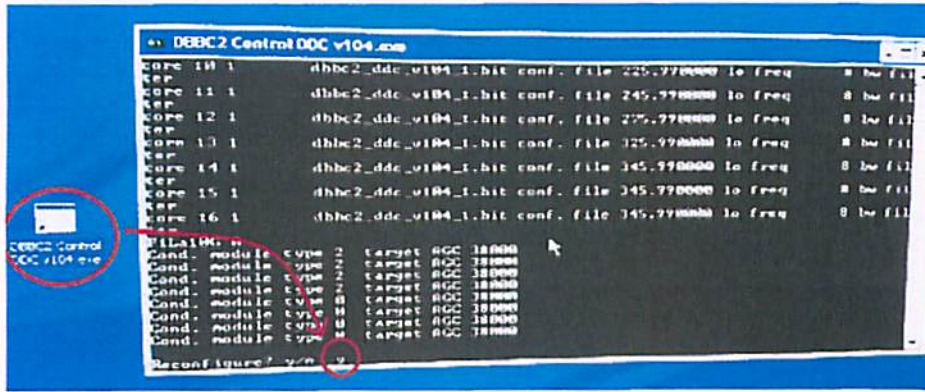
- How to synchronize the time of the DBBC, see section 12) about "dbbc=pps_sync"

5) Start the NASA Field System

- The NASA Field System can be started on the Field System PC
  - for 20m RTW it is currently the PC fs3rtw.vlbi (usually fs3rtw.vlbi)
  - for 13.2m TTW1 it is the PC fsttw1.vlbi
  - for 13.2m TTW2 it is the PC fsttw2.vlbi
- If the PC is off, start it and wait for the login screen
- If no user is currently logged in, do the login procedure (enter the username "oper" and the password ⬛⬛⬛⬛')
- The Field System can be started in the "login shell", typing

  fs

- It opens the "Operator Input" and uses the "login shell" as logging output
- Start the other windows with "Ctrl"+"Shift"+"2" (System Status Monitor), "Ctrl"+"Shift"+"3" (Mark5 Remaining Capacity) and "Ctrl"+"Shift"+"5" (System Temperatures)
- The screen should then look like
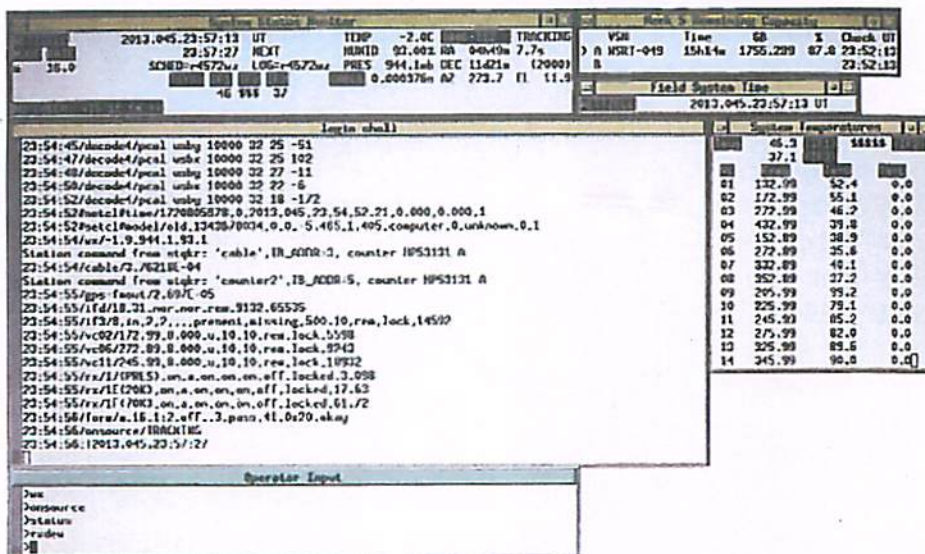
- If the Mark4 rack shows errors follow the following procedure to initialize it, by activating a schedule procedure file and manipulating the spare video converter VC15 manually in the

"Operator Input":

```
proc=<schedulename>wz
setupsx
valarm
vc15=345.99,8.000,u
vc15=alarm
```

- It's possible to also activate a separate ERROR monitoring, if a schedule is started
  - ○ Open a new xterm with a right click onto the screen
  - ○ Enter *tail -f /usr2/log/r4561wz.log | grep "ERROR"* (where "r4561wz" is the name of the currently started schedule)

6) Check the communication to the antenna

- Check if communication to the antenna works, by entering the following to the Field System "Operator Input"

```
antenna=status
```

- If the test results in an error enter the following and wait until it finishes

```
antenna=reset
```

7) Check the schedule

- Check the session summary

- Check if the session is prepared on the Field System PC for the observation (see Tasks before the VLBI session); you can do this with the following command in the Operator Input (where "r4586wz" must be replaced by the actual session name)

```
proc=r4586wz
```

- Check if the latest version is available, by reading the emails with the change notifications of the IVS master plans (usually the schedules are prepared); a good hint is the first source of the schedule to detect changes

8) Check the system parameters

- Check the cabel calibration, by entering the following in the "Operator Input" on the Field System PC (the values should be something about 10^{-3})

```
cable

==> Result:
2015.008.10:50:30.85/cable/+6.5539547E-003
```

- Check the dewar temperatures, by entering the following in the "Operator Input" on the Field System PC (the values should be something about: first stage 70K or better, second stage 20K or around, pressure 10^{-6} or better)

```
rxdew

==> Result:
2015.008.11:04:51.15;rxdew
2015.008.11:04:51.15&rxdew/rx=17,*,*,*,*,*,*
2015.008.11:04:51.15&rxdew/rx
2015.008.11:04:51.15&rxdew/rx=1e,*,*,*,*,*,*
2015.008.11:04:51.15&rxdew/rx
2015.008.11:04:51.15&rxdew/rx=1f,*,*,*,*,*,*
2015.008.11:04:51.15&rxdew/rx
2015.008.11:04:51.25/rx/17(PRES),on,a,on,on,on,off,locked,1e-08
2015.008.11:04:51.33/rx/1E(20K),on,a,on,on,on,off,locked,19.36
2015.008.11:04:51.41/rx/1F(70K),on,a,on,on,on,off,locked,63.21
```

- ⇒ **ATTENTION: The dewar temperatures can currently just be requested in a <u>separate xterm</u>, using the program /usr2/oper/rtw_sx_dewar/bin/rtwdewarc, which continuously prints the dewar values each minute. These values should be manually written into the log file of the new schedule and should be <u>noted on the summary print of the schedule</u>!**

```
fs3rtw:/usr2/oper/:> /usr2/oper/rtw_sx_dewar/bin/rtwdewarc
** Connect to the dewar
*******************************
** Read status of dewar
First stage temperature:  63.21 K
Second stage temperature: 19.36 K
Pressure:                 1e-08 mbar
Alarm is:                 NOT DETECTED
*******************************
** Close connection to dewar
```

- Compare the time of the NASA Field System with the Total Accurate Clock (TAC2)
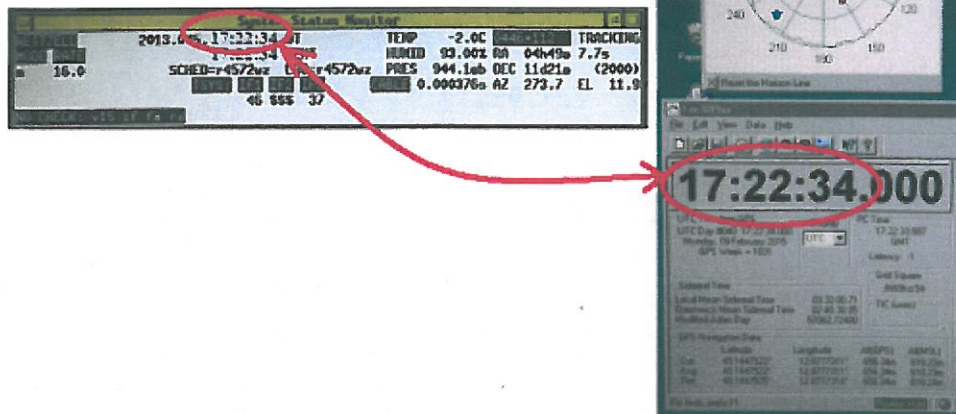
- Check time offset between GPS-time and formatter-time (gps-fmout), by entering the following in the "Operator Input" on the Field System PC (the value should be around 10^-5)

```
==>RTW
counter2
==>TTW
dotmon

==> Result:
2015.008.12:02:51.00/gps-fmout/+3.02846E-005
```

- Check the general time corrections to the time standard of the observatory, using the Web browser page ftp://wzeit2.wettzell.ifag.de/WLRS/zeitoff1.new (use the last output and note on the summary print of the schedule the time (UTC), the EF18 value (minus 0.6 for 20mRTW ⇒ dUT(REF,EFOS18)), and the TAC2 (⇒ dUT(REF,TAC2)) value; compare them to the values from a previous schedule: the should just be slightly different)
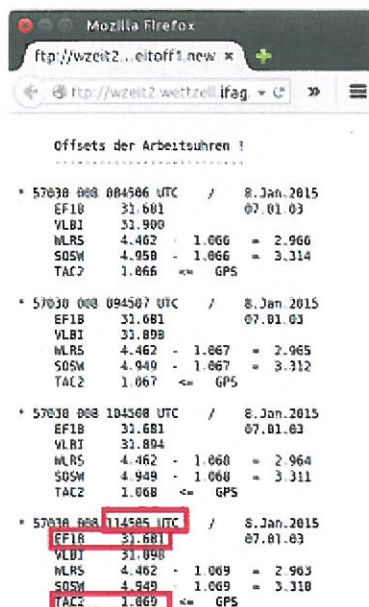
- Check the meteorological reading, by entering the following in the "Operator Input" on the Field System PC (there should be practical values for temperature, pressure and humidity) and not down the general weather conditions (e.g. fog, covered sky, rain, strong wind, etc.)
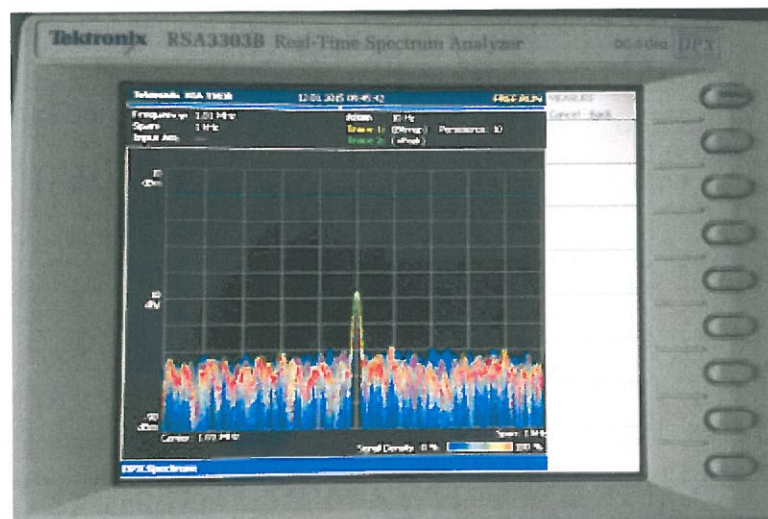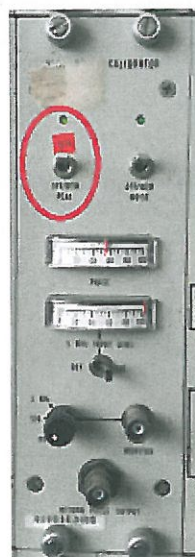
```
wx

==> Result:
2015.008.11:58:13.43/wx/ 2.7,954.2,95.4
```

9) Check the phase calibration

- Check if a phase calibration sends tones
  - RTW: on the spectrum analyzer (a peak in the middle at 1.01 MHz)

- If it is not yet switched on (e.g. sometimes after astronomical experiments), switch it on at the Mark4-rack

- TTW: with an auto-correlation

  ○ see Quality control: autocorrelation

10) Check the antenna pointing

10a) Simple antenna pointing test

- Enter the following in the "Operator Input" on the Field System PC to use Cassiopeia A for the pointing test

  ```
  antenna=casa
  ```

- Another test source is Cygnus A. To use it, enter the following in the "Operator Input" on the Field System PC

  ```
  antenna=cygnusa
  ```

- The antenna will move to the position of Cassiopeia A respectively Cygnus A
- If the antenna points into direction to Cassiopeia A (the antenna is "onsource") enter

  ```
  antenna=stop
  ```

- Check the screen of the writer, where you should see something like

10b) Extended antenna pointing test (fivept)

- "fivept" is currently not performed with the Wettzell antennas
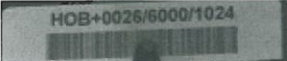
11) Prepare the recording

- Check the session size in the session summary and select a suitable module

- Search for an empty or an already correlated Mark5 module in the glass cabinets for the modules (open the Web page http://ivscc.gsfc.nasa.gov/program/index.html and click on the HTML-version of the master file links; compare the session names with the labels on the modules and follow the according link; if the "Correlation" section of the opened session summary page is a link with the correlation summary, then the session is already correlated; another possibility is to search for the session name in the subjects of the emails on the email PC; if a correlation report was received, the session is correlated)

- the larger modules are for the 24h sessions

- the modules are ordered for the specific sessions and carry a label with the session identifiers ⇒ please only use the related modules for the specific sessions

- the single-harddrive modules in the black boxes can be used for the 1h sessions (it is necessary for these modules, to use the special adapter module with the two single slots; put the harddisk into the module adapter first and lock it and then put the complete module into the Mark5 slot, as usual); **the disks should not be used because of the current disk assignment to the sessions**
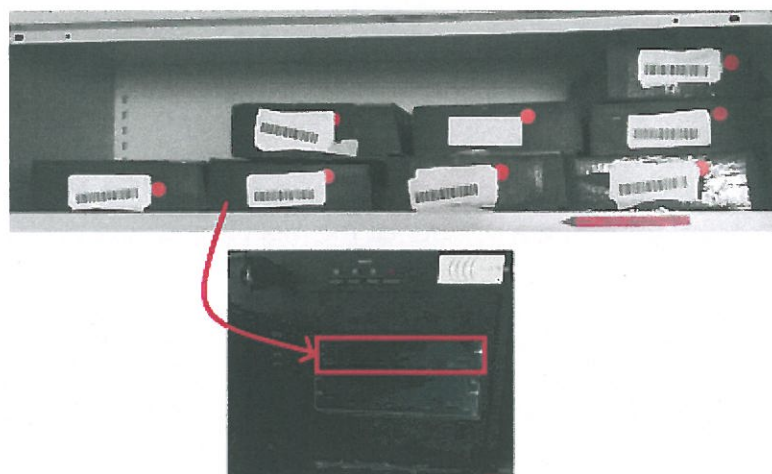
- also the weekend 1h sessions share the larger module
- If all sessions on one module are already correlated, the dedicated module can be reused (the reuse is prepared by W. Schwarz and R. Schatz, not by the operator himself)
- Plug the module into the first slot of the used Mark5 and turn the according key (**Attention: Do not mount two modules at once (especially if you mix old PATA and new SATA**

modules)!
- Wait until the module is mounted and the "Ready"-LED is on (no LED is blinking)
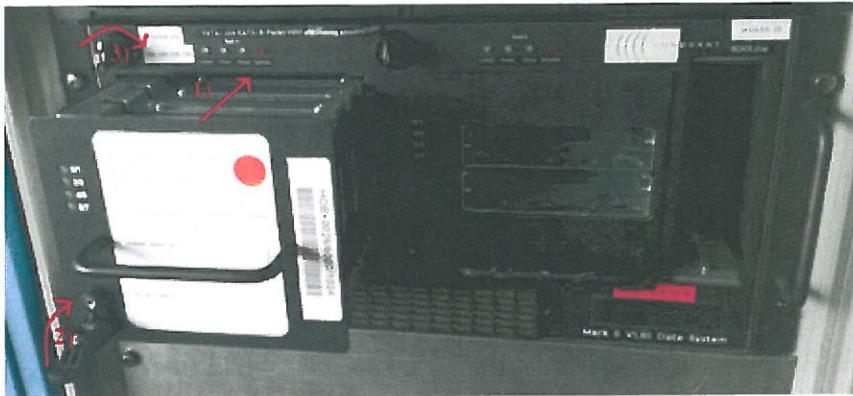
- **Attention: Usually it is not necessary to erase a module anymore, because tzhe modules are used for several sessions to save disk space.** If it should be necessary to erase a module, enter the following commands in the "Operator Input" on the Field System PC, but please inform the responsible chief engineer before.

```
mk5=protect=off
mk5=reset=erase
mk5=dir_info?

==> Result: 2015.008.19:30:56.26/mk5/!dir_info? 0 : 0 : 0 :
2007893385216 ;
        (where the last number is the capacity, here about 2000 MB)
```

- Remove the read label and the session labels with the bar codes only from the disk module if it is a new or reused module so that it looks like this (**usually this is not necessary according to the clearly assigned sessions to the individual disks**); if you are forced to do this, please inform the responsible chief engineer before.
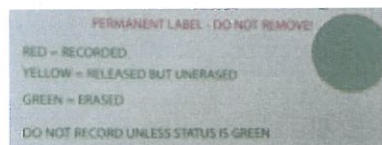
- Check the VSN number of the module by entering the following in the "Operator Input" on the Field System PC, compare it with the number on the module and note the number onto the session summary print

```
mk5=vsn?

==> Result: 2015.009.05:29:33.02/mk5/!vsn? 0 : BKG+0134/2000/1024 :
OK ;
        (where the VSN is BKG+0134 with 2000MB)
```

- If the number is wrong or not defined (which sometimes happen on received modules from external) then it can be defined with the following in the "Operator Input" on the Field System PC

```
        mk5=protect=off
        mk5=vsn=BKG+0134
        mk5=vsn?

        ==> Result: 2015.009.05:29:33.02/mk5/!vsn? 0 : BKG+0134/2000/1024 :
OK ;
            (where the VSN is BKG+0134 with 2000MB)
```

12) Check the time of the formatter (and Mark5B)

- **ATTENTION: The output of the Mark5B+ software on the Mark5B+ must run on another Linux screen. Select another screen on the Mark5B+ with "Ctrl"+"Alt"+"F2", because the output on the screen with a running Mark5 software influences the reaction times for requests from the Field System and crashes the time setting.**
- Push Ctrl+Shift+'T' to start teh program "fmset"
- Check if the times are the same for all outputs
- If the times differ synchronize them
    - Push 's' for sync start
    - Push 'y' for Mark5B sync
    - Push 'y' for DBBC sync (if a DBBC is used)
    - Push Esc
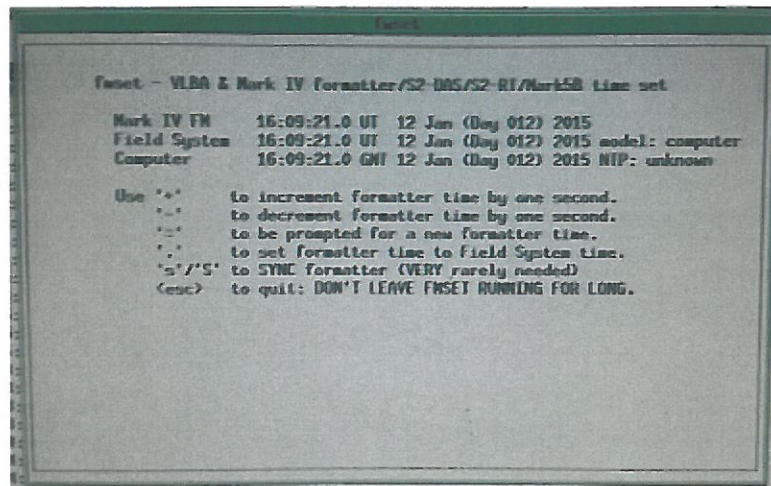
- On Mark5B+ (currently at the 13.2m TTW) the timing of the Mark5 can be checked and configured manually by entering the following commands on the NASA Field System

```
        dbbc=pps_sync
        mk5=clock_set=32:ext:32
        mk5=mode?
        mk5=dot_set=:force
        mk5=dot?
```

- On Mark5B+: take care that the monitor of the Mark5B+ does not show the output of the Mark5 software and that the active terminal screen is a new login screen, because the outputs on the Mark5 screen can lead to time delays during the synchronization check because of text

buffering.

13) Start schedule

13a) for a 24h session

- The processing of a schedule session can be started by entering the following into the "Operator Input" of the Field System (where "r1456wz" must be replaced by the actual schedule)

```
schedule=r1456wz,#1
check=all,-v15
```

- If other sources should be switched off (e.g. defective Video Converters) use the dedicated acronym (in the example v14 for the Video Converter 14) and enter the following command

```
check=*,-v14
```

- The Field System initializes all devices and starts the processing of the new schedule (which name appears in the system status monitor for the log and the schedule output)
- 20m RTW: Sometimes the setup runs not completely smooth on Mark4 racks, so that the following should be entered, if some red error LEDs are active on the video converters

```
valarm
```

- If you want to reset the alarm of one individual video converter, for example vc15, use

```
vc15=alarm
```

- The schedule start automatically opens an additional terminal which prints the error messages. Please arrange it on the screen as you like.

13b) for a 1h intensive session

- Open a separate xterm and enter the following to record the scans also on the e-VLBI EVN PC (where r1456 is the session and wz is the two-letter-acronym of the antenna; currently the second EVN PC is used; if the first should be used again, the 2 in the script name can be left away) ⇒ **ATTENTION: Start this only 20 minutes prior to an observation, as the connection to the EVN PC will be closed otherwise to early!!!**

```
MakeEvnFile2.sh r1456 wz
StartEvnRec2.sh r1456 wz
```

- The processing of a schedule session can be started by entering the following into the "Operator Input" of the Field System (where "k15005wz" must be replaced by the actual schedule)

```
schedule=k15005wz,#1
check=all,-v15
```

- The Field System initializes all devices and starts the processing of the new schedule (which name appears in the system status monitor for the log and the schedule output)
- 20m RTW: Sometimes the setup runs not completely smooth on Mark4 racks, so that the following should be entered, if some red error LEDs are active on the video converters


```
        valarm
        vc15=alarm
```

13c) for the 1h weekend/Monday session

- If the observation is attended on site of the telescope, the same tasks can be performed as described under 12b)
- If the observation is controlled from remote or if it is operated unattended, then the operator on the Friday evening observation (Fridays A+I) must prepare the automatic start of the Saturday, Sunday, and Monday 1h session
- It is necessary to enter a larger module into the Mark5
- Open a separate xterm with a right click on the screen and enter the following (where k15010wz is the example session and must be replaced and where all questions must be answered manually) ⇒ **ATTENTION: If the schedules are injected, the antenna moves to the survival stow position and programs the automated start of the sessions**

```
        MakeWeekend
*******************************************************************
        ** UNATTENDED SCHEDULE GENERATOR
**
        ** Version: 2014-08-01
**
*******************************************************************

=================================================================
        == Unattended experiment no. 1
==
=================================================================
        Name of unattended experiment (e.g. k08255wz, empty string means
off) []: k15010wz
        Check again:
        Name of unattended experiment (e.g. k08255wz, empty string means
off) [k15010wz]:
        Needed setup time (>10 minutes for setup before experiment starts)
[20]:
```

```
        MarkV bank set ('a' or 'b') [a]:
        Start EVN-recording [y]: y
        Which evlbi-server should be used ('1' = evlbi1 or '2' = evlbi2)
[1]: 2
        Check again:
        Which evlbi-server should be used ('1' = evlbi1 or '2' = evlbi2)
[2]:
        Prepare EVN-PC for k15010wz
        Name of Snap-File: k15010wz.snp
        Name of Proc-File: k15010wz.prc
        The Recording Bandwidth is 16000 Mbps
         ./dstart 2015-01-10T07:30:00; . recpassBW k15010_wz_010-0730a 20
         ./dstart 2015-01-10T07:30:57; . recpassBW k15010_wz_010-0730b 55
         ./dstart 2015-01-10T07:32:31; . recpassBW k15010_wz_010-0732 39
         ...

        Script written into file:
/usr2/oper/EVN_Record_Files/recexpt_k15010_wz.sh

        recexpt_k15010_wz.sh                        100% 3831      3.7KB/s
00:00
        Script also written into file:  /home/oper/recexpt_k15010_wz.sh at
eVLBI2
        End of Conversion
        Schedule an additional experiment [n]: y
        ... (do the same steps for all three sessions)


*****************************************************************************
        * ATTENTION: PREPARE MARKV!!!
*
        *       - Fieldsystem must be operative (start 'fs')
*
        *       - Fill 8-pack-slots and activate key
*
        *       - Delete and test 8-packs
*
        *       - Prepare Antenna Control Unit (ACU) for remote pc and az/el
is *
        *         set to stop
*
*****************************************************************************
        Inject unattended file into fieldsystem [n]: y
```

- Test the correct injection with the following command in the "Operator Input" of the Field System, which prints the startup times and commands for the programmed sessions

```
    ti
```

- Be aware that you put the dedicated sign for the "unattended operation" in front of the Field System monitor

14) Enter additional comments

- Enter the following additional comments into the "Operator Input" of the Field System, which contain the information about the checked system status (therefore replace the values by the actual values, e.g. dUT are the time corrections, WX is the meterological situation, etc.)

```
" Observation  i15010wz  2014/01/10
" dUT(REF, EFOS18) = 64.234 usec at 010/17:45UT
" dUT(REF, TAC2)   =  0.203 usec at 010/17:45UT
" Pointing tested with CasA ok
" System ok
" WX: completely covered, light wind from west, no rain
" Dewar values: 60.25 (70K), 19.88 (20K), 1e-8 (PRES)
" ... (here is space for additional comments about detected problems
etc.)
```

15) Send start message

- Send a start email to **ivs-ops@ivscc.gsfc.nasa.gov** with the same information as typed into the comments in section 13)
- Take an existing email in the outgoing folder and use it as new, where the values can be replaced by the actual
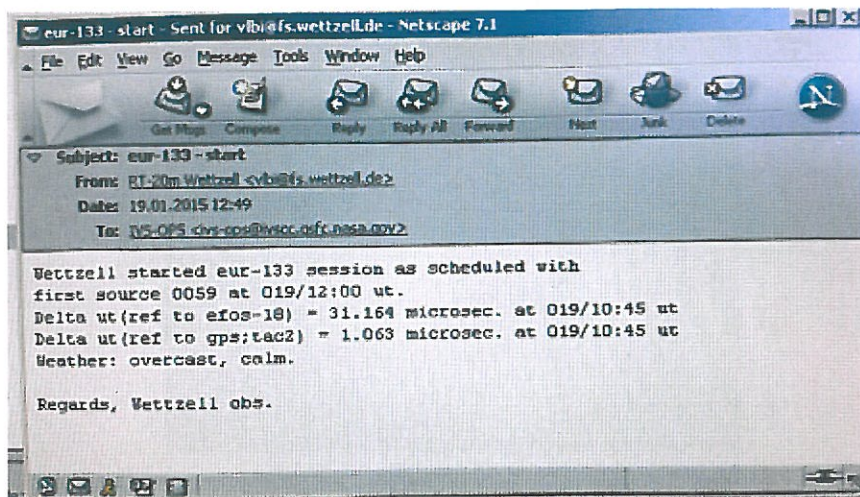
16) Check the start of the schedule

- Check if the schedule starts correctly at the scheduled time and
- if there are no errors.
- Add a red label at the designated position on the Mark5-module
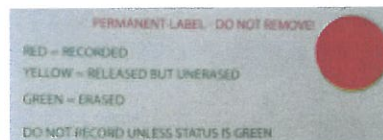
17) Entry in the log book

- Additionally to the entries in the schedule log on the NASA Field System PC, it is required to write a short log book entry.
- Each startup of a schedule must be registered in the log book. A minimum entry should consist of
    - the name of the session and the date
    - a short status information, like "system ok"
- The log book entry is a possibility to register special or critical situations. If something happens, if changes are made, if specific information seem to be interesting for other operators, additional lines should be added, e.g. "Failure in video converter 10 ⇒ replaced by the spare part from slot 15"
- Each entry can also contain additional information (optional), like
    - the success information of a pointing test, like "Pointing tested with CasA ok"
    - meteorological information, like "completely covered, strong wind"
    - time offsets and clock corrections, like " dUT(REF, EFOS18) = 64.234 usec at 010/17:45UT; dUT(REF, TAC2) = 0.203 usec at 010/17:45UT"

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http://wiki.wtz/doku.php?id=vlbi:vlbioperations:01startthesession
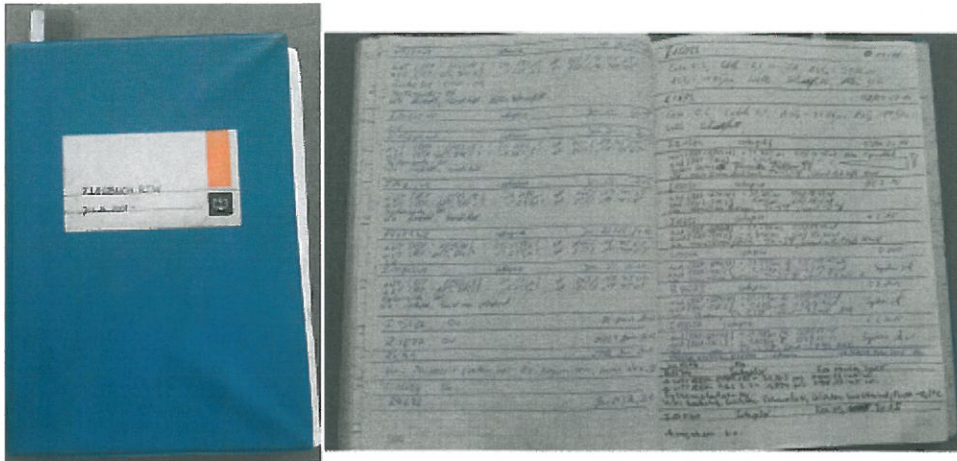
Last update: **2016/02/16 18:08**

Tasks during the session

1) Check the system regularly

- Check if the antenna moves
- Check if the schedule is still processing
- Check the system parameters in the System status Monitor
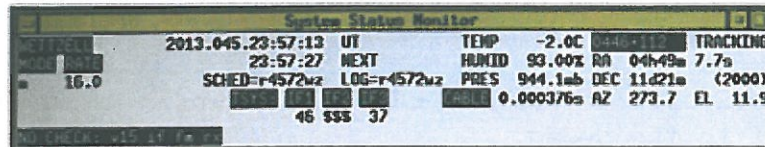
- Compare the time with the TAC2

- Check the cabel calibration, by entering the following in the "Operator Input" on the Field System PC (the values should be something about 10^-3)

```
cable
==> Result:
2015.008.10:50:30.85/cable/+6.5539547E-003
```

- Check the dewar temperatures, by entering the following in the "Operator Input" on the Field System PC (the values should be something about: first stage 70K or better, second stage 20K or around, pressure 10^-6 or better)

```
rxdew
==> Result:
2015.008.11:04:51.15;rxdew
2015.008.11:04:51.15&rxdew/rx=17,*,*,*,*,*,*
2015.008.11:04:51.15&rxdew/rx
```

```
2015.008.11:04:51.15&rxdew/rx=1e,*,*,*,*,*,*
2015.008.11:04:51.15&rxdew/rx
2015.008.11:04:51.15&rxdew/rx=1f,*,*,*,*,*,*
2015.008.11:04:51.15&rxdew/rx
2015.008.11:04:51.25/rx/17(PRES),on,a,on,on,on,off,locked,1e-08
2015.008.11:04:51.33/rx/1E(20K),on,a,on,on,on,off,locked,19.36
2015.008.11:04:51.41/rx/1F(70K),on,a,on,on,on,off,locked,63.21
```

- ⇒ **ATTENTION: The dewar temperatures can currently just be requested in a separate xterm, using the program /usr2/oper/rtw_sx_dewar/bin/rtwdewarc, which continuously prints the dewar values each minute. These values should be manually written into the log file of the new schedule and should be <u>noted on the summary print of the schedule</u>!**

```
fs3rtw:/usr2/oper/:> /usr2/oper/rtw_sx_dewar/bin/rtwdewarc
** Connect to the dewar
*******************************
** Read status of dewar
First stage temperature:  63.21 K
Second stage temperature: 19.36 K
Pressure:                 1e-08 mbar
Alarm is:                 NOT DETECTED
*******************************
** Close connection to dewar
```

- Check time offset between GPS-time and formatter-time (gps-fmout), by entering the following in the "Operator Input" on the Field System PC (the value should be around 10^-5)

```
==>RTW
counter2
==>TTW
dotmon
==> Result:
2015.008.12:02:51.00/gps-fmout/+3.02846E-005
```

- Check the meteorological reading, by entering the following in the "Operator Input" on the Field System PC (there should be practical values for temperature, pressure and humidity) and add comments about the weather condition

```
WX
==> Result:
2015.008.11:58:13.43/wx/ 2.7,954.2,95.4
" WX: completely covered, strong wind
```

- Check if the recording runs correctly
  - Select the Mark5-recorder on the screen using the "Ctrl"+"Ctrl" hot key and the pop-up menu

- Push "Ctrl"+"Alt"+"F2" to select the second terminal. Login with user oper (if not yet logged in)
- Enter the following command and check if the numbers in the columns change from scan to scan

```
DirList
```


2) Error and failure management

2.1) Error detection

- Each relevant error generates a BEEP sound (**Do not switch off this sound!**) and produce an error output in the log of the NASA Field System
- Some errors are more relevant than others (e.g. if the antenna does not move). In principle each error should be checked. But the following error messages are not crirtical for the exoperiment success:
  - bo-124: No (scan_name=...) observation starting at a future time found in schedule.
  - bo-135: Maximum number of characters in procedure parameter is ?WWW.
  - ch-4: Head is still moving.
  - ch-201: communication trouble
  - ch-204: USB bandwidth does not check with requested value
  - ch-303: bandwidth does not check with requested value
  - ch-308: **total power integrator overflow**
  - ch-316: **Total power integrator overflow on IF1**
  - ch-317: **Total power integrator overflow on IF2**
  - ch-337: Reproduce bandwidth does not check with request
  - ch-338: Reproduce equalizer does not check with request
  - ch-340: Reproduce track A does not check with request
  - ch-341: Reproduce track B does not check with request
  - ch-363: IF3 mixer state does not check with request.
  - ch-370: **Total power integrator overflow on IF3**

- ib-10: ibcon initialization failed, gpib devices inaccessible.
- q@-404: Head positioning failed to converge.
- qk-211: **Tsys value for device ?W overflowed or was less than zero.**
- qn-201: Error in request. Unknown module or does not match your equipment.
- rb-301: Label is not in CSA format as specifed.
- sp-4: Unrecognized name (not a function or procedure).
- 5r-503: error decoding record? scan label parameter
- All other errors should be taken seriously!
- If the error stays for a longer time (longer than for two scans), then it is necessary to inform the responsible person (personnel staff of the VLBI team may try to fix the problem themselves) ⇒ **See the telephone list on the right side of the operator window in the RTW control room**

2.2) Error management for known error situations

- **Antenna Control Unit (ACU) - problems:** If there are problems with the ACU, e.g. the antenna does not move anymore try
  - check the local ACU-terminal, if there are hints about the error
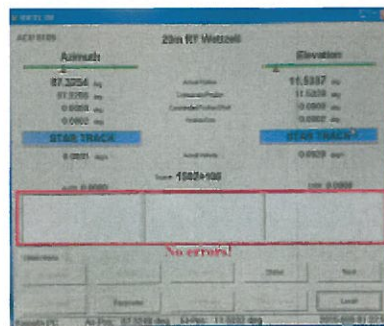
- to reset the ACU-communication with the following command in the operator input of the NASA Field System and wait until the successful reconnection shows a dedicated output

```
        antenna=reset
        ==> Output:
        2015.041.14:58:36.01;antenna=reset
        2015.041.14:58:36.01#antcn#ACU: reset ACU server, init ACU and
reconnect all other connections
        2015.041.14:58:37.01#antcn#ACU: Reset commanded, sleep 5 seconds
and reconnect
        2015.041.14:58:42.23/antenna/ACK
```

- if nothing works anymore, go into the antenna tower and switch the ACU off, wait 10 seconds and switch it on again. The switch is on the backside of the ACU. You have to open the EDV-Rack for that. Follow the following procedure:
  - Interrupt the schedule with

```
        halt
```

- Switch off the ACU, wait 10 seconds and switch it on again.
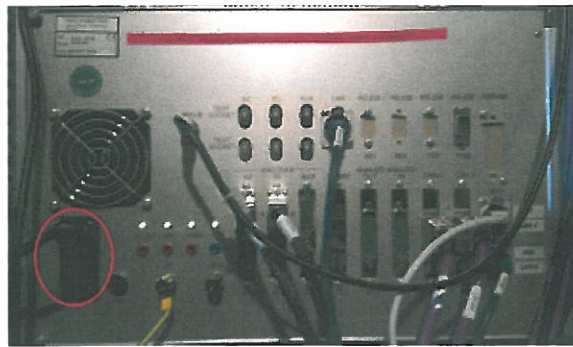
- Reconnect to the ACU and start the schedule again (replace <session> by the real session name) at the right line number (see the session summary; e.g. here line 143)


```
<code>
antenna=reset
schedule=<session>,#143
cont
</code>
```

- **Mark5-problems:** If there a problems with the recording do the following
  - RTW (Mark5A)
    - Select the Mark5-recorder on the screen using the "Ctrl"+"Ctrl" hot key and the pop-up menu

- Push "Ctrl"+"Alt"+"F2" to select the second terminal. Login with user oper (if not yet logged in)
- Enter the following command and check if the numbers in the columns change from scan to

scan

EndM5A

- Push "Ctrl"+"Alt"+"F1" to select the second terminal. Login with user oper (if not yet logged in)
- Enter the following command and check if the numbers in the columns change from scan to scan

```
Mark5A -m 0 -f 1 &
```

- If this does not work, change into "root"-user mode with "*su*" and the "root"-password and enter

```
reboot
```

- After the reboot login as "oper" and enter the following command

```
Mark5A -m 0 -f 1 &
```

- If this does not work, switch the Mark5 off, wait 10 seconds and switch it on again

- After the reboot login as "oper" and enter the following command

```
Mark5A -m 0 -f 1 &
```

- TTW (Mark5B+)
    - Follow the similar procedures as for RTW. Just replace "*Mark5A -m 0 -f 1 &*" by "*DIMino - m0*"

- **NASA Field System problems:** If there a problems with the NASA Field System or the controlling by the NASA Field System follow the following procedures:
    - Enter the following command in the "Operator Input" window

```
terminate
```

- The Field System can be restarted in the "login shell", typing

```
fs
```

- It opens the "Operator Input" and uses the "login shell" as logging output
- Start the other windows with "Ctrl"+"Shift"+"2" (System Status Monitor), "Ctrl"+"Shift"+"3" (Mark5 Remaining Capacity) and "Ctrl"+"Shift"+"5" (System Temperatures)
- The screen should then look like

- It's possible to also activate a separate ERROR monitoring, if a schedule is started
    - Open a new xterm with a right click onto the screen
    - Enter *tail -f /usr2/log/r4561wz.log | grep "ERROR"* (where "r4561wz" is the name of the currently started schedule)
- If this does not help, open a new terminal (right mouse click and selection from the menu) enter "*su*" and the "root"-password to become root and enter

    reboot

- If this does not help, push the power button of the PC for a longer time to switch off the Field System computer, wait 10 seconds and push it again to switch it on again
- If no user is currently logged in, do the login procedure (enter the username "oper" and the password ▮▮▮▮▮
- After rebooting start the NASA Field System again, as described above

- **Mark4-rack probelms:** ⇒ directly call the responsible person

- **Network problems:** ⇒ directly call the responsible person

- **Power problems:**
    - After returning of the power, follow the instruction in: Tasks to start the VLBI session
- If all of these solutions do not work, call the responsible person (see the phone list on the right side of the wiondow in the RTW control room)

3) Critical situations

- The operator is responsible for the safe operation of the maschine for human beings and the system itself
- If he sees any problems, danger or other situations, which influence the safety, he is responsible to STOP the antenna and all dangerous parts
- In critical situations, there are "EMERGENCY STOP" switches (also in the control rooms), which will directly interrupt the movement

- Critical situations are also meteorological hazards, like strong wind (> 70 km/h wind speed). In case of such a hazardous situation, move the antenna into stow position with

```
antenna=safepos
```

4) Email notification and log file entry when error situations

- If there are larger error situations so that scans are lost it is necessary to enter a short notice about the error situation and the status (fixed or not) into the log file by entering the error text with a heading " in the Operator input, e.g.

```
" ACU-communication failed, because of network problems => fixed by
IT-administration
```

- Additionally it is necessary to send an email for each urgent, huge failures with the problem dentification and some additional informations to
  - IVS-OPS ivs-ops@ivscc.gsfc.nasa.gov
  - IVS-URGENT ivs-urgent@ivscc.gsfc.nasa.gov
  - IVS-analysis ivs-analysis@ivscc.gsfc.nasa.gov

5) Interrupt for other sessions (e.g. INT)

- Most of the 24-hour sessions are interrupted by a shorter 1-hour intensive.
- To interrupt a session do the following
  - Enter *"halt"* in the operator input (a "HALT" appears in the System Status Monitor)
  - Change the Mark5 module or switch of one bank and switch the other on with the key at the Mark5-PC
  - Call the new schedule and follow the instructions in: Tasks to start the VLBI session
  - Enter *"cont"* in the operator input if the "HALT" is not cleaned automatically after the schedule start

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Permanent link:
http://wiki.wtz/doku.php?id=vlbi:vlbioperations:02duringthesession

Last update: **2015/02/12 16:14**

Tasks after the session

1) Change log file output to the station log file

- Enter *"log=station"* in the Operator Input (oprin) window of the NASA Field System

2) Print the label for the Mark5-module

- Print the label by entering the following command sin a new xterm

```
cd /usr2/log
drudg <schedulename>wz.log
```

- As now more sessions are recorded on one module, to many labels might be on the module. Therefore, please just use an empty label to note the session handwritten on the module. This is only allowed for modules which are not shipped to the correlator but transferred with e-VLBI.

3) Send the "stop" email

- Send a "email" to IVS-OPS ivs-ops@ivscc.gsfc.nasa.gov with the following content (where session name is the name of the currently stopped observation session):

```
Subject: <sessionname>wz - stop
Wettzell obsered <sessionname>wz  as scheduled.
All scans are recorded.
regards, wz-obs.
```

- or with the following content for the INTENSIVES (Mo-Fr)

```
Subject: <sessionname>wz - stop
Wettzell obsered <sessionname>wz  as scheduled.
All scans are recorded and will be transfered to 141.74.6.91.
regards, wz-obs.
```
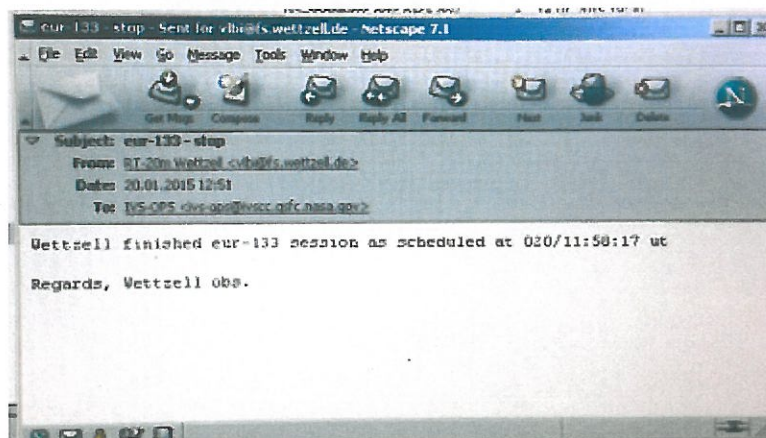
(or add a short report with the appeared problems and errors)

4) Move the antenna to the safe position

- If no other experiment follows, the antenna **must** be moved to the safe stow position using the following command in the "Operator Input" of the NASA Field System

```
antenna=safepos
```

5) Send the log-file manually to CDDIS (only if automated transfer fails)

- If the transfer at the end of the schedule fails (no output of # while the transfer happens), then run a manual transfer
- Change into the directory with all log-files

```
cd /usr2/log/
```

- Open a FTP-connection to cddis.gsfc.nasa.gov

```
ftp cddisin.gsfc.nasa.gov
User:
Password:
```

- Run the following commands (while <file.log> must be replaced by the name of the log-file, which should be transfered)

```
passive
hash
bin
put <file.log>
bye
```

6) Transfer of the sessions from mk52evlbi machine (141.74.6.92) directly to the correlators

Please see for standard transfer: Tasks to send the data of the VLBI session

Please see for manual transfer: Description of the Tsunami transfer

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http://wiki.wtz/doku.php?id=vlbi:vlbioperations:03afterthesession

Last update: **2016/02/16 18:13**

Tasks to send the data of the session

1) Regular sending with e-Transfer

- Because the R4 sessions must be transferred to the correlator in Washington, where we have a weak connection, it is important that the operator of the Friday evening starts the transfer after the end of the R4-session, so that the transfer runs over the weekend!
- Plug the module into the e-VLBI Mark5 machine 141.74.6.92 in the e-VLBI rack in the RTW control room
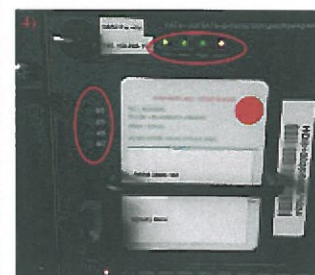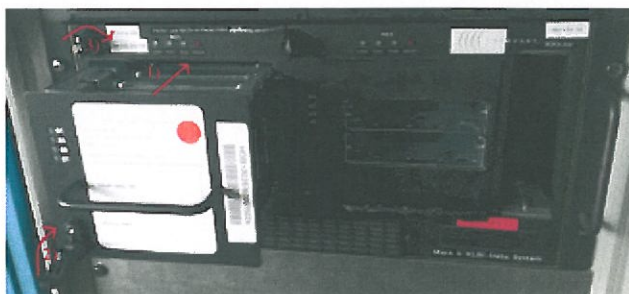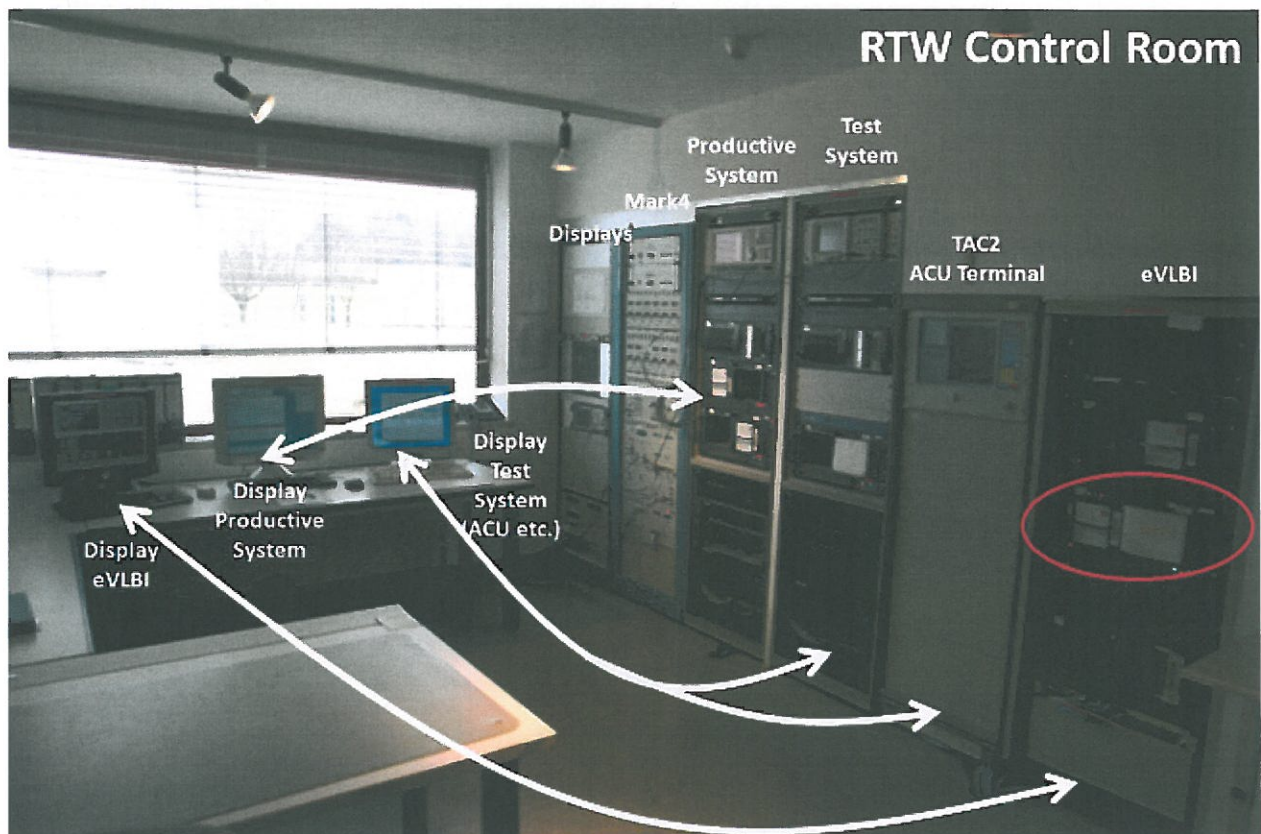
- Go to the corresponding terminal and select the "mk52evlbi Mk5B" machine in the KVM menu (after pushing "Ctrl"+Ctrl")

- If no user is logged in push "Ctrl"+"Shift"+"F7" to select the graphical desktop. If no desktop is available push "Ctrl"+"Shift"+"F1, log in as user oper with password ▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓" and enter "*startx*". Then the graphical desktop should start.
- Start three separate X-terminals, by clicking on an empty space on the desktop and selecting "XTerm" and change into the tsunami directory with "*cd /home/oper/tsunami-scripts* " on each
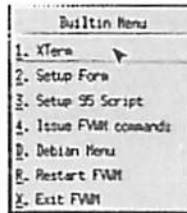
- Arrange the terminals in the following way, so that the upper left is for direct SSH-connections to the target machines, the upper right is for the start of the "fuse"-emulation, and the lower is to configure and start the transfer
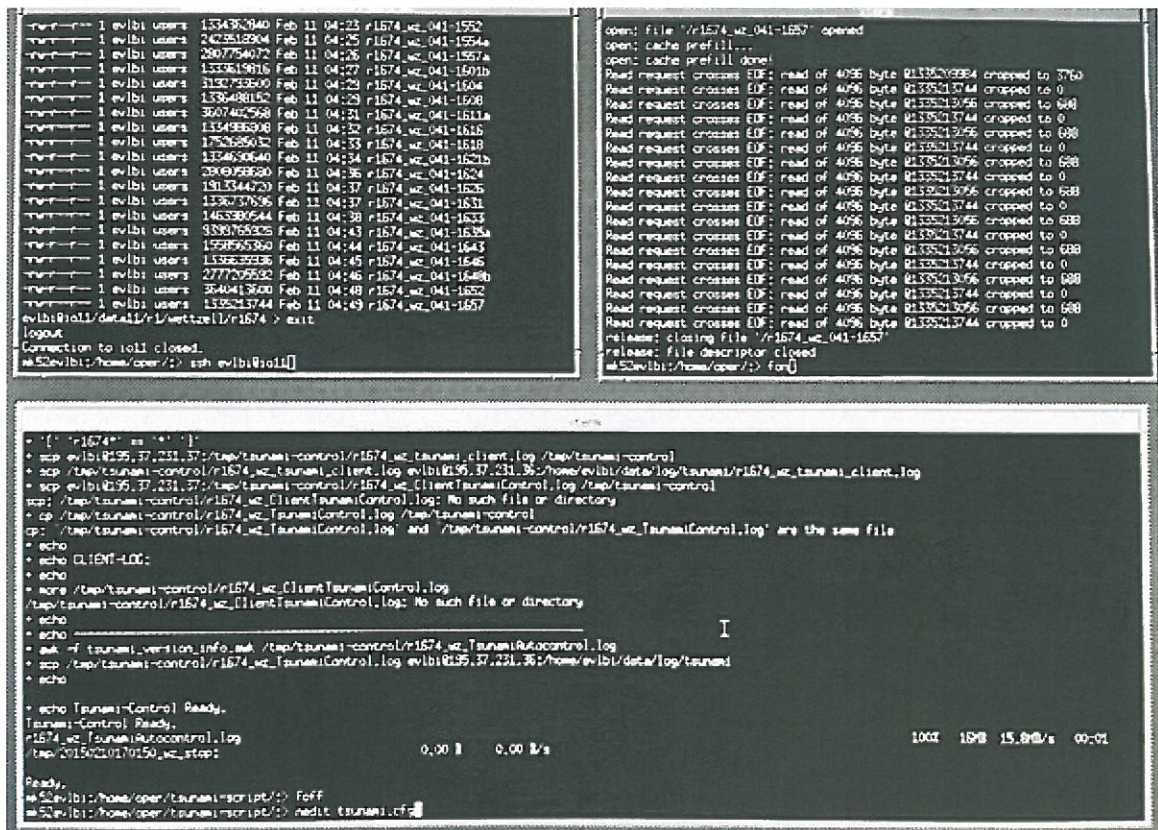
- If the module is inserted and the red ready LED is on over the module, then start the "fuse"-emulation in the upper right window with

```
fon
```

- Check the target correlator on http://ivscc.gsfc.nasa.gov/program/index.html by selecting the master file (for 24h sessions or for 1h sessions) and searching the session name and the corresponding correlator for that session, e.g.

- Check the capacities of available volume and transfer rates to that correlator on http://www3.mpifr-bonn.mpg.de/cgi-bin/showtransfers.cgi . In the given situation, e.g. to Bonn, raid "data10" on the server "io10" would be possible with a maximum rate of 700MBit/s (available transfer rates). Please also consider the transfer priority and start with the modules with highest priority first.

Transfer Web Page for VLBI Stations and Correlators

Transfer Priority		
Correlator	**Experiment(+Station)**	**Bandwidth (when indicated)**
BONN	enr139	-

Available transfer rates for BONN		Available transfer rates for WACO	
TO Bonn	700m	TO WACO	950m
FROM Bonn	950m	FROM WACO	950m

List of Active Data Transfers

Started at	Sent from	Sent to	Raid	Experiment Name	Preset Transfer Rate	Port	Serial Number
2016-02-16 16:46:19	kb	hay	data-st53	rv116	200M	46225	20160216164619
2016-02-16 09:49:50	Hb140	Bonn	data2	chag98ke	150m	2632	20160216094950
2016-02-15 21:28:55	Hb208	Bonn	data2	chag95hb	100m	2631	20160215212855

Default connect port 46224
Default msfcopy port 2690

Bonn Storage Information					Haystack Storage Information					WACO Storage Information				
Raid	**Via Server**	**Size**	**Free**	**Note**	**Raid**	**Via Server**	**Size**	**Free**	**Note**	**Raid**	**Via Server**	**Size**	**Free**	**Note**
data2	io02	163.7 TB	63.1 TB		data-st13	evlbi1	14.3 TB	3.4 TB		data1	san01	9.0 TB	1.7 TB	
data3	io03	72.8 TB	11.7 TB		data-st10	evlbi1	14.3 TB	1.7 TB		data2	san01	9.0 TB	1.0 TB	
data10	io10	36.4 TB	11.8 TB		data-st11	evlbi1	14.3 TB	78.0 GB		data3	san01	9.0 TB	1013.4 GB	
data10b	io10	8.2 TB	3.8 TB		data-st12	evlbi1	14.3 TB	983.2 GB		data4	san01	9.0 TB	2.5 TB	
data11	io11	40.9 TB	40.9 TB		data-st20	evlbi2	14.3 TB	1.1 TB		data5	san01	9.0 TB	3.9 TB	
data13	io13	65.5 TB	2.5 TB	RadioAstron Only	data-st21	evlbi2	14.3 TB	895.9 GB		data6	san01	9.0 TB	1.5 TB	
data14	io14	65.5 TB	13.9 TB		data-st22	evlbi2	14.3 TB	971.9 GB		data7	san01	11.8 TB	1.7 TB	
					data-st23	evlbi2	14.3 TB	2.2 TB		data8	san01	11.8 TB	2.5 TB	
					data-st30	evlbi3	14.3 TB	4.5 TB		data9	san01	12.2 TB	3.1 TB	
					data-st31	evlbi3	14.3 TB	2.3 TB						
					data-st32	evlbi3	14.3 TB	3.0 TB						
					data-st33	evlbi3	14.3 TB	3.0 TB						

Hosted by the Geodesy VLBI Group, Institute of Geodesy and Geoinformation, University of Bonn.
Written by Frederic Jaron
Maintained by Jerome Bernkopf

- Select a server and log in with SSH in the XTerm for SSH (upper left one). All SSH-connections use stored keys for the authentication, so that only the user and server must be used, like shown below. The IP-adresses and users can be found here: IP-addresses of the "evlbi" network

```
ssh evlbi@io10 (or io03, io11, io13 for Bonn)
ssh wett@san01 (for Washington)
ssh oper@evlbi1.haystack.mil.edu (evlbi2.haystack.mil.edu,
evlbi3.haystack.mil.edu for Haystack)
```

- There change into the right directory:
  - Bonn: a combination of the corresponding directory on the raid (see http://www3.mpifr-bonn.mpg.de/cgi-bin/showtransfers.cgi), the session type (session acronym) and the subfolder "wettzell", e.g. "cd /data11/r1/wettzell/ "
  - Washington: a combination of the corresponding directory on the raid (see http://www3.mpifr-bonn.mpg.de/cgi-bin/showtransfers.cgi), a subfolder "evlbi" with the corresponding raid number, e.g. "cd /data1/evlbi01/ "
  - Haystack: a combination of the corresponding directory on the raid (see http://www3.mpifr-bonn.mpg.de/cgi-bin/showtransfers.cgi) and the subfolder "Wettzell", e.g. "cd /raid4/Wettzell/ "

- Create a new folder there, which has the name of the experiment (only in Washington: extend that name with the station acronym "wz"), e.g. for the experiment "R1674"

```
mkdir r1674
```

- Open an editor with the configuration file for the transfer (e.g. "nedit" with " *nedit tsunami.cfg & *") in the lower XTerm and edit the configuration according to the transfer conditions: target "TS_CLIENT", user "TS_CLIENT_USER", experiment name "TS_EXP_NAME" and "TS_FILES", raid "TS_RAID", target path "TS_CLIENT_PATH", location of the tsunami client "TS_TSUNAMI_CLIENT", and transfer raid "TS_TRANSFER_RATE" (in the directory are example files, which you can use as template; just overwrite the existing "tsunami.cfg" with the example). Following are the three sections for the three correlators as examples:
  - Bonn:

```
#
# tsunami.cfg
# This is the config file for tsunami-control.
# Tsunami-control is written by:
# Christian Dulfer
#
# Changes: 08.02.2008 by Christian Dulfer
#          2012-09-04 Simone, added TS_RAID
#          2012-09-25 Christian, adaptions for Wz
#     2013-05-31 Christian, access to Washington
#
#TS_CLIENT=195.37.231.94     # 1008, Bonn
#TS_CLIENT=195.37.231.36     # 1010 Bonn
TS_CLIENT=195.37.231.37      # 1011, Bonn
#TS_CLIENT=195.116.24.178    # san01, Washington
#TS_CLIENT=192.52.62.238     # corazon, Haystack
#TS_LOGSERVER=195.37.231.36  # 1010, Bonn
TS_CLIENT_USER=evlbi         # Client user at Bonn
#TS_CLIENT_USER=oper         # Client user at Haystack
#TS_CLIENT_USER=wett         # Client user at Washington
TS_SERVER_USER=oper
TS_LOGSERVER_USER=evlbi

TS_EXP_NAME=r1674            # Session name
TS_STATION=wz               # Station
TS_FILES=r1674*             # File filter
TS_FILE_TYPE=*              # File type filter

TS_RAID=data11              # Indication for web status
#TS_CLIENT_PATH=/data1/evlbi01/r1642_wz     # san01, R1, Washington
#TS_CLIENT_PATH=/raid4/Wettzell/rd1205_wz   # Corazon, Haystack
#TS_CLIENT_PATH=/data11/int3/wettzell/k11289  # 1011, K12 (Montag), Bonn
#TS_CLIENT_PATH=/data11/t2/wettzell/r2256   # 1011, R2, Bonn
TS_CLIENT_PATH=/data11/r1/wettzell/r1674   # 1011, R1, Bonn
#TS_CLIENT_PATH=/data10/r1/wettzell/r1670wz # 1010
TS_SERVER_PATH=/mnt/diskpack
TS_LOG_PATH=/home/evlbi/data/log/tsunami

TS_TSUNAMID_PATH=default          # Tsunami standard installation on server

TS_TEMP_BIN=/tmp/tsunami-control

#TS_TSUNAMI_CLIENT=default     #Washington
#TS_TSUNAMI_CLIENT=default              # Haystack
TS_TSUNAMI_CLIENT=/cluster/tsunami/tsunami-udp-v1lb42/client/tsunami    # 1008/1010

TS_CREATE_MD5=no

TS_TRANSFER_RATE=250m

TS_BLOCKSIZE=default

TS_PORT=default

TS_HSTIMEOUT=360

# TS_DELAY_1 : Delay between killing old Tsunami-Server-Processes and starting Tsunami-Server
# TS_DELAY_2 : Delay between Server-Strat and Client-Start.
# TS_DELAY_DELTA=default

TS_DELAY_1=default
TS_DELAY_2=default
TS_DELAY_3=default
TS_DELAY_4=default

TS_MAIL=off

TS_MAIL_1=evlbi@mpifr-bonn.mpg.de
TS_MAIL_CC="evlbi@mpifr-bonn.mpg.de"

#TS_CORRELATOR=Haystack
TS_CORRELATOR=Bonn
#TS_CORRELATOR=Wash

TS_CLIENT_KILLING=off
```

  - Washington (max 150 mbit/sec transfer rate):

```
#
# tsunami.cfg
# This is the config file for tsunami-control.
# Tsunami-control is written by:
# Christian Dulfer
#
# Changes: 08.02.2008 by Christian Dulfer
#          2012-09-04 Simone, added TS_RAID
#          2012-09-25 Christian, adaptions for Wz
#          2013-05-31 Christian, access to Washington
#

#TS_CLIENT=195.37.231.34      # 1009, Bonn
#TS_CLIENT=195.37.231.36      # 1010 Bonn
TS_CLIENT=195.37.231.37       # 1011, Bonn
#TS_CLIENT=195.116.24.178     # san01, Washington
#TS_CLIENT=192.52.62.238      # Corazon, Haystack
TS_LOGSERVER=195.37.231.36    # 1010, Bonn
TS_CLIENT_USER=evlbi          # Client user at Bonn
#TS_CLIENT_USER=oper          # Client user at Haystack
#TS_CLIENT_USER=west          # Client user at Washington
TS_SERVER_USER=oper
TS_LOGSERVER_USER=evlbi

TS_EXP_NAME=r1674             # Session name
TS_STATION=wz                 # Station
TS_FILES=r1674*               # File filter
TS_FILE_TYPE=*                # File type filter

TS_RAID=data1                 # Indication for web status
#TS_CLIENT_PATH=/data/evlbi010/r1642_wz      # san01, R1, Washington
#TS_CLIENT_PATH=/raid4/wettzell/rd1208_wz    # Corazon, Haystack
#TS_CLIENT_PATH=/data1/ine3/wettzell/k12209  # 1011, K12 (Montag), Bonn
#TS_CLIENT_PATH=/data1/r2/wettzell/r2096     # 1011, R1, Bonn
TS_CLIENT_PATH=/data1/r1/wettzell/r1674      # 1011, R1, Bonn
#TS_CLIENT_PATH=/data1/r1/wettzell/r1672wz   # 1010
TS_SERVER_PATH=/mnt/diskpack
TS_LOG_PATH=/home/evlbi/data/log/tsunami

TS_TSUNAMID_PATH=default            # Tsunami standard installation on server

TS_TEMP_BIN=/tmp/tsunami-control

#TS_TSUNAMI_CLIENT=default     #Washington
#TS_TSUNAMI_CLIENT=default          # Haystack
TS_TSUNAMI_CLIENT=/cluster/tsunami/tsunami-udp-v1k42/client/tsunami   # 1009/1010

TS_CREATE_MD5=no

TS_TRANSFER_RATE=150m

TS_BLOCKSIZE=default

TS_PORT=default

TS_RETIMEOUT=360

# TS_DELAY_1 : Delay between killing old Tsunami-Server-Processes and starting Tsunami-Server
# TS_DELAY_2 : Delay between Server-Strat and Client-Start.
# TS_DELAY_DELTA=default

TS_DELAY_1=default
TS_DELAY_2=default
TS_DELAY_3=default
TS_DELAY_4=default

TS_MAIL=off

TS_MAIL_1=evlbi@mpifr-bonn.mpg.de
TS_MAIL_CC="evlbi@mpifr-bonn.mpg.de"

#TS_CORRELATOR=Haystack
TS_CORRELATOR=Bonn
#TS_CORRELATOR=Wash

TS_CLIENT_KILLING=off
```

- Haystack:

```
#
# tsunami.cfg
# This is the config file for tsunami-control.
# Tsunami-control is written by:
# Christian Dulfer
#
# Changes: 08.02.2008 by Christian Dulfer
#          2012-09-04 Simone, added TS_RAID
#          2012-09-25 Christian, adaptions for Xz
#          2015-05-31 Christian, access to Washington
#

#TS_CLIENT=195.37.231.34     # 1003, Bonn
#TS_CLIENT=195.37.231.36     # 1010 Bonn
TS_CLIENT=195.37.231.37      # 1011, Bonn
#TS_CLIENT=198.116.24.178    # gan01, Washington
TS_CLIENT=192.52.62.238      # corazon, Haystack
TS_LOGSERVER=195.37.231.36   # 1010, Bonn
TS_CLIENT_USER=evlbi         # Client user at Bonn
TS_CLIENT_USER=oper          # Client user at Haystack
#TS_CLIENT_USER=oper         # Client user at Washington
TS_SERVER_USER=oper
TS_LOGSERVER_USER=evlbi

TS_EXP_NAME=r1674            # Session name
TS_STATION=wz               # Station
TS_FILES=r1674*             # File filter
TS_FILE_TYPE=              # File type filter

TS_RAID=data-stik          # Indication for web status
#TS_CLIENT_PATH=/data1/evlbi01/r1642 wz     # gan01, R1, Washington
TS_CLIENT_PATH=/raid4/Wettzell/rd1208 wz    # Corazon, Haystack
#TS_CLIENT_PATH=/data1/int3/wettzell/k13389 # 1011, K13 (Montag), Bonn
#TS_CLIENT_PATH=/data11/t2/wettzell/t2096   # 1011, Bonn
TS_CLIENT_PATH=/data10/r1/wettzell/r1674    # 1011, R1, Bonn
#TS_CLIENT_PATH=/data10/r1/wettzell/r1670wz # 1010
TS_SERVER_PATH=/mnt/diskpack
TS_LOG_PATH=/home/evlbi/data/log/tsunami

TS_TSUNAMID_PATH=default          # Tsunami standard installation on server

TS_TEMP_BIN=/tmp/tsunami-control

#TS_TSUNAMI_CLIENT=default        #Washington
#TS_TSUNAMI_CLIENT=default                    # Haystack
TS_TSUNAMI_CLIENT=/cluster/tsunami/tsunami-ssp-r1042/client/tsunami    # 1003/1010

TS_CREATE_MD5=no

TS_TRANSFER_RATE=250m

TS_BLOCKSIZE=default

TS_PORT=default

TS_HSTIMEOUT=360

# TS_DELAY_1 : Delay between killing old Tsunami-Server-Processes and starting Tsunami-Server
# TS_DELAY_2 : Delay between Server-Start and Client-Start.
# TS_DELAY_DELTA=default

TS_DELAY_1=default
TS_DELAY_2=default
TS_DELAY_3=default
TS_DELAY_4=default

TS_MAIL=off

TS_MAIL_1=evlbi@mpifr-bonn.mpg.de
TS_MAIL_CC="evlbi@mpifr-bonn.mpg.de"

#TS_CORRELATOR=Haystack
TS_CORRELATOR=Bonn
#TS_CORRELATOR=Wash

TS_CLIENT_KILLING=off
```

- Save the configuration and make a copy of it with the extension of the session, e.g. "tsunami.cfg.r1674"
- Start the transfer in the lower XTerm with

```
./tsunami_autocontrol.sh
```

- The transfer will start. The startup takes a while, but then you should see a regular output, which is updated line-by-line.
- Check the arriving scans in the SSH-XTerm (upper left) in the created target directory, using

```
ls -larth
```

- After finishing of the transfer stop the "fuse"-emulation in the lower XTerm with

```
foff
```

- Take out the module and put it in the rack for the transfered but not yet correlated modules (in the cooled room behind the control room)
- If you have to reboot the system, follow the instruction like given in startup and during sessions

(except the starting of the Mark5-software, because "fuse" is used).
- If you have to stop a transfer manually push "Ctrl"-"C". But the entry in the transfer Web page will be kept. This must be canceled manually see Description of the Tsunami transfer

2) Manual sending with e-Transfer

- Please take a look at Description of the Tsunami transfer

3) Sending the hardware with courier services

- To send a real package with a courier service, fetch a cardboard box from the attic, screw the RFI shiled around the module (you can find them in the cabinet in the RTW control room) and pack the module into the cardboard box.
- Then follow the instruction in TNT Versand (package size: 10,000 kg; length: 49 cm; width: 34 cm; height: 30 cm)
- **Attention: You must call the service +49-9428-260-0 with all required information (sender account: 70216494) from the previous document and the printed sending documents (custom value must be lower than 19 Dollars)**

From:
http://wiki.wtz/ - **Geodetic Observatory - Wiki**

Permanent link:
http://wiki.wtz/doku.php?id=vlbi:vlbioperations:04sendthesession

Last update: **2016/02/16 18:22**

Tasks for remote operations of VLBI session

1) Remote terminals

- There are several remote terminals with similar setup for the different purposes to control sessions on specific telescopes remotely. Currently the TWIN-telescopes and partly the O'Higgins telescope is controlled from remote in the current operator room of the RTW.
- The remote terminal is on the operator desk, connected to a small ZOTAC-PC (username: twingui; password: ▓▓▓▓▓▓)

2) Start of the software e-RemoteCtrl

- The software can be started with a starter button on the upper left corner on the screen. Double-click the button to open the software. It opens the graphical user interface with the standard configuration related to the predetermined antenna connection.

- You have to change to the tab of the antenna. Enter the specific user and password (currently the same as for the field system).
- Click on one of the '+' to open the different windows of the control.
- Follow the instructions in the manual.

3) User manual for the software e-RemoteCtrl

- Installation and users manual

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http://wiki.wtz/doku.php?id=vlbi:vlbioperations:05remotesession

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Special tasks to fix bugs by operators from the observatory staff

1) Receiver failure due to hot temperatures

a) Receiver reset

- A simple receiver reset can be done, by switching the fuse in the power distribution rack in the basement of the RTW tower

-
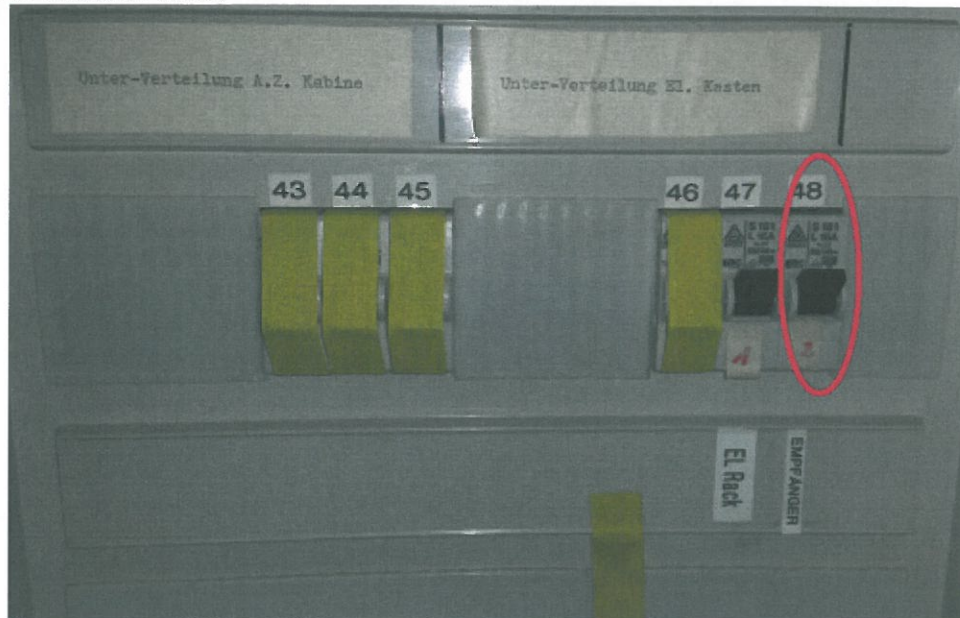
b) Power-off due to hot temperatures in the receiver

- If the failure "**ERROR ma -4 Device rx timed-out on response.**" appears in the NASA Field System and the external temperatures are higher than 30 degree Celsius, then usually the power switch turned off the power automatically
- Switch it on again by switching the switch under the receiver (see image)
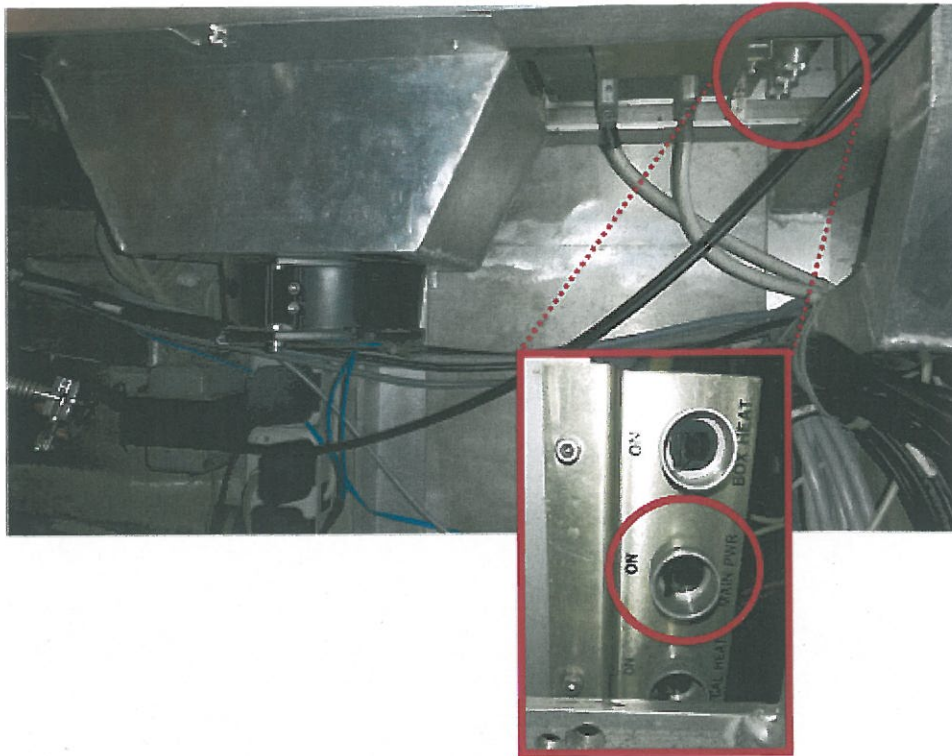
c) Additional protection with additional fan under the receiver

- To increase the cooling, an additional fan can be plugged on under the receiver
- Just plug in the power cable (see image)

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http://wiki.wtz/doku.php?id=vlbi:vlbioperations:10bugfixes
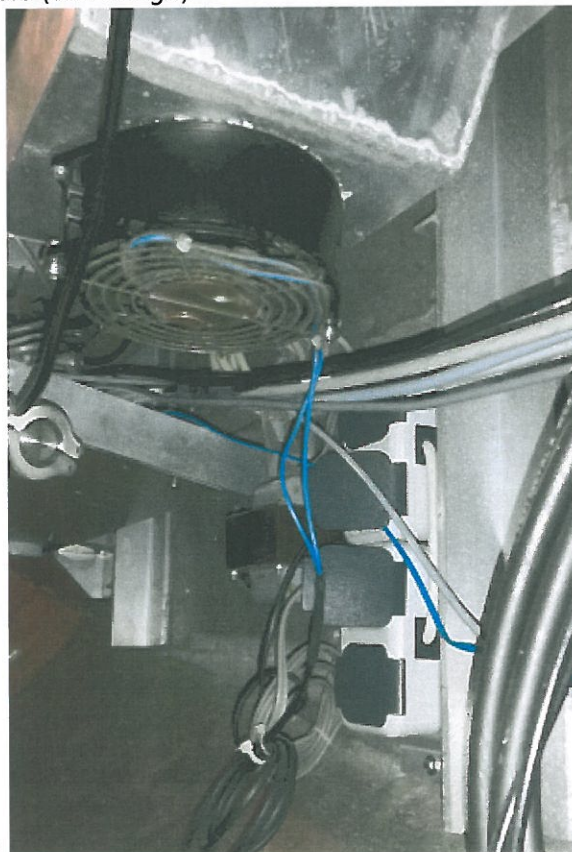
Last update: **2015/07/07 18:32**

Tsunami transfer manual

Check and update current Tsunami transfers on the transfer Web page

Currently operated Tsunami transfers are listed in the List of Active Transfers for VLBI. All transfers must be registered there with:

- Register the start of a transfer:
    - *"touch yyyymmddhhmmss_EXPNAME_FROM_TO_RATE_PORT_DIRNAME_start"* where
        - yyyy = year
        - mm = month
        - dd = day
        - hh = hour
        - mm = minute
        - ss = second
        - EXPNAME = experiment/session name
        - FROM = sender name (wz)
        - TO = receiver name (e.g. Bonn)
        - RATE = transfer rate (e.g. 400m)
        - PORT = used tsunami port
        - DIRNAME = directory on the receiver machine (e.g. data10)
    - Send it to Bonn, using FTP
        - *"ftp ftp.mpifr-bonn.mpg.de"* (User: ▓▓▓▓▓▓; Password:▓▓▓▓▓▓)
        - *"cd incoming/geodesy/transfers"*
        - *"put yyyymmddhhmmss_EXPNAME_FROM_TO_RATE_PORT_DIRNAME_start"*
        - * or with ncftpput: *"ncftpput ftp.mpifr-bonn.mpg.de incoming/geodesy/transfers yyyymmddhhmmss_EXPNAME_FROM_TO_RATE_PORT_DIRNAME_start"*
- Register the end of a transfer:
    - *"touch yyyymmddhhmmss_FROM_stop"* where
        - yyyy = year (same number as in the start notice)
        - mm = month (same number as in the start notice)
        - dd = day (same number as in the start notice)
        - hh = hour (same number as in the start notice)
        - mm = minute (same number as in the start notice)
        - ss = second (same number as in the start notice)
        - FROM = sender name (e.g. wz; same identifier as in the start notice)
    - Send it to Bonn, using FTP
        - *"ftp ftp.mpifr-bonn.mpg.de"* (User: ▓▓▓▓▓▓; Password:▓▓▓▓▓▓)
        - *"cd incoming/geodesy/transfers"*
        - *"put yyyymmddhhmmss_FROM_stop"*
        - or with ncftpput: *"ncftpput ftp.mpifr-bonn.mpg.de incoming/geodesy/transfers yyyymmddhhmmss_FROM_stop"*

Manual setup of a Tsunami transfer to Bonn

(only possible from the Mark5 with Tsunami (141.74.6.92))

- Check transfer capacities on:
    - List of Active Transfers for VLBI
- First terminal on the Tsunami Mark5 machine:
    - *"ssh evlbi@io10"*: connect to the io10 server (IP: 194.94.199.163) at Bonn (e.g. Washington is wett@san01)
    - *"cd data10"*
    - *"mkdir o13238"*: creates subdirectory for the sessionn *"o13238"*
    - *"cd o13238"*
- Second terminal on the Tsunami Mark5 machine:
    - *"cd /evlbi/o13238"*: change to directory of the local session storage o13238
    - *"tsunamid *"*: starts the Tsunami server
- First terminal on the Tsunami Mark5 machine:
    - " *tsunami* " or if this does not work " */cluster/tsunami/tsunami-udp-v11b42/client/tsunami* "
    - *"connect 141.74.6.92"*
    - *"set rate 400m"*: set transfer speed to 400 Mbps
    - *"get *"*: fetch all files
    - =⇒ The transfer runs =⇒ wait until it finished
- Third terminal: update the transfer Web page with the start message (see "Check and update current Tsunami transfers on the transfer Web page")
- Quit: First terminal on the Tsunami Mark5 machine:
    - *"exit"*: quit client after transfer
- Quit: Second terminal on the Tsunami Mark5 machine:
    - Cntrl+'C': quit server
- Third terminal: update the transfer Web page with the end message (see "Check and update current Tsunami transfers on the transfer Web page")

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VLBI On-site Quality Control using the Autocorrelation Functionality of the Mark5B

(curently the functionality is available on the Mark5B 192.168.208.31)

Extracting a piece of a scan to a file

(the commands can be entered on the Mark5B in the "*tstDIMino*" or in the NASA Field System with the command prefix "*mk5=*"; the following command sequence shows the Field System version)

```
scan_check
mk5=get_stats?
mk5=status?
mk5=scan_set=::+20000000
mk5=disk2file=/home/oper/data/latest.m5a:::w
!+3s
mk5=scan_set=
```

or use the station procedure "mk5plot" (TTW1)

Running the autocorrelation

- The autocorrelation can be generated with the script "*m5spec*" on the Mark5B (login as user "*oper*")

```
m5spec -nopol /home/oper/data/latest.m5a Mark5B-256-16-1 4000 10240 ~/data/test.spec
```

- Or use the script /home/oper/data/plotscan.sh on mk52ttw1.vlbi

Plotting the autocorrelation of all channels

- The autocorrelation plots can be generated with "*gnuplot*" on the Mark5B
- You need the following configuration files:
    - plot_16x8geo or
    - plot16x16geo

```
gnuplot -geometry 960x675-0-0 -noraise -persist ~/data/plot_16x8geo
```

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http://wiki.wtz/doku.php?id=vlbi:qualitycontrol:autocorrelation

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