

Minutes for AMiBA Engineering Telecon

Meeting Date: 30-Mar-2006

Participants:

Australia: Michael Japan: MT, Paul H.

USA: Ted, CT, Johnson, Kyle, Edwin, Johnny, Bill, Ken, Guo-Chin, Jeff

Taiwan: Patrick, Hiroaki, Homin, Eugene, Paul S., Chia-Hao, Philippe, Keiichi

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Minutes Recorder: Kyle

I. New Action Items:

II. Previous Action Items (still open):

Kyle - Detailed test plan.

Philippe - Summary report of photogrammetry measurement.

Keiichi/Patrick - Mount testing.

Bill/Ted/Pierre - Modification of shelter.

III. Closed Action Items (as of this meeting):

IV. Miscellaneous Discussions:

Site:

Ted - Last week we elevated the shelter. Bill and Mr. Chao are now working on the installing doors and skirts for the shelter. They probably need a few more days to finish the work. Sleeping container is on site and waiting for Joshua to hook up the power. We expect he can finish it some time next week.

Guo-Chin - Last night when we opened the shelter, the fabric still interfered with the jig-pole.

Ted - This should not be happening but we'll keep an eye on it. About the clearance, the distance between platform and fabric at center is 63in, and at edge is 54in. The distance between platform and truss is 113in at center and 100in at the edge.

(23/Mar/06)

CT - We have wired cables for several electronic boxes and connected the IF cables. Joshua is routing cable now. We've also installed cables in the 2nd correlator box.

Ted - Yesterday Johnson installed Rx6 (the 5th receiver on platform) and will install Rx5 next week after shelter elevation.

Philippe - After the shelter is elevated, could you measure the clearance between platform and the shelter?

(26/Jan/06)

MT - Keiichi could you start thinking about the observing plan for the year based on some information and assumption of hardware availability and put it in writing to show people? (19/Jan/06)

MT - I asked Philipe to start design an insulating wrap around the cone and hope to reduce thermal deformation. That's a long term plan.

(08/Dec/05)

Pierre - I got a quote for the 2ndhand generator. It's about 10k including shipping to site. I'll also look for some comparison.

(11/Aug/05)

M.T. - Open issues in general on site:

(1) spare parts for the mount. Philippe will be in charge of it.

(3) lightning protection

(4) emergency generator

(6) accommodation on site -> 2nd container for sleeping.

(7) a new car

(2) helium lines and cables routing to the platform

(5) how do people access the platform. Cherry-picker, ladder?

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Platform:

(23/Mar/06)

MT - Philippe, can we estimate the worst case scenario of the platform deformation on optical pointing based on the modeling? We know the location of the OT and we should be able to make prediction.

(29/Sep/05)

Philippe - I will spend some time to look into the safety issues of operation.

Shelter:

(02/Mar/06)

MT - I will check with Debbie on the progress of the motor order.

Pierre - Individual motor control is working, but there is some problem with the switches. We will also need some bumpers. I am expecting the load cells to arrive next week. After receiving them, I can finish the control part.

(13/Oct/05)

Pierre - One year ago we asked Manfred to add a few relays and software in PLC to indicate mount is in parking position. We need to test its function whether the relay is closed when the mount is parked when next time I am in Hilo.

Mount:

Ken - We did polarization pointing this week and last week. We used 80 stars for (a) constant-solid-angle method and 80 stars for (b) const-az-el-window method. For (a) it was ok, but for (b) we stopped at 54 stars. There is still H_{next} problem. Yesterday we did a 6hr long tracking, and it was fine. I will do some analysis for the data we got.

Michael - I am worrying about calling sequence of H_{next} when requesting multiple polarizations. I would like to have a summary of the problem. The nature of the error is supposed to go into a log file.

Patrick - Basically the script runs smoothly for some time. When H_{next} error occurs, all the subsequent calls return with an error.

Hiroaki - I did not find any thing in the error log. I am not sure if Ken and Guo-Chin is using the most up-to-date software.

Michael - I will look into the code to see if I can find the problem. On the other hand, while you are observing, you could use 'tail -f' to display the log file in real time. That may help troubleshooting the nature of the problem. Another point is that the code is not recovering from the error. We should find out why.

Homin - After cleaning up the network cables in the container, I found a cable to switch 2 was loose. After fixing it, we have had two days log on the network traffic. We will run at least another 7 days monitoring for timeout. After the period, Pierre can proceed to upgrade the switches.

(23/Mar/06)

Patrick - Summarize the report:

1. The repeatability is better than I thought before. If we make a cell-to-cell comparison between two pointing runs and average the difference over whole sky, the averaged error is only a few arcsec, as Vertex claimed.
2. Also did a test to observe the same star at the same time on second day. This is to compare the error in exactly the same az,el window.
3. One problem we found is with the interpolation table. It should improve the accuracy for tracking. The result on the other hand shows that with interpolation table turned on, the error seemed ok for a period and suddenly jumps off by a lot. I suspect it is due to the modeling of pointing error before generating the interpolation table. For example there is mount tilt, when it is not properly handled in the model, the interpolation table sometimes will over-compensate and sometimes under-compensate. We will continue investigating this issue.
4. No time for polarization pointing yet. And weather was not good.

(02/Mar/06)

Homin - When we examine the network communication more closely, we found the type 1 timeout is always there. Sometimes you are lucky and you wouldn't see timeout, but

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sometimes you are not so lucky. We still need another computer to monitor this timeout issue.

(23/Feb/06)

Patrick - We should keep updating the log of changes to the platform.

(25/Aug/05)

Patrick - Some temperature sensors have loose wires that need to be soldered. Someone onsite or in Hilo can do it.

Receiver:

Ted - We now have six receivers on platform. Johnson is verifying performance of #5. Joshua also did all the cables for six electrical boxes.

(23/Feb/06)

MT - Patrick, please summarize the preparation work for 1.2m beam pattern measurement, and we'll also need the schedule for 1.2m dish. Let's discuss this issue offline or later.

(08/Dec/05)

Pierre - I found that the LNA bias comes from a 7805 regulator which is sensitive to temperature change. I ordered a 8588 chip which is programmable and more stable. I plan to use hair dryer to test it.

(10/Nov/05)

Kyle - The first two Rx on the platform can accept one polarization of calibration when the cal source is ready.

(09/Jun/2005)

Pierre - Two quick fixes to the LNA power supply card.

1. Reverse the protection diode instead of removing it should provide a protection at 3V.
2. The polarized capacitor at output is reversed and I suspect it is dead. They should be replaced.

LO/IF:

Su-Wei - Now we have six new version IF/LO and I am working on the 7th. We found a problem in IF/LO#8. When we put it on Rx and perform hot/cold load, we only got $y=1\text{dB}$. Adding a 2-18GHz band pass filter cures the problem. Johnson will test it on ML.

Correlator:

CT - We scanned the sun again but the SNR was the same. Kyle and I are doing some calculation about it.

Kyle - For the SNR estimation, I used to assume the sun is a 1-D source, but that's not quite right. So the calculation I am doing now is for a 2-D source. I can also simulate the effect when the baseline length is different.

(23/Mar/06)

CT - We want to modify the doors of correlator boxes. If we put some servicing holes on the door, we would not need to lower the entire box just to trim the phaseshifter inside. I have talked to Bill and he will help me with the design.

CT - We should prepare some spare modules. To replace the power supply board for correlator box, it will at least take 1 hour because we need to lower the box and remove many semi-rigid cables to take it out.

Kyle - Another issue is about the platform polarization. We know the mount was not installed aligned to the north and the error has been corrected in the Vertex software for pointing. How does this error affect the platform orientation? Is it also corrected? The platform orientation is related to the projected baseline length. And using CCD to verify it is not trivial since we don't know the relation between CCD and platform. I will send another email to describe this problem.

(23/Feb/06)

CT - Eventually we will pull a cable to connect the 10MHz from GPS to correlator PC.

(16/Feb/06)

CT - I checked the new corr PC in Taipei and it looks ok but haven't finished yet. So I will ship it out next time. As for the prototype data board, they are compatible with the new system. So I can set up another system down in Hilo some time. I am still working with Warwick to solve the data transfer process problem.

(26/Jan/06)

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CT - As for parts for expansion, I haven't heard from Warwick because he just got back from vacation. I will contact him again.

Calibration System:

Kyle - We received email from Jackie that we now have PC/104 and motion control modules in Taipei. Before I left Taipei, I gave some document and driver to Yi-Chen to study. I will send him an email to ask about his progress.

(09/Feb/06)

Pierre - I think the thing to start could be the mechanical structure Chia-Hao designed.
(29/Sep/05)

Kyle - I will circulate the test results presented in the workshop for more comments. And we also need to discuss the next step of the calibration system.

Dish:

Philippe - The optical telescope holder on 1.2m dish is not made very good. It will move. We need to redesign it.

Locutus - We finished the beam pattern measurement of last dish. When do we have to send it out?

Kyle - Here we have some concerns about the final installation position of dish and feedhorn. Ted found the focus position may be off the optimal by as much as 5mm. I suggest we hold the last dish in Taipei and verify the beam pattern at this position.

Patrick - According to formula, the feedhorn position can be off by about 80% of wavelength and still show good performance. If off by more than that, the power will drop a lot and the beam pattern will also change.

Homin - If you want to alter the schedule, you need to ask MT for decision. Please call him or write to him about this issue.

(23/Mar/06)

Paul S. - Dr. Ong informed that they are polishing the surfacing and will be ready for surface measurement before coating.

(02/Mar/06)

Locutus - About the 60cm dish, I still have to measure the last dish's beam pattern. Right now we are lacking spectral analyzer. Eugene is going to check with Agilent and see when it will come back. The new feedhorn fixture is being made now.

(23/Feb/06)

Ted - We have studied the cover of 60cm dish. We can either hold the fabric with aluminum frame or tight it down with wires.

Bill - I think we can order more Goretex fabric to test both ideas.

Testing:

Kyle - We are short on manpower for testing. After Guo-Chin leaves, Ken is alone and no one can accompany him for pointing tests. I think in the beginning Ken can come with me to do some day time correlator tests and pointing tests may have to be postponed.

Misc:

(02/Mar/06)

Patrick - I am wondering about the second optical telescope issue. One suggestion is to install the spare C-8 on the platform and swap ccd with the original C-8 for some quick result. In the long run, we would still like to set up an independent system.

MT - That's fine. The issue now is with the OT bracket. Bill thinks the bracket will need some modification. I think after Johnny finishes with translation stage, he could work on the bracket.

(26/Jan/06)

Keiichi - Mark Birkinshaw and Katy Lancaster are planning to come to Hilo. When will we be doing fringe?