

# Minutes for AMiBA Engineering Telecon

Meeting Date: 09-Feb-2006

Participants:

Australia: Michael

USA: Bill, Keiichi, MT, Pierre

Taiwan: Homin, Edwin, Eugene, CT, Paul S., Chia-Hao, Joshua, Johnny, Paul H., Hiroaki, Ted, Kyle, Patrick

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Minutes Recorder: Kyle

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## I. New Action Items:

**Kyle** - Detailed test plan.

## II. Previous Action Items (still open):

**Philippe** - Summary report of photogrammetry measurement.

**Keiichi/Patrick** - Mount testing.

**Bill/Ted/Pierre** - Modification of shelter.

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

**Ted/Bill** - Replace the damaged motor for shelter.

## IV. Miscellaneous Discussions:

### Platform:

**MT** - Philippe sent in his summary to me. I will ask him to circulate it.  
(29/Sep/05)

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

**C.T.** - I would like to ask the science team to finalize the configuration of 7-element receiver locations.

### Shelter:

**MT** - Bill and Pierre took a look at the motor, and it appears not so damaged. We are now thinking on a longer term replacement plan.

**Pierre** - Ted and I are contacting the vendor for a pair of three phase motors for M1 and M2. I will ask for the lead time.

**MT** - Biill, Mr. Zhao and Pierre worked hard on the shelter modification. We have a bit delay on the fabrication of mechanical part on vendor's side, but otherwise it is proceeding with the plan. Bill is also working on the cover for the hole on supporting cone. Pierre also works on the new shelter control box.

**MT** - We aim to finish the modification of shelter in the second week of March.

**Pierre** - About the load cells, the vendor can not ship earlier. So it will be shipped on Mar/4.

(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.

**Pierre** - I have sent a mail to ASFI for calculations and detailed drawings.

### Mount:

**Keiichi** - We tested a new version PTC software. It changed a sign in the formula and the center of rotation now is within the ccd frame when optical tilt correction is activated. The factor of two problem in subtended angle is gone.

**Keiichi** - We have taken 10 sets of 100-star-pointing data with a total of 1000 fits images in the course of 10 days. I have wrote an automatic analysis pipeline to find star position errors with a record of telescope pointing. The repeatability looks good, but we will want to quantify how good it is. Patrick has generated a non-grid based pointing error table to Vertex. We should be getting an interpolation table soon.

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**Keiichi** - I tried to monitor the communication between TCS and ACU using tcpdump on my laptop, but there was some problem.

**Patrick** - I think you should connect the external laptop to the hub connecting ACU and PTC. Running tcpdump there should let us monitor traffic in both direction between TCS and ACU.

**Michael** - We have identified two types of timeout:

- (1) When TCS sends a message to ACU, the a low level acknowledgment on the receiving end is sent to ACU, and ACU interprets the message and respond if it understands or not the message within a very short period of time. If TCS did not get this respond from ACU for about 1 sec, it will assume the socket is dead, so it closes and restart one. We don't understand why it happened.
- (2) The second type of timeout is when we have successful connection for almost exactly 1 hour, ACU will close the socket for no obvious reason. It is clearly a problem in ACU and not a network problem because PTC, which is connected on the same hub, does not do it. Stephan will need to solve this one.

I have sent Stephan an email detailing the above findings and asked him to solve the problem on ACU.

**Pierre** - I compared the network diagram from Homin and what's inside the container and found one extra switch. There are cables everywhere. I want to install a more professional 19" switch and clean up everything.

**MT** - I agree we should try to make the container more professional. Pierre, please send your idea to Homin.

**Patrick** - I got a reply from Klause about the velocity dependent error in program track mode, which can be up to 10 arcsec. He suggested that we do a longer track on a star and analyze the accuracy.

**MT** - Patrick, please write a summary of the software problems now.

**MT** - About the new optical telescope bracket, it is difficult to put on. When Johnny comes here, Bill can supervise him to put it on.

(26/Jan/06)

**MT** - The new optical telescope bracket is hard to installed. Bill has some ideas about how to do it and we will do some tests before real installation. For the pointing tests, Keiichi will still use the original bracket.

(25/Aug/05)

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

### Site:

**Ted** - I have asked the vendor for sleeping container to proceed. They will use a 20A breaker for light, 20A for outlet and 30A for heater. I need clarification from Joshua or Pierre that we have enough power on site.

(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.

(24/Nov/05)

**Pierre** - Is there a coax cable for 10MHz clock from GPS time server to correlator on the platform?

(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

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(6)accommodation on site -> 2nd container for sleeping? Or visitor building for sleeping and 2nd container for office?

(7)a new car

(2)helium lines and cables routing to the platform

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

### Receiver:

**Johnson** - We are still pumping receivers now. I have sent out a test and installation schedule for receivers today. Basically we will install Rx1 and Rx2 in the week of Mar/20.

**MT** - By end of March, we should be able to have seven receivers. Tod Gier has sent out the rest of LNA and we should get them in these two days.

**Kyle** - We only have seven pieces of production feedhorn and one of them is being used for beam pattern measurement. Since all seven of them will be used in the receiver, I suggest we make a new fixture to hold the prototype feedhorn in the center of dish for beam pattern measurement.

**MT** - I would like to know if it is practical to do 1.2m beam pattern measurement in the current setup. Could someone make an evaluation?

**Patrick** - I will get the students to be ready for the measurement.

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

(19/Jan/06)

**Homin** - We tried to reinstall the monitor PC with the standard OS for other AMiBA PC (RedHat 9.0) but glish (to be used by Grxmon) failed to be installed. I have gathered some error messages.

(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:

### Correlator:

**CT** - I did some test on the correlator software. Two data transfer process overlap and that might cause some glitch in the data. I will work on this today and tomorrow.

(26/Jan/06)

**Kyle** - Could we setup a correlator system in Hilo? For example, we may use the prototype system. It is not the same as the production system, but we will be able to do some tests in the lab.

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

(06/Oct/05)

**C.T.** - I want to test one baseline with electronically-tuned attenuator for LO to balance the power between phase states. One concern is if the control has some delay (like we found in prototype testing with a PIN attenuator in 21GHz LO), then the scheme would not work.

### Calibration System:

**MT** - The next pacing item is the calibration system.

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**Pierre** - I think the thing to start could be the mechanical structure Chia-Hao designed.

(13/Oct/05)

**Kyle** - I will put together a schedule when the calibration should be online and when we should really push to finish the system.

(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:

(26/Jan/06)

**Paul S.** - Cotech found some problem in the coating and will redo the coating.

(12/Jan/06)

**Paul S.** - The small telescope holder is in the design but the fabric holder is probably not. I will ask them to clarify.

**Ted** - About the 60cm dish cover, Dayton said he can only finish the structure early next week. By that time, I will be gone. The fabric from GORE will come in early Feb.

### Testing:

**MT** - Kyle, please work with CT and Johnson to produce a more detailed test plan.

(26/Jan/06)

**Johnson** - We had some discussions this week. I think we need about two more weeks for monitoring the system and the schedule may overlap with pointing. So I think we can secure the instrument under the platform and use a 8m GPIB cable to record data on the cone.

**Pierre** - Transmission may become unstable at long distance. You should be careful.

Another way may be to convert the GPIB to CAN bus or ethernet, and then the distance is not a problem.

### Misc:

**Paul H.** - University review is in the week of Feb/23. Please send in your new materials. Then there will be the NSC review and a site visit. I am trying to convince NSC to hold the site visit in Hawaii.

**MT** - I will collect the materials like last year and summarize to Paul. Please send me your slides before next meeting.

(26/Jan/06)

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

**MT** - We will have first light with dish, and it will happen after the shelter elevation is done. And by the time we have a successful fringe, we may want to have a dedication, also for the NSC review.

**Paul H.** - For the review, I think it is better held in Hawaii where they can see the actual thing and a successful fringe. We'll try to arrange a good time for it.

(16/Dec/05)

**Patrick** - MT mentioned that we should have a place to collect all the important information and factors of the system, different from the everyday communication of problems.

**CT** - I think for what Patrick said, people can request such information in the weekly meeting and the responsible person will come up with the information and be collected somewhere. The important information does not change very often.