

## Minutes for AMiBA Engineering Telecon

Meeting Date: 30-Jun-2005

Participants:

Australia: Michael

USA: Keiichi, Paul Ho, M.T.

Taiwan: Chia-Hao, Ted, C.T., Johnson, Joshua, Patrick, Pierre, Homin, Shockly

USA Dial-in = 1-800-653-5390, 6668081#

Outside USA Dial-in = 1 773 843 6301

Minutes Recorder: Kyle

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### I. New Action Items:

**Ted** - verify the hole pattern on the interface ring.

**Ted** - investigate the new optical telescope mounting structure.

**Homin/Guillaume** - fix the problem of Linux CCD control software.

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

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

### IV. Miscellaneous Discussions:

Platform:

**Ted** - Mr. Moo has almost finished the machining. We will inspect them on Jun/6 and verify the hole-pattern they mark. If ok, he will proceed to do the drilling and painting, which takes about one week. Then we will fly to accept it and ask them to ship the interface ring to Hilo.

**M.T.** - We expect to receive it around Jul/20 if everything goes well.

**Ted** - We have included a ~0.5mm tolerance on the holes on the interface ring. That includes the holes for the alignment pin from the platform. There are new alignment pins from the interface ring to upper U-joint. Those will be tight fit.

**M.T.** - Another issue is the photogrammetry measurement of the platform. I would really like to know the flatness.

**Michael** - I suggest you can put on some dummy receivers to simulate the deformation at different orientation when it is fully loaded. And also you could buy the targets now and install them on the platform while it is still on the ground. The targets come in a roll and are adhesive.

Site:

**M.T.** - It seems we need both a crane and a cherry-picker to install and service the correlator and receivers, but both equipments are not cheap. We need all of you to think hard on this issue.

**Paul** - Do we have anyone who has the knowledge about crane and its operation? This person can also help us select and buy the crane.

**Michael** - Have you consider hanging a crane on the shelter truss? And take it off when it is not used, or shelter open/close?

**Paul** - How does people access to the platform even if we have a crane to lift?

**Ted** - Cherry-picker can lift people to the edge of platform, but it is not really safe to walk on the platform. We may need harness and maybe some safety nets below the big holes.

**M.T.** - We need to cover the holes.

**Ted** - Bill Liu advised me to talk to a company who makes crane that mount on ships.

**M.T.** - Let's develop something more concrete about this issue. I'll check how BIMA service their telescope.

(16/Jun/2005)

**Ted** - For the crane, I found one but still need to discuss with the sales. This one can operate under 72km/h wind and survive under 152km/h. When fully extended is 16m high, and is 2m high when stowed. Plan A is to erect it outside the fence on lave with a large concrete slate. Plan B is to erect it just outside the containers.

**M.T.** - Ted, please talk to Ludwig about the concrete slate.

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Mount:

**Patrick** - I sent a report to Vertex regarding the problems we found after Klaus left. Among them are two or three that make the automatic pointing procedure impossible.

**M.T.** - I will follow up on your report and press Vertex to give us an answer as soon as possible.

**Keiichi** - We need UPS for TCS, and the Vertex computers. Last time we went there and found out the computers were not normal. After a few reboot, we brought them back to normal. Checking the computer log, there's probably one power blackout in Jun/26.

**Pierre** - I have bought some large UPS for the vertex computer. I will install them next time I go. Keiichi, please buy a common UPS from OfficeMax to protect the TCS.

**Keiichi** - When Michael was here, we found out the platform pointing axis, which can be determined by the center of rotation when we change the SkyPol while doing startrack, moves relative to the CCD frame when pointing to different (az, el). The movement is mostly toward lower elevation and we therefore suspect gravitational influence.

**Keiichi** - Three possible causes of the movement:

- (1) Tilt of optical telescope due to gravity (CCD camera, telescope tube, or the primary mirror).
- (2) Deformation of the dummy ring or hexapod mount.
- (3) Control software error.

**Michael** - The magnitude of software or jack length error in order to be the cause is so large that this is less probable. The most probable cause is the optical telescope flopping around. The offset required to shift a star to the pointing axis (center of skypol rotation) from the catalogued coordinates is the platform pointing error.

**Michael** - The drift in startrack, I think, is the consequence of the large pointing error. Since the pointing error between east and west requires a star to move about 500 pixels across the CCD over a time scale about 6 hours. It is reasonable that the star would move 20 pix during a 15min track.

**Michael** - I think it is very important to investigate how to provide a very stable optical telescope on the platform.

**Ted** - There should be ways to improve. I will think about it.

**Homin** - Guillaume still has some trouble with ccd control software from Linux to get a dark frame. I think it is a hardware problem. I suggest Keiichi to recycle the power for the CCD.

Receiver:

**Johnson** - Eugene recently tested all the SHM and found several of them have large RF return loss. We need to open these four and see if we can improve the bonding. And we also need another four pieces of SHM for Rx7 and Rx8.

**Pierre** - The electrician came and finished all the work. We are now running the compressor. We still need the fencing. I got three quotes but all expensive.

**M.T.** - Kevin has suggested some cheap, ready made, dog house that may suit our need. I will hold this issue until we find a good solution.

**Ted** - For adsorber in the compressor, the lead time in Taiwan is 6 weeks.

**M.T.** - We can contact the local CTI people. It will probably be faster.

(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.

**Pierre** - I will send out a preliminary report on the noise I found in LNA bias.

LO/IF:

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**Shockly** - I am drilling holes on the IF/LO casing for the variable gain amplifier. And also quoting some 3.5mm male-to-male adaptor to connect with the other IF amp.

**C.T.** - There should be a way to skip this adaptor, like switching to male-to-male pad in between.

**Johnson** - The VGA should arrive around end of July, but I will email to check the status of the order.

### Power Distribution:

(16/Jun/2005)

Pierre - Waiting for three filters I ordered.

(09/Jun/2005)

Pierre - Parts arrived but I did not have time yet. We should try a set of cold-head power distribution in the new office.

### Shelter:

(16/Jun/2005)

Pierre - The other shackle needs to be replaced, too.

### Correlator:

**C.T.** - I have finished the design of backplane modification and will send it to fabrication. We also had a meeting Tuesday about the bracket.

**Homin** - I would suggest Ted to measure the real dimension on the platform for the correlator bracket and Po-I can talk to machine shop about our requirement.

### Calibration System:

(16/Jun/2005)

Kyle - I have the new harmonic generator and the waveguide attenuator for it. Now I am waiting for receivers to come online and test them. Otherwise I will start working on the computer control system with Pierre.

### Helium Lin:

**Ted** - I will use the 9m helium line in Mauna Loa to test the routing. I have also given some lengths to Helix in Taiwan. They will help us estimate the pressure drop.

**M.T.** - When you come here next week, we should place the order for the 3<sup>rd</sup> compressor.

### Misc:

**M.T.** - We moved the lab and Pierre has been setting it up. I have placed the order for the rest of the desks and chairs.

**M.T.** - Some people have been complaining the logistics to Mauna Loa. I will ask Mauna Loa people about sleeping in the site and think about how to improve our buildings.

(16/Jun/2005)

Patrick - Need some help for a 30m long 48V power cable. It is needed when we want to do pointing with the platform.