Meeting Date: 28-Aug-2003

<u>Participants:</u> <u>Australia:</u> W. Wilson, C.T. Li <u>USA:</u> Bob, M.T. Chen <u>Taiwan:</u> John Payne, Kyle Lin, H. Jiang, J. Han, W. Ho, T. Huang, P. Shaw

USA Dial-in = 1-800-653-5390, 6668081# Minutes Recorder: C.T. Li previous weeks comments

# I.New Action Items:

#### AI-28Aug03-1:

Ferdinand/Kyle - Have been discussing through emails. Will come out a test plan for 60-cm dishes next week.

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

<u>AI-21Aug03-1</u>: Summary of open issues/design questions - Need to settle on the site, on the cost, as well as the new location. Is there any impact on the project? For testing, to come up with a plan next week to check whether we have missed anything, e.g. trying the observing program, testing the dishes, etc. Discuss the calibration system, also the very tight specs on the phase switches,

Ferdinand - For calibration system, parts have been ordered. Things are coming together. Has discussed with John Payne, Paul Shaw about the general issues. The first approach is behind the secondary.

Kyle - Will have the analysis of long-term data, and the leakage into drift scan mode next week.

<u>AI-21Aug03-2:</u> Homin - After putting DC converter together with receiver, it came out more noisy than before. The reason is that the DC converter is too close to the back plane. Cable is picking up radiation from the DC converter. One of the solutions is to make an Aluminum shielding to cover the DC converter. Will relocate the bias connector in the next batch run of back plane. If all the schemes fail, suggest using a deeper box (need some discussions with Bob).

Bob/Homin - Joshua made another cable with shielding. The results turned out better. Homin will send drawings and description around. Bob will schedule a meeting to discuss more on bias and back plane.

AI-14Aug03-1: Warwick - Become directly involved with offset issue (assigned by Paul H.)

Kyle - Don't have new test results yet.

Warwick - From the recent test results, which show quite large RMS (~ 400), it seems correlators have been driven very hard, that might cause the non-linearity in the correlator. Suggest testing the offsets with different IF power.

Kyle - Offsets also changed as swapping two IF inputs with the same IF power.

AI-24July03-1: Bob/Ferdinand: Resolve site issues.

Ferdinand / Bob - Circulated a copy of site layout that it's more clear for everybody where the telescope will be. The new location is 6 feet lower, not 6 meters. Also check with the new location of the telescope if when the platform is 30 degree elevation, the outermost dish will look into the lava field during the operation when platform comes up. Also sent out a document regarding the interference with the container. The enclosure rolls off away from the road, that way you can put the enclosure up before erection of the telescope. We can use it to protect things in bad weather. The trigger to the new design is the high cost of excavation.

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

AI-14Aug03-2: Bob - Ask Conrad of Vertex to send pictures of the mount to both Pauls for the proposal. Ditto for the platform and cone and jackscrews.

Bob - Will send Paul Shaw a new set of pictures.

<u>AI-14Aug03-3:</u> Ted - Obtain and distribute test results of platform material test coupons from Dr. Ong.

Ted - Material seems OK. Have sent the results to Phillipe for comment.

#### IV.<u>Miscellaneous Discussions:</u>

# MMIC:

Huei - Waiting for the approval of export license. Haven't got reply about dicing. Will send another email to inquire. There should be enough amplifiers for 13-elements after  $2^{nd}$  iteration.

#### Receiver:

Ming-Tang - Have cooled down the receiver. Will start monitoring the temperature. Also check the alignment. For the LO cables, vendor will provide the correct products soon.

Ming-Tang - Will cool down receivers using prototype window (still waiting for the final windows to come in a week). Looking for machine shops or companies in Taiwan to manufacture the noise coupler.

### LO/IF:

Kyle - After testing the relation between offsets and LO power modulation, the preliminary specs for difference in IF power between two phases is less than 0.01dB

#### Correlator:

Warwick, C.T. - Have a design for data acquisition. The next step is to implement it. There are about 4 or 5 PCBs that have to be designed. It will take about 4 weeks total for someone working on it full-time. Mark Chen can help on this issue. We can also sub-contract the layout to external firms.

Updates from Derek -

1) Received more correlator modules from Marki, we now have a total of 40. Marki owes us 15 more to complete the order of 55.

2) The DC amp board was turned by the fab house (no charge). I have received 40 and they kept 60 for assembly. Peter sent them the parts last week and 55 boards are currently being assembled. Expected completion date is 1-2 weeks from this writing. Once we receive these boards we will integrate them with the Marki correlator modules, align the pots, then send them to Taipei for responsivity and phase characterization (vs frequency).

3) Peter sent the mockup correlator frame to Ted last week. He also sent Ted our dummy front and rear power divider modules + 15 Marki correlator modules with DC amp modules (no PCBA) attached. Still missing are the BMA to SMA adapters which are due the 1st or 2nd week of Sept (need these to interface the Marki modules to the PDs).

4) I received the 4 new batch readout chips from CT. They are in my office and Peter knows where they are just in case a pair of observers come to Hawaii during my absence.

5) 2nd section plate assemblies are nearly complete but we are still missing some components (amps on loan to Prof Chu, short some pads, etc.) Shortages are on order. Plan was to integrate the 2 spare plates into the prototype but this might not be a good idea until the offset issue is settled (don't want to add in a new set of potentially parameters).

Chao-Te - Will work on the data acquisition board design with Warwick within these two weeks in AT. The long lead time item for now is the processing of power divider board. Will check with vendor about the delivery. Will work with Ted on the  $3^{rd}$  section frame and enclosure design after returning from the trip.

#### Platform/Mount:

Bob - For mount, talked to Phillippe this week. He is in Germany this week. Phillippe saw them put two of the jackscrews into the cone.

For Platform, will have discussion with Bob Romeo about the modifications tomorrow. Need to have the material, drawing, and PO, also need some time for fabrication, to have the modifications done by end of September.

#### Ted - Worked with Phillippe and Bob Romeo about the platform modifications

Mike - Not concerned at the first level that Vertex can provide an antenna, which can be driven, and give reliable feedback of where it is. A little puzzled about their approach to the pointing problem. The suspicion is we have set pretty tight specs. Don't think they fully appreciate the subtlety that they will try to follow. Have spoken to them on number of occasions, recommended the alternative, they turned to go their part. When they get things assembled, and first start trying, then to get the pointing model to work, at that stage we should be involved. For the table of correction, they will use 10-degree square patch on the sky, that would be sort of correction to get the pointing right. However, to create the table, to check, and to maintain it, would be very difficult. They will quickly discover that they can't measure it. At that point, we will probably recommend using Venix? Modeling. Just generate a polynomial model of the platform. That will describe and in fact create that table. It is always being a part of our plan is that we have the optical telescope, which will provide us the reference point model. Provided they give us within the point of view of the optical telescope, presumably we should be able to make a local correction.

DC Power/ Distribution:

Enclosures: none

Site Issues/Network:

<u>Dishes:</u>

# 2-Element Prototype Issues:

Kyle - Testing stop until 1<sup>st</sup> of Sept. Will take these two weeks to think about what to do next, and circulate the plan between Mike and other people.

Ming-Tang/Mike/Jeff - Suggest testing 60-cm dishes, maybe just a simple drift scan, using a signal source instead of astronomical objects. Not in the far field may not be much a problem. Won't have a perfectly deep null on the 1<sup>st</sup> side lobe, still can get a good sense how far the side lobes are.

Mike - Suggest trying the observing program, to check the link with correlator and other parts of the system (like a dummy antenna).

# Schedule:

Paul Shaw /Paul Ho - May need more than two years to complete the 19 elements. According to Derek's estimation, we will need 342,000 more USD to finish 19 elements. Need to figure out what causes the change. For the calibration system, the cost isn't forecast before. According to Ferdinand, it may cost us 74,000 USD to build up the 7 units, 31,000 (USD) for expansion to 13. According to the latest estimation, it looks like we're short eventually, e.g. we don't know how much we are going to spend on site. However, that does not affect the expansion.