

Minutes for AMiBA Engineering Telecon

Meeting Date: 5-June-2003

Participants:

Australia: M. Kesteven, W. Wilson

USA: D. Kubo, B. Martin, J. Peterson, M.T. Chen, F. Patt

Taiwan: H. Wang, H. Jiang, J. Han, W. Ho, T. Huang, P. Shaw, C.J. Ma, K. Lin, H. Wang,
C.T. Li, P. Ho

Minutes Recorder: D. Kubo

[comments from this week](#), [previous weeks comments](#)

I. New Action Items:

AI-5jun03-1: Derek - Generate schedule for parallel correlator activities on ML.

II. Previous Action Items (still open):

AI-29May03-2: Paul S. - Integrate all individual schedule inputs onto a 1 sheet master schedule.

[Will post on website and send e-mail pointing to link.](#)

AI-29May03-3: Bob - Review Paul's master schedule to determine what are the leading schedule drivers.

[Awaiting to look at master schedule.](#)

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

AI-15May03-2: Paul S. - Obtain CTI cold head quote for 7 with the option of purchasing 13 more later. Specifically ask for a discount (in writing) for the follow-up order of 13.

[Paul S. - Received written quote with 7% discount one first 7 units, 10% discount on 14 if order before end of 2003. Will proceed to order the 7 units from Taiwan. Also working to get a quote for the model 1020R compressor. Delivery of compressor will be directly to Hilo.](#)

[Paul S. - Received verbal quote from Taiwan rep to match US quote of 10% discount on qty of 20 units, otherwise 5% discount on first 7 units. Need to get written quote but ran into some difficulty having the rep committing or defining this on paper.](#)

[Bob - If we do decide to purchase the cold heads from the US, should we try to add in the order for the compressors to obtain further discounts?](#)

[Paul Ho - Let's make sure to have a decision on this matter by next week.](#)

AI-15May03-3: Derek - Provide Homin with DC-DC converter board quantities (and DC voltages).

[Discussed briefly that we would like to use +/-12V for Corr Frame supplies \(instead of +/-15V\).](#)

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>>Rx/Corr Box = 1/box = 7 boards of {+15, +15, +5D, -15}
>>Corr Frame = 3/frame = 6 boards total; 2ea of {+12, +12, +12, +12}, {+12, +5D, -12}, {+12, +12, +12, +12}
>>Data AQ Box = 1/box = 2 boards of {+15, +5D, -15}

AI-15May03-5: **Derek** - Provide Mark Chen with requirements for 1st Section backplane board.

Nearly complete, will send out tomorrow.

AI-22May03-1: **Derek** - Update correlator schedule. Assume 75% availability of Peter O.

Schedule has been updated and distributed by e-mail.

AI-29May03-1: **Bob** - Close out NGC (TRW) MMIC issue.

Huei - Looks like making progress. Paul Clintworth requested the names and copies of resumes' and passports for Paul Ho, Huei Wang, and any students involved. Huei will provide this information and Bob will follow up with an e-mail.

IV. Miscellaneous Discussions:

MMIC: See closed AI-29May03-1 above.

Receiver: Bob asked Ming-Tang if there were any concerns with the schedule. Ming-Tang said his schedule is dependent on the delivery of several items including the cold head, vacuum chamber, and various waveguide components by this month.

Noise injection hardware - Bob raised a concern over CT's latest phase shifter report. Phase is off by +20 degrees but the amplitude now appears OK. Why are the results different from before where the offset was -20 degrees and there was a significant amplitude imbalance. CT believes he understands the reasons why this happened. Warwick suggested that since there now appears to be excess phase that one can trim away the dielectric to reduce it to 90 degrees. Someone brought up the issue that the phase shifter is designed for cryo application but is being tested at room temperature. How much will this affect the phase results? The dielectric will change with T as well as the physical dimensions of the cavity.

Ming-Tang - will attack the noise coupler problem after solve the phase shifter issue.

LO/IF: none

MTC - Prof Chu is planning to deliver 2 LO/IF modules by end of July to mesh with the receiver delivery. Delivery of next 5 should not be a problem because parts are already ordered. Delivery of 21 GHz DRO module should not be a problem because it is very similar to existing prototype hardware with exception of power splitter.

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Correlator: Derek - Submitted PR for Marki correlator modules. Warwick has been out of the loop for a while and asked if we've done enough tests to make sure this is indeed the right decision. DK - 2 sets of tests were done, one comparing the individual module performances, and the 2nd was comparing the performances (side by side) while operating in the prototype at ML. Cheng-Jiun will forward the ML test results to Mike and Warwick.

Derek - Originally stated that Meridian module had better phase response than the Marki module but this may not be true due to the different ways they were tests. The Meridian module was tested using one of the lag outputs as a phase reference for the other 3 lags. This method would tend to cancel any common phase behavior. The Marki module was tested using a different external reference mixer with a most likely different phase response. This latter method would tend to give much more pessimistic results.

Derek asked CT whether it was OK for him to change all of the TTL (LV-TTL) interfaces between the readout boards and data AQ boxes to differential TTL. CT thought this would be OK and the total number of pins will remain the same.

CTL - Mark is doing the layout for the readout board. Front power divider fabrication is proceeding. Modification of rear power divider connector spacing will require recalculation of trace lines to match delay of front power divider. Depth of rear power divider should be reduced as a consequence of making it taller.

Derek - Marki will ship 003 module tomorrow. He has tuned the IF lines to try to remove the suck out at 3.5 GHz. Derek will do a quick test here in Hilo then send it off to CT in Taipei for characterization and as a mechanical model. Will contact Marki about the verbally quoted 5% discount to offset the RCUH overhead (we're currently getting 3% discount).

Platform/Mount: Mike - PC is ready to send to Vertex. Need to work with Homin on how to get it there.

Bob - Had CMA platform meeting yesterday - discussed testing protocol. Schedule will be firmed up by end of this week. There are still some discussions on the mount to platform interfaces.

Ted is completing the updates for the cable wrap attachments (to the platform?).

Bob - Received an e-mail from Vertex mount which included an MS Project schedule which he could not open. The e-mail also mentioned something about trouble measuring/characterizing the offsets generated by the jack screws. Paul Ho asked Bob to find out what the major schedule drivers are for Vertex.

DC Power Distribution: See closed AI-15May03-3 above.

Site Issues/Network: Bob - Boulder - blueprints 99%, only a few changes left which should be complete by the end of this week. Paul S. asked for a copy of these drawings. A copy of the project manual will be available for contractors (contains rules?). Ferdinand has been looking for contractors here on Hawaii (Hilo, Kona) and Oahu. A separate contractor will be used for electrical work.

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Ferdinand - Working with HELCO (Hawaiian Electric & Light Co.) for site power. Learned that the existing transformer has a 300kVA capacity and the current NOAA facilities consume between 20 to 50 kVA. Our AMiBA estimate is 75 kVA max so there is ~175kVA margin to spare. This existing transformer is located about 500 feet (150m) from the container. Overhead wires will not be possible due to interference with a nearby helicopter pad. Need a licensed engineer to stamp off the final power drawings.

Ferdinand - Excavation and foundation - Large contractor can do both but they may be more expensive and may not be available soon. Expect to send out bid packages next week. Bids may take about 1 month. Paul Ho suggested to contact John Maute for the names of small contractors. Paul Ho asked for approximate costs and Bob replied that the A&E firm estimated \$100-140k (probably on the high side). Would like to hire a qualified inspector to carefully review the quality of the contractors work at ML.

Bob - Will have a (face to face) meeting with the architectural firm tomorrow in Boulder. Drawing is 90 - 95% complete. Ferdinand has started to get bids on this work from both Hilo and Kona contractors.

2-Element Prototype Issues: Deferred to following science meeting.

Derek - Working on offset issue in Hilo. Will discuss details of tests in Science meeting following this meeting.

Schedule: Discussed above.

Enclosures: none

MTC - Taipei office has received the chassis sent by Ferdinand.