

Minutes of Teleconference on ALMA ATF & OSF Holography Planning

Thursday, August 10th 2006, 15:30 UTC.

Minutes by DTE, last changed 2006-08-15

Participants: Beasley (part of meeting), Brito, Emerson, Glendenning, Kern, Lucas, Mangum, Murowinski, Ocampo, Perfetto, Ramirez, Shepherd, Sramek.

All future meetings will use the same call-in details:

From USA: 866-814-1347

Outside USA: +1-517-444-3243

Participant Passcode: 3155752

(Leader Passcode: 1874599)

Minutes of our last (2006-07-20) meeting are at:

<http://www.tuc.nrao.edu/~demerson/osfholo/mins2006-07-20.1.1+attach.pdf>

AGENDA. 2006-08-10

- I. Old Action Items
- II. Holography Specifications and Evaluation Criteria
- III. Schedule.

AGENDA ITEM I. Old Action Items

See minutes of last meeting at <http://www.tuc.nrao.edu/~demerson/osfholo/mins2006-07-20.1.1+attach.pdf>

1. Antonio to give Brian. revised ICD. It is understood that the exact ranges may change as the design progresses, however the M/C points and formats can be fixed.

This is not yet completed; however, it is not critical. Brian would have preferred to have received the complete information, but given that the ICD only adds M/C points (i.e., it is backwards compatible) it can wait for 2 months. Jeff Kern agreed. Receiver #2 will be delivered late December 2006, with holography transmitter #2. Everyone agreed these should be sent to the ATF as spares, where they may be used to help possible and

eventual debugging at the OSF. Brian agreed that a delivery of Dec 1 for the complete ICD would be ok. Jeff Kern asked for receiver documentation; Antonio said he could regenerate notes on the holography receiver which would in effect be an interim receiver manual. The algorithms for receiver tuning should be available from Christian; Martin should also be consulted. This documentation would be delivered with Receiver #1.

The holography system is currently designed for 230 V AC. Not everything is dual-voltage. It was agreed by Dick to provide a separate 230 V transformer at the ATF where necessary, and not to modify the holography system at all.

There was discussion about Labview and its place at the OSF. For holography at the OSF, all control functions will be taken care of by the CIPT (receiver tuning will be in a second stage after the documentation is delivered), as will archiving of monitor data. However, Labview will still be needed for real time monitoring of the system, which although not essential will probably be convenient. Brian and Dick agreed between themselves and Pedro Ramirez they would be responsible for ensuring that a PC with compatible, installed Labview would be available at the OSF for this purpose.

Jeff Mangum pointed out that there had been a problem running Labview and CIPT software simultaneously; conflicts arrive if both try to access the same monitor point simultaneously. Brian agreed this would be resolved if it is still a problem with the current software.

2. Antonio will organize a small working group to consider the holography feed issues, what feeds are or are not acceptable, and what timescale for delivery of feeds to ATF and/or OSF.

This working group has not yet been formed, but will be soon. There was discussion as to which feeds were in Robert Ridgeway's hands. Further discussion of feed acceptability would take place within this new working group.

3. Dick will keep contact with site over the tower specs, to ensure that adequate equipment haulage and a platform are included.

This is not thought to be a big issue, but Dick will keep contact with Peter and SiteIPT over the tower specs.

4. Site IPT should discuss with Jack the needs for the shelter at the OSF tower base.

Probably nothing more to do here. Peter will see what is put in place at the ATF during testing there, and duplicating something quickly for the OSF later..

5. Rodrigo will put details of the holography rack onto EDM. See attachment to these minutes. Rodrigo comments: "These [see attachment] are a few general assembly drawings I have for documentation. They can be used as a reference. In the binder, that will be delivered together with the mini-rack, there will also be detailed PCB drawings, data sheets, test results, the SoW, purchase orders and the disc configuration for the Ethernet Power Strip."

Completed.

6. Dick and Brian will circulate an agreed schedule for the ATF activities.

Ongoing. See Agenda Item III.

7. IPS will be updated (see attachment to these minutes). After the meeting Stefan wrote "I have updated the IPS to reflect the latest information from Antonio. Assembly and Testing of (2) Holography transmitters was split into two separate tasks. The dates should reflect our discussion with one exception. Vacation time of Front End staff was not accounted for in the delivery schedule and that puts the shipment out 1 more week."
(This may slip the schedule described above by ~1 week).

Ongoing. See Agenda Item III.

8. Although the baseline is for holography at the ATF to use the AEC antenna, this is a somewhat fluid situation which Dick will watch very closely, keeping all informed.

Dick will make the definitive pronouncement as to which antenna will be used, on the rx shipping date, currently scheduled for August 28th.

9. Darrel will organize the next meeting, currently set for Thursday August 10 at 15:30 UTC.

If you've read this far, you'll know it happened. Next meeting will be in 2 week, on August 24th at 15:30 UTC.

AGENDA ITEM II. Holography Specifications and Evaluation Criteria.

Are the following correct?

The specs are from Table 2 of an Overview by Larry D'Addario for an October 2004 review of ALMA holography. However the original requirement for variable frequency has been removed. See http://www.tuc.nrao.edu/~demerson/osfholo/larry_overview.pdf

*Measurement error: <10 microns rms, goal <5 microns rms
Transverse resolution: 0.1 m or better
Measurement time: 60 mins, goal 30 mins
Frequency: 80-120 GHz, fixed frequency.*

What component of the error is allocated to the dish feed?

How do we evaluate?

*Compare the September 2006 holography measurement to 2004 measurement?
How close should they be?
What are the pass/fail criteria?*

Jeff Mangum commented that in practice a transverse resolution of 0.2m, rather than 0.1, has proved adequate. The 10 micron rms and 5 micron goal are repeatability errors, not including systematic effects such as main dish feed phase pattern.

As a holography verification criterion, it was agreed that new holography maps should be compared to the previous (2004) holography data. A correction should be applied for temperature differences, but after that correction the rms of the difference map between new (2006) data and 2004 data should be less than 14 microns.

If the holography test failed this 14 micron criterion, then we need to know if the problem is with holography measurement, or with the antenna changing shape. In such circumstances, the holography system might be moved to the other antenna and fresh measurements made. Evaluation of those results could determine if holography is the problem, or much more seriously if an antenna has changed shape with time.

AGENDA ITEM III. Schedule. What are the latest dates?

Rick distributed before the meeting the following email (dated 2006-08-09) with an attached schedule:

"For Darrel's item III, I put together a picture of a schedule of work at ATF on the holography tests, to use as a strawman for the discussion tomorrow. This plan is extracted from a recent discussion between a few of you who are trying to plan that work out.

PDF and MPP versions of the same information are attached here."

There was considerable discussion, and Rick agreed to produce a revised schedule. This is attached to the current minutes, below. One issue was clarification needed as to which cables and cable work corresponded to which line item. There was discussion as to whether we should be planning for a 5-day or 7-day working week, and the relationship between this and contingency time in the schedule.

The following are extracted from notes written by Debra.

CIPT needs the following items added to the holography schedule:

Duration	Task
1 week	Integrated user tests at the ATF
1 week	Bug fixes and verification at the ATF for the highest priority bugs that must be fixed before acceptance by AIV

CIPT would prefer to have this scheduled after the Science validation tasks.

Rick asked: What if we deliver the system to Chile without these tests and then do the tests in Chile. AIV acceptance rules

would have to be bent for this.

Debra: CIPT would strongly prefer not to have this happen since AIV folks will have to deal with bugs in the system at first and not a complete and documented system. Not good.

If you have to move the system to Chile in a crunch then if at all possible, allow CIPT to do the integrated user test before shipping to Chile. Then CIPT can work on bug fixes during shipment and install the final version of the software in Chile, just before AIV acceptance.

Debra requested:

CIPT would prefer to have the optical pointing tests and delivery to AIV be delayed (e.g. not at the same time as holography). Debra suggested February (Dec or Jan would be another possibility).

Dick noted after the meeting that the current PSI schedule is to install the production FEs in Feb so the ATF would be mostly free for OPT testing (especially if CIPT works mostly at night).

Nick noted that he may not be able to deliver the OPT rack in Oct.

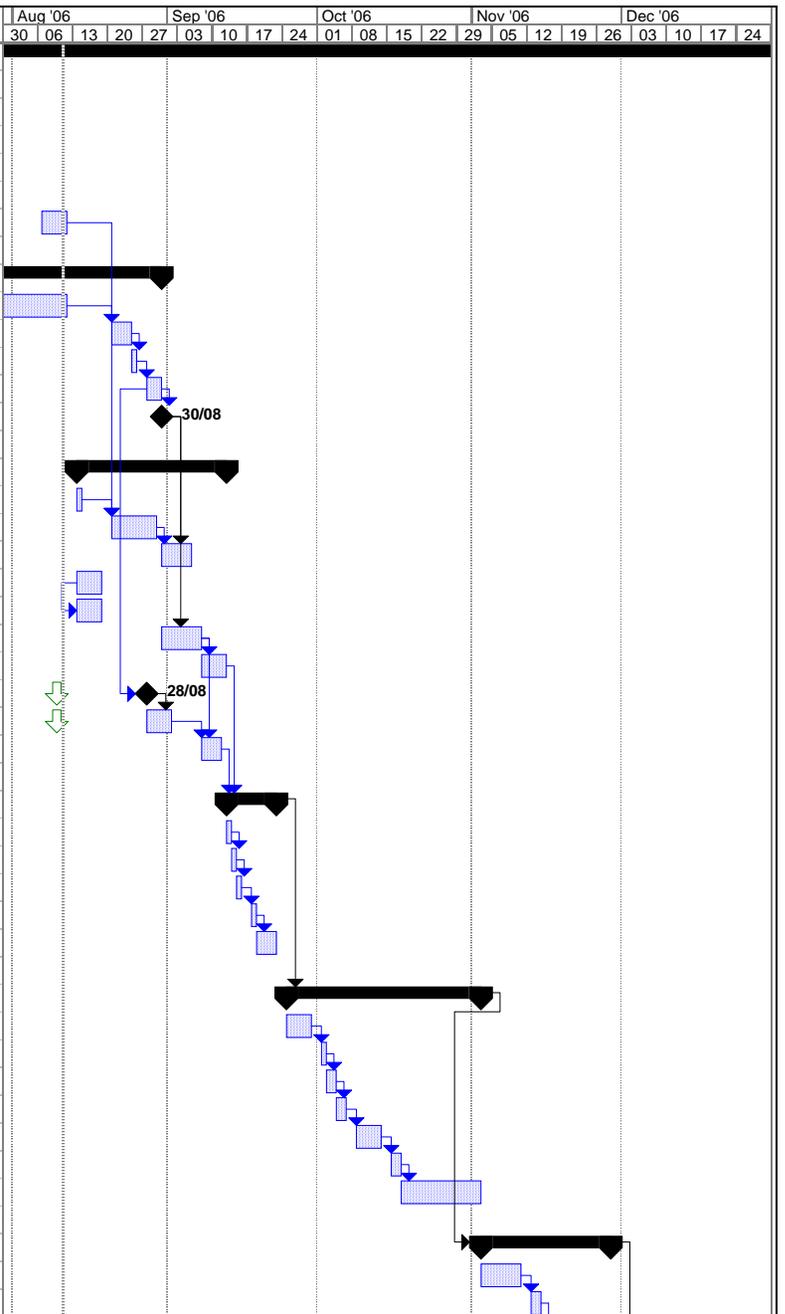
Jeff Mangum noted that this has to get done *before* Feb because it will be needed first for Vertex checkout in Chile.

Nick will provide an updated schedule in a few weeks for the OPT rack delivery to the ATF. Wait to see what this is before we decide on the fate of the optical pointing delivery to AIV.

ACTION ITEMS

1. Antonio will deliver a user manual and ICD with monitor/control points to be shipped by the time the receiver is shipped, currently scheduled for August 28.
2. Antonio will organize a small working group to discuss holography feed issues.
3. Dick will communicate with the Peter and the site IPT over the tower specs. Peter will follow the ATF tower base shelter implementation, with a view to duplicating it at the OSF.
4. Dick, Brian and Pedro will ensure the right Labview and PC get delivered to the OSF.
5. Dick will pronounce on “which antenna” on August 28th, or on whatever the rx shipment date is if that slips.
6. Rick will produce a revised schedule and distribute (see attachment below).
7. Darrel will organize the next teleconference for Thursday, August 24th at 15:30 UTC.

ID	Task Name	Duration	Start	Finish	Aug '06				Sep '06				Oct '06				Nov '06				Dec '06							
					30	06	13	20	27	03	10	17	24	01	08	15	22	29	05	12	19	26	03	10	17	24		
1	Holography System	322 days	Tue 01/11/05	Thu 25/01/07																								
2	Develop transmitter electronics	30 wks	Tue 01/11/05	Mon 29/05/06																								
3	Repackage holography receiver	32 wks	Tue 01/11/05	Mon 12/06/06																								
4	Develop ancillary electronics (cabling, power supply, ABM, TE and 25MHz, etc.)	30 wks	Tue 01/11/05	Mon 29/05/06																								
5	Develop control software	10 wks	Mon 13/03/06	Fri 19/05/06																								
6	Modify reduction software for data format	10 days	Mon 13/03/06	Fri 24/03/06																								
7	Ship Tx cables and spare minirack to AOC	5 days	Mon 07/08/06	Fri 11/08/06																								
8																												
9	NTC: Rx and Tx	53 days	Mon 19/06/06	Wed 30/08/06																								
10	Integrate/test tx, rx at CV	40 days	Mon 19/06/06	Fri 11/08/06																								
11	System test at NTC	4 days	Mon 21/08/06	Thu 24/08/06																								
12	Pack	1 day	Fri 25/08/06	Fri 25/08/06																								
13	Ship to AOC	3 days	Mon 28/08/06	Wed 30/08/06																								
14	Receive Tx and Rx at AOC	0 days	Wed 30/08/06	Wed 30/08/06																								
15																												
16	AOC and ATF preparation	21 days	Mon 14/08/06	Tue 12/09/06																								
17	Inspect Tower	1 day	Mon 14/08/06	Mon 14/08/06																								
18	Install Tx cables	7 days	Mon 21/08/06	Tue 29/08/06																								
19	Install Tx at ATF and verify control	3 days	Thu 31/08/06	Tue 05/09/06																								
20	Prepare RF cables	5 days	Mon 14/08/06	Fri 18/08/06																								
21	Ensure 230V power is available at ATF	5 days	Mon 14/08/06	Fri 18/08/06																								
22	Control software checkout at AOC	5 days	Thu 31/08/06	Thu 07/09/06																								
23	Upgrade software at ATF	3 days	Fri 08/09/06	Tue 12/09/06																								
24	Antenna VA / AEC decision	0 days	Mon 28/08/06	Mon 28/08/06																								
25	prepare antenna for electronics	5 days	Mon 28/08/06	Fri 01/09/06																								
26	Install receiver	2 days	Fri 08/09/06	Mon 11/09/06																								
27																												
28	Checkout	8 days	Wed 13/09/06	Fri 22/09/06																								
29	Check M/C and 1st point of Tx	1 day	Wed 13/09/06	Wed 13/09/06																								
30	Ensure Tx and Rx on correct frequency, confirm adequate received power	1 day	Thu 14/09/06	Thu 14/09/06																								
31	Peak transmitter pointing	1 day	Fri 15/09/06	Fri 15/09/06																								
32	Verify receiver complex output and stability	1 day	Mon 18/09/06	Mon 18/09/06																								
33	Margin	4 days	Tue 19/09/06	Fri 22/09/06																								
34																												
35	e2e tests of the system	29 days	Mon 25/09/06	Thu 02/11/06																								
36	Verify mount movement and synch with data	5 days	Mon 25/09/06	Fri 29/09/06																								
37	Verify writing/reading from archive	1 day	Mon 02/10/06	Mon 02/10/06																								
38	Perform 1st raster and create database	2 days	Tue 03/10/06	Wed 04/10/06																								
39	Confirm data analysis and display are working correctly	2 days	Thu 05/10/06	Fri 06/10/06																								
40	Produce first holo image	5 days	Mon 09/10/06	Fri 13/10/06																								
41	measure, adjust focus and illumination	2 days	Mon 16/10/06	Tue 17/10/06																								
42	Margin	12 days	Wed 18/10/06	Thu 02/11/06																								
43																												
44	Science Validation	18 days	Fri 03/11/06	Tue 28/11/06																								
45	a few more images	6 days	Fri 03/11/06	Fri 10/11/06																								
46	Move antenna panel to calibrate	2 days	Mon 13/11/06	Tue 14/11/06																								



Project: holography at ATF
Date: Fri 11/08/06

Task: Progress
Split: Milestone

Summary: External Tasks: Deadline:

Project Summary: External Milestone:

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