

# **Minutes of Teleconference on ALMA OSF Holography Planning**

**Wednesday, April 12 2006, 16:00 UTC.**

(Minutes written by DTE, 2006-04-12, first revision)

**Participants:** Crady, Donoso, Emerson (chair), Glendenning, Janes, Lucas, Mangum, Michalski, Murowinski, Ocampo, Perfetto, Sakamoto, Sramek, Webber, Wootten .

Minutes of our last (2005-03-02) meeting, including the AI list, are at:  
[http://www.tuc.nrao.edu/~demerson/osfholo/mins2006-03-17\\_1.pdf](http://www.tuc.nrao.edu/~demerson/osfholo/mins2006-03-17_1.pdf)

## **AGENDA:**

### **I. ACTION ITEMS FROM LAST MEETING. See**

[http://www.tuc.nrao.edu/~demerson/osfholo/mins2006-03-17\\_1.pdf](http://www.tuc.nrao.edu/~demerson/osfholo/mins2006-03-17_1.pdf)

1. FE SOW would be distributed to this group, after review by John W., in about 2 weeks.
2. Antonio continues with the ICD tasks, to be completed by April 15. These include the tower interface, and the transmitter-computing interface (agreed to be minimal). Antonio will send holography tx requirements to Claus. Antonio will work with Jeff Z. to confirm that nothing has changed on the holography-antenna interface.
3. Rodrigo Brito will:
  - Define interface between BE and Computing for Ancillary Box at ATF and OSF. (1-2 days)
  - Budget for both BE deliverables and some extra equipment that will need to be purchased. (1-2 weeks)
  - Reflect changes in SoW and uploading it to EDM. (1-2 weeks)
4. Dick will arrange for the laser synthesizer to be shipped from the ATF to CV.
5. Dick will send tower specs to Claus.
6. Cesar will add the delivery of system #2 into the schedule (see last para section III [in minutes of March 17]).

### **II. AIV: WEATHER STATION at OSF (needed for antenna testing).**

### **III. TWO TOWERS OR ONE?**

### **IV. SCHEDULE.**

### **V. AOB**

### **VI. NEW ACTION ITEMS**

## **MEETING DISCUSSION:**

### **I. Existing Action Items:**

1. SOW. Antonio already has the draft SOW written. It will be reviewed by John Webber, and distributed to the group by the end of this week. Considered completed.
2. ICD tasks. Antonio has drafts ready. One change is because of the higher mass (approximately 80 lb total) now to be put at the top of the tower. This is because the replacement holography transmitter, including the positioner, is much heavier than the earlier photonic design. A means of getting it to the top of the tower needs to be devised (a crane at the OSF?) Site folks need to be aware of this increased weight.  
Rick mentioned that ALMA-J are concerned about clearance for connectors. Japan will use our holography receiver on their 12-meter telescopes, although they will supply their own receiver for their 7-meter telescopes.
3. BE SOW. This is complete, the Project Engineer has approved, and an account number has been sent to Clint.
4. Transmitter already received in CV, synthesizer packed and about to be shipped. Considered completed.
5. Tower specs: done, except that a little further dialog is needed because of the increase in tx mass.
6. Cesar & schedule issues: done, subject to further revisions resulting from new developments.

### **II. OSF Weather Station.**

Prior to the meeting, Al circulated the following:

"Science has planned to provide a weather station for antenna testing, with requirements as given in SCID-90.05.13.00-001-A-SPIE. The Specs are being drafted. The plan is to redeploy the CR4 wet mirror hygrometer, which meets the requirements, from the NA site characterization container (NASCC) to the OSF. In the past, this device sent an email to Charlottesville very day with a report on its health through the satellite telephone at the NASCC. The satellite connection has been turned off since last summer (~June 05). It is identical to the instrument currently installed at the ATF and to the four planned for deployment around Chajnantor. The NASCC device needs to be recalibrated. Nyman is checking on that this week. At some point in the next two months we will remove it, ship it back to the USA for recalibration. In the early Fall 2006 it will be redeployed to Chile and installed at the OSF. At the EU site characterization trailer is a Davis weather station, which includes an anemometer; Nyman will check on that and we plan on redeploying that to the OSF

also. At Chajnantor, local weather will be monitored by the station at APEX in the meantime, as ALMA no longer funds site characterization. At the OSF, the Davis device data is sufficient for holography but the CR4 device data will be needed for optical pointing."

In discussion, although the weather station is essential for optical pointing, it was agreed that it is also needed, although less critically, for holography. A solarimeter is a possible addition to the instrumentation, although it is not required as a regular operations instrument. It could be standalone, but in any case Computing agreed that interfacing to it would be a trivial issue. No issues.

### III Towers.

Rick said that there would be 2 holography towers<sup>1</sup> at the OSF; one to serve the Japanese and Vertex antennas, the second for the Alcatel antenna pads and our own pad at the OSF. It is possible that the first tower could also serve the Alcatel antenna. Eduardo had sent a map of the proposed siting of the first tower, which is 300 meters from both the Japanese and the Vertex antenna pads – see Fig 1 below, also available at [http://www.nrao.edu/~demerson/osfholo/tower\\_2006-04-12.pdf](http://www.nrao.edu/~demerson/osfholo/tower_2006-04-12.pdf).

In sending out the map, Eduardo commented:

"In the attached drawing we are showing the aerial power line that will feed the SEF areas. Is there any objection to this design?"

We need to start construction ASAP to meet the commitments we have with Vertex and ALMA-J.

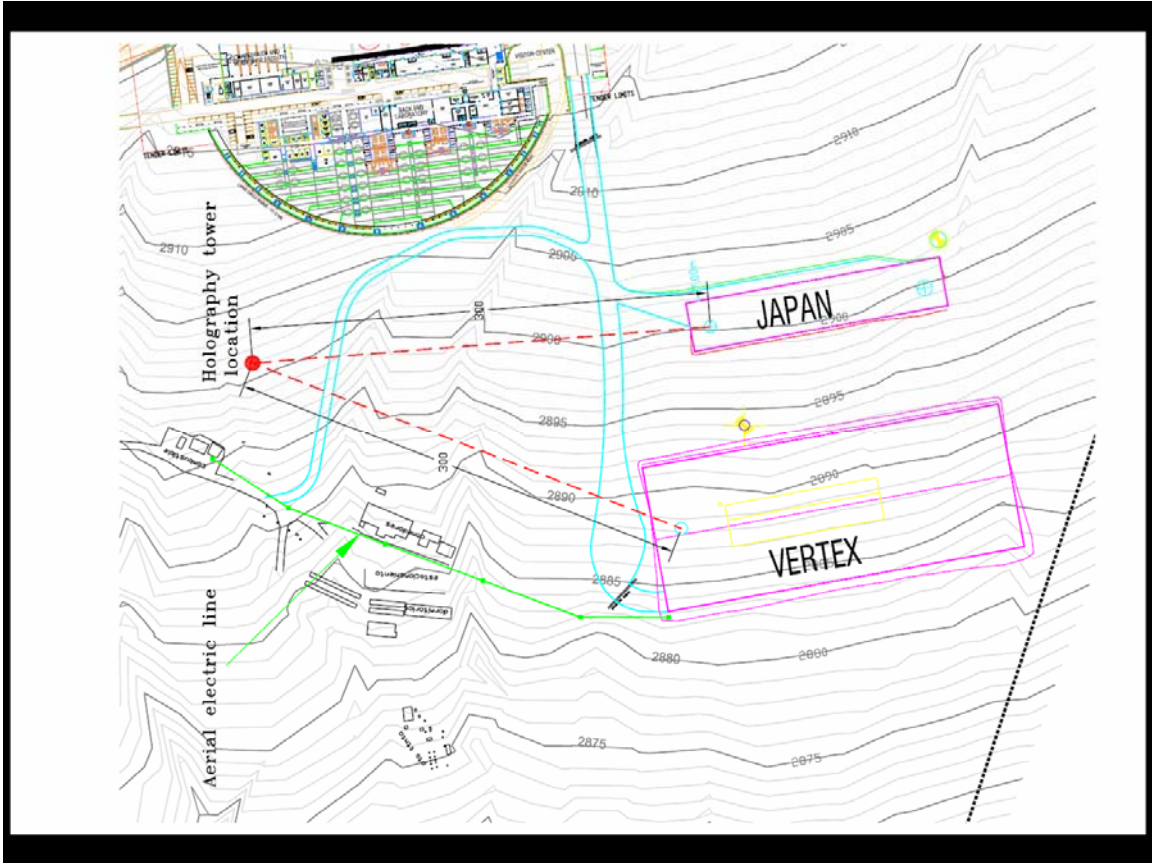
We also show in the attached sketch how the holography tower could be located to achieve a 300 m distance to the SEF areas (Vertex and ALMA-J) We still have to see the relative location to the Alcatel area and check if the proposed location meets all three areas requirements. This is a suggestion only, but we needed to show the location relative to the power lines, so there is no interference."

The motivation for two towers, rather than one, is that it gives robustness to the schedule.

The position shown in Fig 1 is agreed by this group, but we should ensure that all interested parties are aware of the decision. Some additional confirmation is needed to ensure that the power line is not likely to generate problems with reflections of the signal from the holography transmitter.

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<sup>1</sup> Clarification: in discussions shortly after the meeting, it was agreed with Tony B. that we will carry the two-tower concept for now, but will only move forward implementing one tower for now. We will insert a decision point (late 2007?) about actually buying the second tower. We should put together two transmitter systems as a backup anyway. This will be explained and discussed more at the next telecom.



*Figure 1: Tower position 300 m from Japanese & Alacatel antenna pads*

#### IV. Schedule.

It was agreed that the holography transmitter and receiver could be delivered to the ATF by about mid July, if the transmitter positioner was not needed then (which it isn't). The delivery will be followed by software integration at the ATF, with the first installation of the receiver on the Vertex antenna. John and Antonio will go over their schedule in more detail to decide the most appropriate and precise delivery date.

Dick S. will propagate the current schedule, July-September, to the antenna vendors to check for consistency. Brian will look into whether a software person needs to travel to CV to check interfacing with the receiver. Jack Meadows has said he will be ready to install the transmitter at the ATF. Note that the OSF installation may take longer than it does at the ATF; we should check on the availability of a crane to help with installation at the top of the tower.

Robert agreed that there has to be a change of format built into his software, but sees no problem and this can be done before July. There are no other data processing changes.

Scientists will be required for tests at the ATF from August 2006. Darrel was volunteered to come up with a plan, in collaboration with Jeff M., Al, Robert and others.

**V. Any other business.**

Eduardo reminded us about the potential power line problem for holography reflections. An answer on whether the tower site is acceptable is needed next week. The power line is 380 V 3-phase 1 MW.

**VI. New Action Items**

1. Antonio and John W. will confirm the precise date for delivery of holography systems to the ATF.
2. Antonio will keep ALMA-J informed on the holography interfaces.
3. Dick S. will notify antenna vendors – and anyone else concerned – of the current August-September schedule status.
4. Tower siting: the proposal needs to be circulated, and Darrel volunteered to provide at least a cursory check on whether reflections from the power line will be a problem. Eduardo will provide details of the line (wire diameter, wire height) as soon as available, and will look into possible alternate routes for the power line.
5. Rick will explain more about the two-tower vs. one-tower issue at our next telecon.
6. Antonio will work with Claus confirming the tower specs, in view of the increased tx mass.
7. Brian to arrange for discussions to reconfirm or change the baseline plan to have the first tests between holography hardware and CIPT software at the AOC/ATF (vs. NTC).
8. Darrel will coordinate with the scientists to provide scientific manpower for tests at the ATF from August 2006.
9. Darrel will organize the next group telecom for about 3 weeks from today's meeting.

DTE, 2006-04-12