

Minutes of Teleconference on ALMA OSF Holography Planning

Friday, March 17 2006, 15:30 UTC.

(Minutes written by DTE, with help. 2006-03-17, first revision)

Participants: Brito, Donoso, Emerson (chair), Dierksmeier, Eschwey, Glendenning, Janes, Mangum, Murowinski, Ocampo, Perfetto, Seiicho, Sramek, Wootten, Zivick .

AGENDA:

I. Existing Action Items & related discussion.

1. FE SOW needs updating to reflect the 2 sets of support electronics.
2. Antonio continues with the ICD tasks, to be completed by April 15.
3. Rodrigo Brito will list computer requirements for holography both at the ATF and the OSF. He will come up with a draft document within one week.
4. Dick continues to pursue the laser synthesizer as a backup for the ATF holography, albeit at low priority.
5. Rick will provide Darrel with revised tower and antenna pad sitings.
6. Darrel will create terrain profiles from Rick's data.
7. Darrel will arrange another telecon of the group in about 2 weeks.

II. Schedule issues

III AOB

IV New Action Items

Minutes of our last (2005-03-02) meeting, including the AI list, are at:
http://www.tuc.nrao.edu/~demerson/osfholo/mins2006-03-02_2.pdf .

MEETING DISCUSSION:

1. Existing Action Items:

1. *FE SOW needs updating to reflect the 2 sets of support electronics.*
Antonio reported that the existing SOW had been modified, and that he is waiting for John Webber to review it. The original plan for delivery to Chile has now changed to one of delivery to the ATF instead. The equipment would now be formally accepted at the ATF, after comprehensive testing in the lab in CV, but will still need testing after its eventual delivery to Chile. The revised SOW should be ready for distribution to this group within about 2 weeks.

2. *Antonio continues with the ICD tasks, to be completed by April 15.*

Antonio reported that the BE interface was done, but that he needed to talk to the Site group for the interface to the tower. There was discussion as to whether the holography transmitter synthesizer should be installed at the top of, or the base of, the tower. Dick pointed out that, from the point of view of diagnostics and maintenance, it would be easier to have the synthesizer at ground level. The cable loss up the tower (~30-40 GHz) would be about 40 dB, so with the synthesizer at ground level, and extra amplifier would be required at the top of the tower.

Dick Sramek owned up to being involved in setting the specs for the original ATF tower, an off-the-shelf item from Rohn; he will forward the information to the Site group.

3. *Rodrigo Brito will list computer requirements for holography both at the ATF and the OSF. This was clarified to mean:*

- Define interface between BE and Computing for Ancillary Box, particularly the physical connection for the 48ms signal (LDVS, RS422, DB9, Quadrax...etc) for both ATF and OSF. (1-2 days)

- Budget for both BE deliverables and some extra equipment that will need to be purchased. Among BE deliverables are the two boxes, cables and power supply. Extra equipment needed: Rack and mounting structure to be used at ATF or/and OSF, Bins, containers, connectors, power supply for Holo-receiver. The plan is to estimate the cost of one single rack containing every item needed for BE and FE to perform Holography at ATf and OSF (of course two racks are needed!!)

- Reflect changes in SoW and uploading it to EDM. Rodrigo will let everybody know when it is done, but for sure before next meeting. (1-2 weeks)

4. *Dick continues to pursue the laser synthesizer as a backup for the ATF holography, albeit at low priority.*

Dick reported that it probably made more sense now to send the laser synthesizer at the ATF back to CV. There it would be available to help with lab R&D, and would be held ready to be shipped either to the ATF or to the OSF as the backup transmitter, if it turns out to be needed. This plan was approved by everyone.

5. *Rick will provide Darrel with revised tower and antenna pad sitings.*

Done, see http://www.nrao.edu/~demerson/osfholo/sketch_2006-03-06.pdf .

6. *Darrel will create terrain profiles from Rick's data.*

Done, see Appendix I below, also at:

<http://www.tuc.nrao.edu/~demerson/osfholo/2towers.pdf> .

The two tower locations being considered, to serve just the Japanese and the Vertex antenna pads, are either (1) close to the First Aid Station near the Dormitories at the ALMA Camp, or (2) at the Temporary Power Plant. The paths lengths from (a) to, respectively, the Japanese and the Vertex antenna pads are:

J1 = 424 meters, V1 = 434 meters

While from (b) to the same pads the paths are:

J2 = 347 meters, V2 = 335 meters.

The ideal path length is about 300 meters; for greater distances, the elevation angle of the transmitter as seen from the antenna becomes lower, giving potentially more problems with reflections. For shorter distances, the near-field corrections start becoming more difficult. Antonio also pointed out that, if the distances differ significantly from 300 meters, then the holography receiver on the antenna will have to be refocused.

The issue of safety was discussed, especially if the transmitter is located near the fuel tanks at the Temporary Power Plant. The transmitter power is completely insignificant, probably ~10 microwatts, and represents no hazard. The main potential hazard is lightning. Appropriate grounding would have to be implemented.

Given that the distances to the antenna pads were 347 and 335 meters, the tower location could be moved some 40 meters further from the Fuel Station, towards the Japanese and Vertex antennas. At the same time, it could be moved a little further East, say 20 or 30 meters towards the OSF circle. These moves would have the dual advantage of moving the tower slightly further from the Fuel Tanks, as well as providing slightly higher elevation as seen from the antennas, and moving the line of sight path slightly further from buildings and other fuel or gas tanks that might contribute reflections.

Antonio asked about conduit access to the tower for cables. There will be no problem for cables at this chosen site.

II. Schedule issues

Before the meeting, Cesar Ocampo distributed an IPS Activity Bar Chart. This is available at: http://www.tuc.nrao.edu/~demerson/osfholo/ips_2006-03-17.pdf .

- Planners will review the schedule with their IPTs, and will produce a revised version by the end of next week (March 24th).
- The objective is to have a final revised tracking version of the IPS schedule, by the time of next conference.

Cesaro will meet with Brian and others in Socorro next week. Brian commented that he would like to see part of the AIPC schedule as well, and the inclusion of transmitter #2 tests in ATF schedule. Brian commented that the 2007-01-01 date is particularly critical, and should appear more prominently in the schedule. Brian said that the integration with the new antenna initially has to be an ALMA activity, not one of the antenna vendors, and this should be shown. Rick commented that there was a separate schedule addressing this, for which there is ongoing discussion elsewhere.

III Any Other Business

Brian commented that it would be good to leave a working holography system at the ATF, so that changes necessitated in Chile could be tested, and to help find problems. This

would be preferable to shipping both systems to Chile. Antonio said that the 2nd holography receiver should be available in August 2006. Rick agreed this second system could be held in the lab, not on the telescope, but in case any need for urgent testing could then be installed on the antenna at the ATF if necessary.

The first system would be shipped to the ATF and tested. This first system would eventually be shipped to Chile, and the 2nd system would then become available, kept in close proximity to the ATF so it could quickly (<1 day) become installed to help efficiently debug any problems encountered in Chile with the first system.

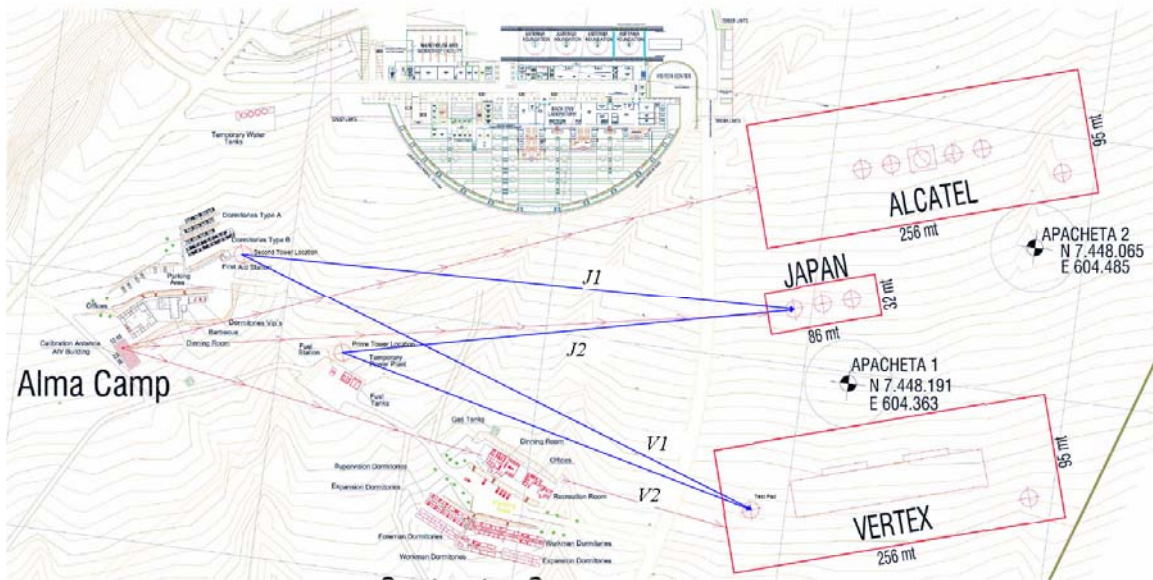
IV. New or Continuing Action Items.

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 above).
7. Darrel will arrange another telecon of the group in about 2 - 3 weeks.

APPENDIX I

Tower positions at the OSF

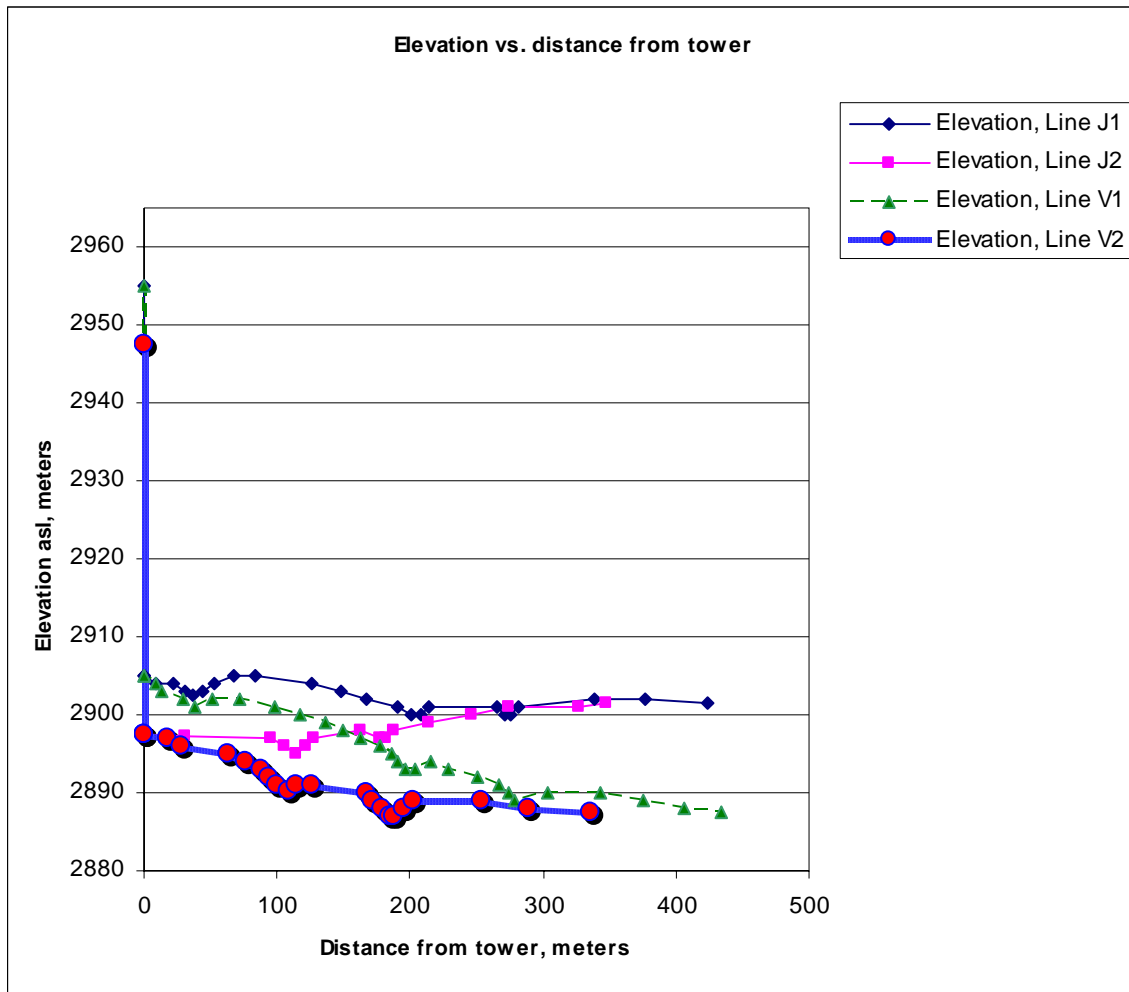
(Darrel Emerson, 2006-03-16)



Layout of towers and antenna pads

The lines J2 and V2 show the lines of sight from a tower located near the Temporary Power Plant, to the Japanese and to the Vertex antenna pads. The lines J1 and V1 show the corresponding lines of sight from a tower located near the Alma Camp dormitories.

Path length	J1 =	424 meters
	V1 =	434 meters
	J2 =	347 meters
	V2 =	335 meters



Terrain profiles from two possible tower locations.

The lines J2 and V2 show the lines of sight from a tower located near the Temporary Power Plant, to the Japanese and to the Vertex antenna pads. The lines J1 and V1 show the corresponding lines of sight from a tower located near the Alma Camp dormitories. See map for details.