

Prior to the meeting, a map showing a new suggested siting for the tower had been distributed (Figure 2, also at http://www.tuc.nrao.edu/~demerson/osfholo/rickmap_lines.gif) together with terrain profiles along the lines of sight from the proposed tower position to the contractors' antenna pads (Figure 3, also at http://www.tuc.nrao.edu/~demerson/osfholo/def_terrains.gif).

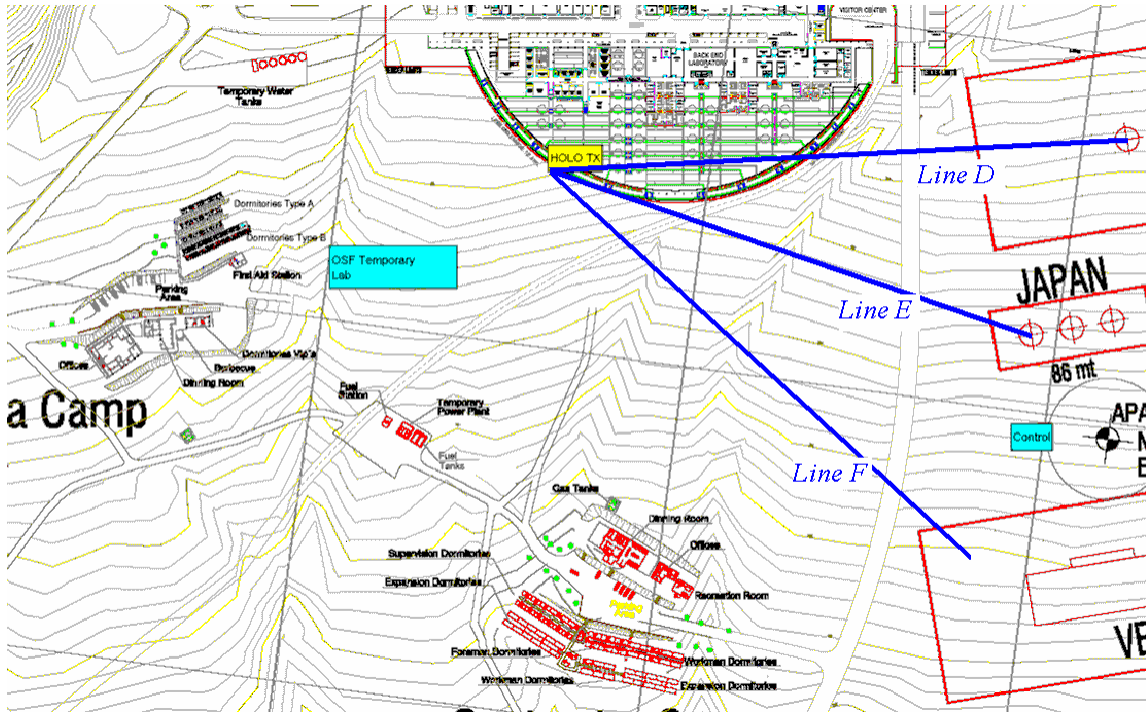


Figure 2. New suggested tower siting, with lines D, E & F to antenna pads

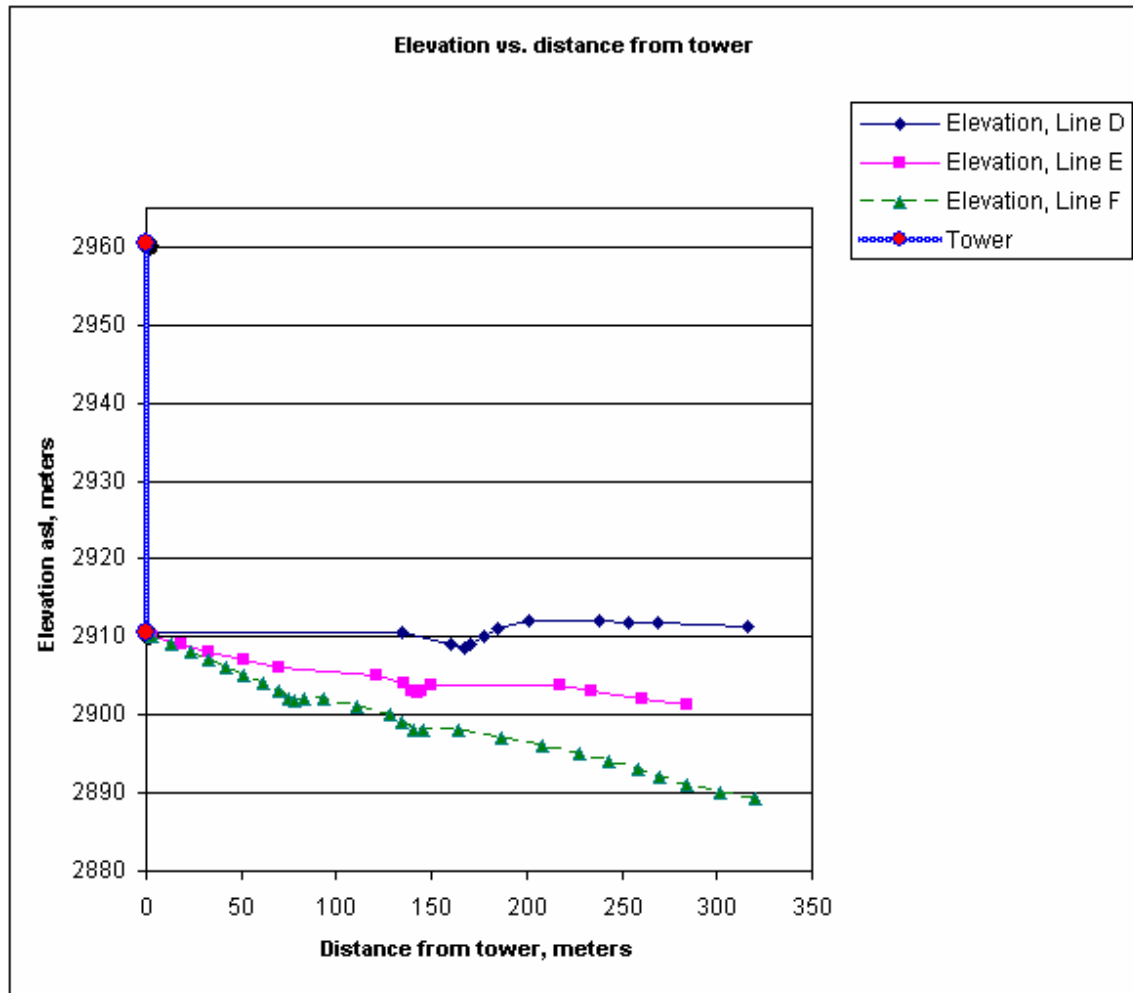


Figure 3. Terrain profiles, along lines D, E & F of Figure 2, from the new proposed holography tower position to antenna pads within 3 different contractors’ areas.

Most of the agenda topics are strongly inter-related, so discussion did not necessarily follow the precise order of the posted agenda.

General Points and Discussion:

Jeff Mangum had asked for clarification on the issue of who does holography. Rick confirmed that ALMA is responsible for the holography and pointing measurements, not the contractors¹. Jeff also expressed concern for the possibility of seeing reflections from the OSF in the new proposed tower siting – see discussion below.

¹After the meeting, Pascal Martinez sent the following comment:
“According to the Antenna SOW section 5.6.3, it is stated that the holography measurement will be performed by ALMA on the antennas #1 only (“For the unit #2 to #N holography measurement and setting of the primary reflector panel will be performed by ALMA after Acceptance of the antennas”). This means pretty much that for the antennas #2 to #N, the antenna will end up on OUR pads at the OSF (either the 4 pads under the movable shed, or the 3 parking pads) with an accuracy of 60microns or better. From this

Antonio asked whether we wanted two holography frequencies or one. The answer is two, each of which is to a small degree tunable. This becomes particularly important with the increased possibility of unwanted reflections that might result from the relocation of the tower.

Antonio asked about the budget for a spare holography receiver. Rick said this was sufficiently important that we should go ahead anyway. John Webber said that funding was already listed in the budget for the 2nd receiver. It was confirmed that, although the Japanese measurements will be using the same holography transmitter, the Japanese would be providing their own holography receiver for the ACA 7 m antennas. They will share the bilateral holography receiver for the four 12 m antennas for the TP array.

Antonio also asked about the distance from the tower to the different antennas. He pointed out that we want to avoid the necessity of refocusing the holography receiver. Other reasons for keeping the distance around 300 meters for all antennas are (1) much closer than 300 meters, and we run into problems with the near-field approximations, and (2) much further than 300 meters, the elevation angle of the top of the tower as seen from the antenna pads becomes too low, which exacerbates the possibility of unwanted reflections. As a guess, it was suggested that a distance of 300 +/-10 meters would be a reasonable tolerance. This places constraints on the siting of the tower. To be confirmed with Robert.

It was agreed that the holography transmitter horn should be steerable in 2 axes, remotely, to allow for the differing heights of the different antenna pads.

The interface between the holography receiver and the backend needs work. Antonio will discuss this with Clint and report back to the group.

Tony pointed out that in the first phase of OSF holography, measurements would only be made to the Japanese and the Vertex sites. A tower sited somewhere in square B3 (see the map in Figure 1, for coordinates) would be adequate². At an appropriate time, perhaps after a year or so, the tower could be moved to (e.g.) square A5, where it would serve the Alcatel contractors' area as well as the main OSF holography antenna pad.

point we are supposed to go down to the required accuracy using holography. In this case, the current location might not be the most suitable unless we have an agreement with the contractors that we want to use their pads after acceptance for the holography setting. Or, we can consider all the holography will be done from our pads and change the location of the tower and have a temporary solution for the first antenna of each contractor..."

²After seeing the draft minutes of the meeting, Pascal Martinez sent the following comment: "While talking with Jorg about what we call the "Work Area Design", I realised that the general slope is around 10%. The excavation will be such that over ~50m (half the width of the Work Areas for VA and AEM), the mountain will be dug and the other 50m will be filled with the excavated material. Therefore in the end we will have on one side a "cliff" of 5m and on the other side a wall of 5m ! This wall will be right in the path of the Holography tower did anybody think about this ? (the EL axis is at 7.6m and the edge of the dish will be at around 1.5m from the ground when pointing at 8 or 9 deg to the holography tower)."

ATF tests: the new holography system WILL be tested at the ATF before anything is shipped to Chile – the tests are for the benefit of the software as well as of the hardware. These tests are scheduled to start at the ATF on September 2006 This is a **critical milestone** which must not be missed. Sramek pointed out the difficulty of coordinating with other activities at the ATF at the time, but agreed that holography had #1 priority. The goal here is NOT to obtain fresh holography measurements of the ATF antennas, other than in the course of thoroughly testing the new holography hardware and software implementation. The holography equipment will be shipped to Chile 3 months after the start of these tests. Holography is part of the acceptance test for the Vertex antennas, so this shipping cannot be delayed.

OSF tests: tests of the holography system will start in February 2007, with measurements on the first Vertex antenna taking place at the OSF in the month of March 2007.

OSF networking responsibilities: it was agreed that the network topology and other responsibilities be transferred to the JAO, as a delivery commitment of Tony Beasley and the JAO IT division, relieving Brian's division of this responsibility.

Action Items:

1. Antonio will work with Clint on the interface between BE and the holography receiver.
2. An ICD is needed for the new holography transmitter – Antonio.
3. Dick Sramek will check on the availability of laser synthesizer at the OSF, as a backup to the holography transmitter system. The new transmitter is not dependent on that, but will consist of a frequency synthesizer with multipliers.
4. Dick will confirm that IPS captures the logic of the sequence of ATF tests, with the critical milestone of holography hardware delivery in September 2006, followed by shipment to Chile 3 months after the start of the tests.
5. Jeff Mangum will confirm with Robert Lucas that a tolerance of 300 +/-10 meters is a reasonable goal for the range from each antenna to the holography tower.
6. Tony Beasley takes on network topology responsibility at the OSF.
7. The schedule: this needs more work. This is primarily Rick's responsibility.

Although not specifically discussed at the meeting, it would probably be appropriate to have our next teleconference in the 2nd or 3rd week of February. Darrel will organize this. These minutes will eventually appear, together with other relevant information, at <http://www.tuc.nrao.edu/~demerson/osfholo/>.