

To: VLBA Configuration/Site Group

From: R. C. Walker

Subject: Aug. 24, 1983 Meeting

**VLB ARRAY MEMO No. 258**

The Aug. 24 meeting of the Configuration/Site Group was attended by Benson, Bridle, Cotton, Crane, Hogg, Hvatum, Kellermann, Peery, Schwab, and Walker.

Buck Peery reported on the trip he and Cam Wade made to several western sites. They visited Fort Davis, McDonald, Kitt Peak, and Owens Valley. They also toured central Washington looking for possible sites. They report that all sites are viable and the people at each of the sites are interested and cooperative. The weather at each of the sites is as good or better than at the VLA. The phone systems are mostly Bell. They are not digital grade yet but the upgrade is being considered. The site in Washington will probably be on private land because most of the government land is in the mountains or in remote areas. I assume we will get more complete written details from Buck and Cam later.

A major concern that will influence the choice of specific sites is the horizon requirement. The geodesy community (eg. Irwin Shapiro) has expressed a desire for low (2-3 degrees) horizons and elevation limits on the telescopes. Observations at such low elevations are useful in separating the atmosphere from the geometric terms in geodesy/astrometry experiments. However there is concern that low horizons mean distant horizons and invite interference. Also many sites just cannot meet a 2-3 degree specification except, perhaps, in a very limited azimuth range. Owens Valley, for example, has 14000 foot mountains on both sides and has horizons in the 5-13 degree range except directly north and south. How important are low horizons and just what are the specifications on horizon height as a function of azimuth range? The Science committee should consider these questions.

Buck and Cam will be visiting the eastern sites next month. This means Haystack, Five College Radio Observatory, and Iowa. The FCRAO is being considered as an alternate to Haystack because of the probable better interference environment, colder winters (less water vapor), and proximity to a mm telescope. The relative merits of the two sites need to be explored.

The Site group has been concerned with the schedule for designing and building the headquarters building and the antenna foundations and buildings at the sites. The design of the headquarters will probably be postponed until 1985 in order to concentrate available resources on the site preparations. If all goes by the expected schedule, construction will begin on 3 antennas in 1985 and those sites will have to be ready. It is likely that the first antennas will be built before the local building and the receivers are ready. Kellermann is concerned that this will make initial testing difficult. He feels that we need to be able to check out the first telescope quickly in

case there are changes that need to be made to others.

There needs to be a decision on the order in which the telescopes are built. The first site should probably be chosen for technical reasons and will probably be Kitt Peak where there is an existing NRAO operation. It could be one of the New Mexico sites but they are not as close to existing facilities. After that, they can be built in an order that is interesting for scientific reasons. However, if we think that a collaboration with Canada may develop, we should concentrate on the southwestern sites first (see VLBA Memo 237).

Dave Hogg reported on his trip to Puerto Rico. He, George Grove, and Ken Turner were trained in the use of the JPL smog machine which is capable of measuring water vapor. The machine will be operated by Ken Turner for two weeks at Arecibo, two weeks at Ramo, and two weeks on the south coast at Parguera Bay. Don Campbell suggested that the atmosphere may be less disturbed on the east coast so we may try to obtain measurements there.

John Benson reported on his progress in analyzing Arecibo VLBI data for phase stability. The results so far look encouraging - they appear to be limited by the Rb standard. I assume we'll have a memo eventually.

I reported on the contents of Memo 250. Since that memo was written, I have looked at more sites in the Rio Grande Valley suggested by Dick Thompson. A site north of those considered before, near the intersection of Rt 107 and I25 gives coverage similar to the Winston site. It would be easier to reach but is over 2000 ft lower and, because it is visible to more people, may be more vulnerable to vandalism with remote operations.