

First Meeting of the LFSP Working Group1. Meeting Date and Agenda

The first meeting of the group took place at the National Radio Astronomy Observatory, Green Bank, on Friday, April 2, 1965. The following were present:

J. W. Findlay	D. S. Heeschen
E. R. Faelten	R. L. Jennings
O. R. Heine	S. von Hoerner
J. A. Hungerbuhler	M. M. Small

The agenda for the meeting follows:

Agenda

1. Brief survey of the astronomical requirements and the Westerhout meeting recommendations (JWF)
2. Brief survey of the outline plan of the study LFSP/JWF/I (JWF)
3. Run through existing types of large steerable or partially steerable antennas
4. Discussions of:
  - a) The floating sphere antenna
  - b) The fixed elevation transit telescope
  - c) "Conventional" designs - Sugar Grove 600-foot
5. Discussions of designs or structural concepts relevant to the study:
  - a) Deflection analysis methods and techniques
  - b) The design of dish structures which, though deflecting, remain paraboloidal (Dr. S. von Hoerner will join the group for this item.)
  - c) Problems of bearings for large moving structures
6. Allocation of tasks among the group and approximate time scales for the work
7. Choose a date and place for the meeting

2. Agreed Actions

All the subjects on the agenda were discussed, with the exceptions of 5(a) and 5(c) which were deferred due to lack of time. The main results of the meeting were the allocation of tasks to the various group members. These may be summarized:

(a) E. R. Faelten

(i) General task: Begin the study of a 200 meter diameter parabolic dish mounted on an azimuth-rotating carriage capable of traveling a full 360°. The dish itself shall be capable of a limited movement in elevation, so arranged that as the elevation angle is changed the focal point remains fixed in space. The axis of the dish shall move over a range of elevation angles from 30° - 50° above the horizon.

(ii) Notes: This is one of two possible ways of making the telescope described in LFSP/JWF/4. The working group will consider what should be done about the second alternate -- in which a fixed spherical surface dish is used with a moving phase -- corrected feed -- at later meetings.

(b) O. R. Heine

(i) General task: Begin the study of the floating sphere antenna (LFSP/JWF/2). The first stages of the work will include a general survey of the advantages, disadvantages, and problems associated with this type of mount. Calculations of the size, strength, and behaviour of a reasonable shell under various imposed forces will be made. First attempts to describe a possible drive and control mechanism will be made.

(ii) Notes: It appeared that the first main factors in this concept for which rough answers were needed were how the shell might be built, how it would behave, and how it might be driven.

(c) R. L. Jennings

(i) General task: Continue and extend the ideas of S, von Hoerner on what might be the optimum geometric arrangement of major load carrying members for a large parabolic dish-type telescope.

(ii) Notes: Von Hoerner has considered the problem of how a parabolic dish can be designed in such a way that, as the dish is tilted about a horizontal elevation axis, the surface deflects yet remains to a first order a good paraboloid with perhaps a changed focal length. Possible 2 dimensional structures have been suggested by Von Hoerner, these need further study and, if possible, extension to 3 dimensions.

(d) NRAO

The very large amount of design and engineering work which has been done for the 600-foot Sugar Grove telescope has great importance for the present study. At some time the group will wish to benefit from this experience, and it was left for NRAO to make plans as to how this might best be done.

3. Next Meeting

The next meeting was arranged to be held in Charlottesville on May 7, 1965.

J. W. Findlay

NRAO - April 28, 1965