ASSOCIATED UNIVERSITIES, INC.
10 Columbus Circle
New York 19, New York

Addendum No. 1
September 25, 1957

Minutes

Pre-Proposal Conference

on

140-foot Equatorial Radio Telescope

September 12, 1957

1. On September 12, a conference was held with representatives of companies interested in all or part of the work involved in the construction of the 140-foot telescope for the National Radio Astronomy Observatory at Green Bank, West Virginia. Attached is a list that indicates the interested contractors. AUI was represented by staff members and consultants, including: N.L. Ashton, L.R. Burchill, J.J. Carroll, C.F. Dunbar, R.M. Emberson, R.C. Herrick, M.B. Karelitz, A.M. Loeb, M. Small, N. Sindlinger, I. Bowman, R.N. Shepard, C. Withrow, G.O. Wardrop, M.L. Westman, D.S. Heeschen, J.W. Findlay.

2. The discussions, which followed a prepared agenda, are summarized below and in the addendum to the specifications that is enclosed herewith. No effort has been made to identify all persons who contributed. Technical matters are treated primarily in the addendum and more general topics will be found in these minutes.

3. Revised due-date for proposals: The original due date of September 30, 1957 for the submittal of proposals was revised to Monday, October 21. No further postponements are contemplated.

4. NSF and AUI: The National Science Foundation is an independent office in the executive branch of the Federal Government. Its programs are supported by Congressional appropriations. The NSF has contracted with Associated Universities, Inc. to establish and operate the National Radio Astronomy Observatory. The contract for the construction of the telescope will be with AUI. Because of its contractual relationship with the Government, and because the money for the telescope derives from the Congress, the construction contract must necessarily include typical Government stipulations.

5. Use of Government-owned Facilities: Some potential builders of the telescope have access to construction facilities owned by the Government. Similarly, it might be advantageous to have some

portion of the work done at a Government-owned facility, e.g. an Army arsenal. It may be presumed that whatever inter-agency arrangements apply to work done for other Governmental Departments will also be available to the NSF.

6. The Telescope Design: The design, on which proposals are now invited, is the product of a program of investigation by AUI. Alt-azimuth designs were considered and a decision made not to adopt an altazimuth configuration for the 140-foot telescope. Similarly, many drive and control systems were investigated and the decision was made not to incorporate a closed servo-loop between the position sensing devices, at the polar and declination axes, and the motors that drive the telescope. Generally, AUI does not contemplate a re-design phase to precede construction; the objective is to build the present design. The contractor will be expected to develop shop drawings and other detailed information on the fabrication and erection; these will be reviewed by AUI with respect to adequacy and suitability and when approved by AUI will mark assumption of a joint responsibility for conpletion of the telescope -- the contractor for materials and workmanship, and AUI for the overall design and performance. During the development of the shop and erection details, the contractor may suggest equivalent alternatives (e.g. casting instead of welding; other commercially available gears, bearings, motors, etc. than those mentioned by AUI) where such changes will simplify procedures, ease procurement problems, or otherwise expedite the work.

7. The Contractor: AUI hopes to find a group with which a prime contract may be made for the construction of the telescope, rather than for AUI to sub contract directly for the variety of materials and work that will be required. The telescope construction involves four principal activities: I - Foundation; II - Steel Structure; III - Aluminum Structure; and IV - Machinery, including bearings, gears, motors, etc. While the foundation is important because it must serve the dual functions of supporting the telescope and housing the control and observation rooms, the foundation is believed to be a straightforward job; the critical parts of the telescope are II, III, and IV. In view of this, AUI will expect the prime contractor to have demonstrated a proven capability in at least one of these three work areas. Because of the joint responsibility for the accomplishment of the work, see paragraph 6, AUI reserves the right to review and approve all sub-contractors. In view of this, contractors specializing in only a limited amount of work may submit proposals directly to AUI, indicating clearly the proven specialization, how much of the telescope work they would do, and at what cost, and AUI will review and consider all such proposals before sub-contracts are made.

8. Proposals: With the possible exception of Items 6 and 7 (see the specification addendum), all proposals are to be on a firm price basis good for 60 days. Within that period AUI will have reviewed all proposals and will have communicated with all proposers.

9. Procedures: In addition to the review of detailed shop drawings and construction techniques, as outlined in paragraph 6, AUI will have a program of tests and surveys. Materials and workmanship will be tested by a reputable testing laboratory, following usual practices. Testing of critical components, e.g. the paraboloid surface panels, bearings, or gears, shall be accomplished by the contractor using methods approved by AUI and such critical components must meet the stipulated tolerances before they may be incorporated in the telescope. In the event a proposer believes an AUI tolerance can be met only with great difficulty and that a tolerance relaxed by 25 - 50% will result in savings by factors of two or more, the proposal should quote on the AUI tolerance and then as an alternative, quote the lesser tolerance the proposer could meet with more assurance and the relevant reduced cost. Throughout the construction of the telescope AUI will follow the work closely and will be prepared to act promptly on any requests of the contractor for information or decisions needed for the effective continuation of work.

10. Cost estimates: The total monies appropriated for the National Radio Astronomy Observatory cannot be earmarked for the 140-foot telescope, because there are other absolute requirements, such as the site procurement or the provision of an electric power distribution system. At what point other facilities will be tabled in order to divert funds to the 140-foot telescope is a decision AUI will make only after the proposals have been received and studied. AUI cost studies during the past year indicate that construction of the 140-foot telescope should be within presently available funds.