

ASSOCIATED UNIVERSITIES, INC.

UPTON, L. I., N. Y.
TEL. YAPHANK 4-6262

June 11, 1957

MEMO TO: Richard M. Emberson
FROM: Charles F. Dunbar
SUBJECT: Radio Astronomy Project -- June 28, 1957 Washington Meeting

The other day we agreed on the following items to be discussed with the National Science Foundation on June 28:

1. Report on negotiations with the Forest Service with respect to use of unoccupied land and boundaries.
2. Report on discussions with the Corps of Engineers in regard to the covenant program and the desirability of having a description of the tract as a whole when the land acquisition program is completed.
3. FY 1959 Budget -- Capital and Operations.
4. FY 1958 Operating Budget.
5. Invitations for October 17, 1957.
6. Necessity for a final report of the work under the three grants.
7. Management allowance negotiations for FY 1958.
8. Form of invitation for proposals to be used in connection with the 140-foot and 85-foot telescopes.

CFD:VN

cc: LRBurchill ✓

ASSOCIATED UNIVERSITIES, INC.

10 COLUMBUS CIRCLE
NEW YORK 19, NEW YORK
COLUMBUS 5-2090

June 19, 1957

Mr. James M. Mitchell
Associate Director
National Science Foundation
1520 H Street, N. W.
Washington 25, D. C.

Dear Jim:

We are planning to meet with you and other members of the NSF staff on Friday, June 28 to discuss various problems in connection with the radio astronomy observatory. Messrs. Burchill and Dunbar are coming down on the night train from New York -- I will fly down that morning. Dr. Findlay and Meade Westman are coming from Green Bank, and we will expect to be in your office sometime between 9:15 a.m. and 9:30 a.m.

I am enclosing a list of items to be discussed during the day, with an indication of the persons having information. You and other members of the staff may have additional items, and, therefore, I suggest you make the final agenda for the meeting.

Sincerely yours,

Richard M. Emberson
Assistant to the President

RME:lc
Encl.

cc: L.R. Burchill ✓
C.F. Dunbar
J.W. Findlay }
M.L. Westman }

Preliminary List of Items for Discussion on June 28, 1957

1. Report on negotiations with the Forest Service with respect to the use of land not immediately required for astronomical work at the site. (Mr. Callender and Mr. Dunbar)
2. Report on the status of the site acquisition and particularly with regard to the covenant program and the desirability of unifying the description of the site. (Mr. Callender and Mr. Dunbar)
3. The FY 1958 operations budget. (Messrs. Roberts, Shepard, Burchill, and Emberson)
4. The FY 1958 capital and operations budget. (Messrs. Roberts, Shepard, Burchill, and Emberson)
5. Arrangements for the October 17 ceremonies at Green Bank including a preliminary list of those that might be invited. (Mr. Dunbar and Dr. Emberson)
6. Requirement for a final report on the work accomplished on the feasibility study grants. (Dr. Emberson)
7. Management allowances and negotiations for FY 1958. (Messrs. Burchill, Roberts, Shepard)
8. Review of our present plans of the invitations proposals with the 140-foot and 85-foot telescopes. (Drs. Findlay and Emberson)
9. Review of our plan procedure with respect to opening of proposals. (Dr. Emberson)
10. AUI invitations to foreign scientists to visit Green Bank; the discussion for the mechanism for making payments; a review of a possible list of invitees, and the determination of whether these people are now receiving separate money from the NSF or other federal agencies at the same time. (Mr. Burchill and Dr. Findlay).

L.R. Burchill

RADIO ASTRONOMY PROJECT

Record of Meetings at National Science Foundation

June 28, 1957

MEETING NO. 1 9:30 A. M.

Present: National Science Foundation:

F. J. Callender
E. A. Eckhardt
Geoffrey Keller
James Morgan
James McCorckle
Marguerite Risley
J. B. Roberts
C. B. Ruttenberg
R. J. Seeger

Associated Universities, Inc.:

L. R. Burchill
C. F. Dunbar
R. M. Emberson
J. W. Findlay
M. L. Westman

1. Report on negotiations with the Forest Service with respect to the use of land not immediately required for astronomical work at the site:

Dunbar submitted a memorandum (copy attached) describing Callender's and his negotiations with the Forest Service on June 24, 1957. Callender pointed out that there was no immediate pressure to enter into agreements with the Forest Service in view of the site acquisition schedule. The rights of some of the present owners to continue to use some of their property for a short time after title has passed will have to be considered.

2. (a) Report on the status of the site acquisition and particularly with regard to the covenant program and the desirability of unifying the description of the site:

Dunbar submitted a memorandum (copy attached) describing Callender's and his conversations with the Corps of Engineers on June 24, 1957. Callender said that the Corps has made some 23 appraisals, on the basis of which it estimates that the total cost of approximately 2600 acres will only be about \$30,000 more than the cost originally estimated by the Corps for the acquisition of about 2000 acres. Acquisition costs are running at about \$176 an acre.

The Corps of Engineers is prepared to supply a unified description of the perimeter of the site when the acquisition program is completed, but not to take the steps necessary to have a description of the Government's holdings recorded in a single deed. Probably this is not very important.

The restrictive covenant program was discussed. Callender pointed out the need for obtaining a covenant from Mrs. Arbogast to be effective during her life.

Emberson said that a copy of the current draft (copy attached) of the restrictive covenant would be necessary in connection with the FCC hearings.

(b) Brown property and other tracts:

Callender believes that there are five tracts where it may be necessary at least to commence condemnation proceedings. These are referred to in Dunbar's memorandum attached hereto. The Corps of Engineers thinks that in two of the five cases it may be necessary to go to actual litigation. For the others, the filing of the notice of condemnation should be sufficient to produce a settlement. The Corps of Engineers expressed the opinion that no compromise should be made with respect to the Brown property.

It was the consensus that all correspondence with individual property owners should be conducted by NSF, with appropriate consultation with AUI.

3. Review of our present plans for inviting proposals for the 140-foot and 85-foot telescopes:

Emberson described the status of the design of the 140-foot telescope. There has been some delay in getting time on the wind tunnel at M. I. T., but these tests should be completed during the week of July 8. Representatives of The Franklin Institute have been in conference with Ashton, and disagreements with respect to oil pad bearings are being ironed out.

Emberson hopes to mail invitations for proposals for fabrication and erection of the 140-foot telescope about the end of July. He then plans to have a pre-bid conference on August 8 and 9. Anyone wishing to submit a proposal will be free to attend. He will not try to hold individual conferences before the submission of proposals. In the invitation, the making of lump sum proposals will be urged. In addition, the invitation will contain a full list of companies which have expressed an interest in the job, or any part of it. Bidders will be asked to subdivide the bid price into its principal elements. In addition, each proposal must contain a list of proposed subcontractors. AUI will reserve the right to publicize to whatever extent it sees fit the prices attached to various components. As to the price of the 140-foot telescope, Emberson said that cost estimates based on material prices still indicate that the cost will be in the neighborhood of \$2,200,000. On the other hand, the difficulties experienced by California Institute of Technology in obtaining satisfactory bids for two 90-foot telescopes is somewhat disheartening. Emberson described the design program followed by AUI leading up to the contract with Ashton for a definitive design.

Dunbar emphasized that the final contract would be a negotiated one, based on competing proposals. He also said that AUI proposed to reserve the right to approve all major subcontractors.

Keller asked whether it would be possible to have some sort of impartial review of the 140-foot telescope design. He would like to obtain a persuasive outside opinion of this sort to satisfy the radio astronomers of the country that the design is sound. Emberson suggested that the ad hoc committee employed by AUI to assist with the development of the design had already accomplished this review. The consensus was that some such procedure as Keller suggested would be desirable for a written record and that consultants who have worked on the design might be the best source for such a statement.

Emberson expressed the hope that it would be possible to contract for an 85-foot dish sometime in the summer of 1957. Specifications for this instrument based on those used by the University of Michigan and Naval Research Laboratory have been circulated. Four tentative proposals have been received. General Bronze Corporation indicated it might contract to build an 80-foot telescope for between \$350,000 and \$400,000. However, it has no design. Berner-Stafford, located on the West Coast, has quoted a price of \$325,000 to \$400,000, but it is not clear just what is included. Blaw-Knox Company has actually contracted to build an 85-foot telescope for the University of Michigan for about \$290,000. However, it does not have a complete design and the contractual arrangement is decidedly loose. Blaw-Knox has indicated a readiness to absorb the current increase in the price of steel, but not any future ones. D. S. Kennedy & Company is building an 85-foot telescope for Naval Research Laboratory. However, the design simply adds wings to the periphery of their 60-foot telescope, and the result is a reflector which is too deep for the RF feeds expected to be used. Kennedy has made a new reflector design and is prepared to contract to build a telescope for about the same price as that quoted by Blaw-Knox.

Methods of testing and inspecting were discussed. Callender expressed the hope that it would be possible to reach a firm decision by July 26.

4. Arrangements for October 17 ceremonies at Green Bank, including a preliminary list of those that may be invited:

Plans for October 17 were discussed. Emberson's proposal is that the morning, starting at 10:30 or 11:00, be devoted to formal exercises of some sort. The local school has offered to serve lunch in the school cafeteria and to permit the use of the school auditorium during the afternoon for a discussion of radio astronomy and a description of what AUI and NSF propose to do on the site. This discussion will be followed by an inspection of the site and an early dinner which will be served in the school.

It was the consensus that AUI should send out invitations referring to NSF. Emberson provided a tentative list of persons to be invited.

Callender asked for a letter to be sent at an early date giving a full description.

5. Requirements for a final report on the work accomplished under the feasibility study grants:

Miss Risley said that the letter asking for a formal report of the work under the grants was a formal communication and was not intended as a request for a new report of any particular kind.

Eckhardt said he would like further information on the scientific work program, the construction program, and the anticipated rate of expenditure. It is important from the point of view of NSF to draw a distinction between commitments and expenditures.

MEETING NO. 2 11:00 A.M.

Present: National Science Foundation:

E. A. Eckhardt
Geoffrey Keller
James McCorkle
James Morgan
J. B. Roberts
R. J. Seeger

Associated Universities, Inc.:

L. R. Burchill
C. F. Dunbar

6. AUI invitations to foreign scientists to visit Green Bank; the discussion of the mechanism for making payments; a review of a possible list of invitees, and the determination of whether these people are now receiving separate money from the NSF or other federal agencies at the same time:

Burchill said it had been suggested that AUI might invite to Green Bank in October some of the foreign scientists who will be attending the URSI meeting in Boulder, Colorado at that time. AUI would be expected to pay extra travel costs incurred by this side trip. This plan raises some problems. One of these is what mechanism should AUI use for paying, since the individuals concerned are neither employees nor consultants. It probably would be desirable to have an approved policy permitting the making of discretionary payments under circumstances of this sort. Another problem is the undesirability of using funds received from NSF to pay to persons whose stay in the United States is already being financed by the Federal Government, probably through NSF. Seeger said that if AUI would supply the names of the persons involved he would try to find out whether they were already receiving NSF funds.

7. (a) The FY 1958 operations budget;
(b) The FY 1958 capital and operations budget;
(c) Management allowances and negotiations for FY 1958:

Roberts said that some revisions in the financial plan and budgets which have been under discussion for some time were necessary. The new figures should be prepared on the assumption that the obligation to produce a working installation including a 140-foot telescope continues and also that the project will receive \$1,130,000 from NSF's appropriation for FY 1958. This latter figure will include funds for an 85-foot telescope and FY 1958 operations. On these assumptions, NSF would like to have the following:

- (i) A re-evaluation of the financial plan submitted for FY 1957;
- (ii) A combined budget and financial plan for FY 1957 and FY 1958, including proposed expenditure of \$1,130,000 from the FY 1958 appropriation;
- (iii) Operating budgets for FY 1958 and FY 1959;
- (iv) Expected rate of expenditure in FY 1958.

It was agreed that at the recent meeting in Dr. Waterman's office NSF took the position that if possible FY 1959 operating funds would be obligated to the contract in FY 1958, but would not be included in the \$1,130,000 figure.

Roberts also said that NSF would like to have some table of priorities on capital expenditures proposed for FY 1958 and some indication of the leveling off point for operating expenditures.

Burchill said that there would be a carry-over of about \$45,000 from the operating budget for FY 1957. Operations for FY 1958 will cost about \$250,000, but this does not mean that additional funding will be necessary to meet these costs. As to the capital budget for FY 1957, he pointed out that the sum of \$4,000,000 obligated in the contract had been reduced to \$3,900,000 at the very outset by the deduction of \$100,000 for FY 1957 operations. In addition, \$650,000 has been allocated for site acquisition, and at least \$2,200,000 must be reserved for the 140-foot telescope. Just how the balance can be most effectively spent can not be determined until a more accurate idea of the cost of the big telescope is obtained. A substantial saving on the cost of bringing in electric power seems likely. On the other hand, it now seems probable that there will have to be a substantial amount of machining at the site in connection with the erection of the telescope. This will necessitate a larger and heavier type of building than was originally planned.

Burchill suggested that a meeting be held in AUI's New York office on July 8 to work out definitive figures in accordance with Mr. Roberts' request. This suggestion was adopted.

MEETING NO. 3 2:30 P. M.

Present: National Science Foundation:

F. J. Callender
E. A. Eckhardt
Geoffrey Keller
James McCorkle
James Morgan
Marguerite Risley
J. B. Roberts
C. B. Ruttenberg
R. J. Seeger

Associated Universities, Inc.:

L. R. Burchill
C. F. Dunbar
R. M. Emberson
J. W. Findlay
M. L. Westman

Burchill confirmed the plans for a budget meeting to be held in the AUI New York office on July 8, 1957.

Emberson recapitulated the discussion with respect to the financing of the travel to Green Bank by foreign visitors. The consensus was that there was no objection to using contract funds for visitors whose professional qualifications might make them valuable to the project. The problem of "prestige" visitors is somewhat different, and NSF wishes to give this matter further

consideration. Emberson agreed to provide a list of individuals who, he understands, will be at the Boulder, Colorado meeting, with comments on each one.

June 27, 1957

MEMO TO: Richard M. Emberson

FROM: Charles F. Dunbar

SUBJECT: Radio Astronomy Project -- Conference with Corps of Engineers

On the afternoon of May 24, 1957, Frank Callender and I called at the office of the Corps of Engineers in Marlinton, West Virginia. We talked with Mr. A. C. Brown, head of the Huntington office, who is in general charge of the acquisition program at Green Bank, and others, including Mr. Vincent A. Virgallito, who is a member of the legal staff of the Corps.

We discussed the following points:

1. Brown said that acquisition costs, as nearly as they can be estimated to date, are running at about \$204 per acre. The area to be acquired in fee is now about 2700 acres, and so the original cost estimate has increased by about \$30,000, if the \$204 figure remains reasonably firm. It is still too early to form any opinion about the ultimate cost.

2. The representatives of the Corps of Engineers are having difficulty in getting into agreement with some of the property owners; notably, Arbogast, Brown, Moro Beard, and Clyde Hevener. The difficulty in the last case is occasioned, in part at least, by the death of Mr. Hevener and the delays necessarily resulting from the settlement of his estate. With respect to the Arbogast property, the original proposal had been to allow Mrs. Arbogast, who is over 90, to retain a life estate in the house and a small amount of adjacent land. However, she is now taking the position that a life estate must also be reserved for her son, who is in his 70's. The Corp of Engineers is unwilling to agree to this. NSF and AUI take the same position. Mr. and Mrs. Brown are taking the position that in their negotiations with Currence, it was agreed that they might retain a life estate in their house and adjacent land, and that the change in plans for the site, which makes this impractical, is a breach of faith. Mrs. Brown has written indignantly to the NSF. Everyone is agreed that the Browns can be allowed to occupy their house for at least two years without interfering with our plans. However, the Corps does not recommend any delay in acquiring title to the entire property. Moro Beard apparently is unwilling to agree to anything. We all concluded that the Corps of Engineers should proceed by way of condemnation in these four cases, and then work out agreements with the owners for harvesting of crops, disposal of stock, etc., on terms which will minimize hardship. The procedure is to prepare a notice of taking, which must be signed on behalf of the National Science Foundation. This notice is then attached to a petition which is filed by the Department of Justice in the United States District Court, together with a sum equal to the appraised value of the property. As soon as the petition has been filed and the deposit made, title to the property vests in the Government of the United States, and we will be free to occupy. In Mr. Brown's opinion, proceeding by way of con-

demnation in a few cases will have a favorable effect on the negotiations with other owners. He expressed the opinion that the necessary paper work could be completed by the middle of July and certainly before the middle of August, which in the case of the Brown's place, is the deadline from our point of view. Bowman wishes to solicit bids for road building, and to let a contract not later than August 15, 1957.

3. We discussed the restrictive covenant program in some detail. Mr. Brown is strongly of the opinion that we should not abandon this program and rely solely on the West Virginia statute. Mr. Virgallito expressed doubt about the constitutionality of the statute. I told him we shared these doubts but thought a test of constitutionality unlikely. He has re-drafted the covenant, and I attach a copy. I discussed with him the question whether such a covenant would run with the land. He is of the opinion that it would. The cost of the covenant program will be somewhat less than the estimate made by the Corps of Engineers. We checked over the figures in the proposal made by the Corps, and Mr. Brown pointed out that the estimate of \$600 per transaction could be reduced to \$500 by eliminating the cost of appraisal, which obviously is not necessary in the case of the covenants. It may also be that some of the other items of cost will be lower than originally estimated. Brown understands our wish to economize, and will proceed slowly.

Callender and I succeeded in impressing on Brown that there is some urgency in regard to the parcels referred to above, and I think that he will do his best to help us.

CFD:VN

June 26, 1957

MEMO TO: Richard M. Emberson

FROM: Charles F. Dunbar

SUBJECT: Radio Astronomy Project -- Conference with Forest Service

On the morning of May 24, 1957, Frank Callender and I called at the office of the United States Forest Service in Elkins, West Virginia. We talked with Mr. E. M. Olliver, Forest Supervisor of the Monongahela National Forest, and Mr. F. H. Sipe, Assistant Forest Supervisor. From the conversation and the appearance of the two men, Frank and I came to the conclusion that Mr. Olliver knows about the trees and Mr. Sipe about the paper.

We discussed the following points:

1. The Forest Service is interested in the provisions of the restrictive covenant we hope to obtain from local property owners. The reason is that the Forest Service makes long-term (sometimes as long as 10 years) sales of stumpage in portions of its property, and the activities of their purchasers should be restricted in the same way that we are restricting activities of other people in the locality. Frank promised to supply copies of the covenant, when the final form is settled.

2. At the request of the Corps of Engineers, the Forest Service is cruising the wooded area for purchasing of Green Bank and estimating the volume and value of the standing timber. The cost of this service was not discussed, but no doubt we will have to pay for it under the contract. We were interested to learn that timber cruises sometimes involve a tree-by-tree count of the standing timber, which of course is a very lengthy process. In this case, the count and measurements are based on a 10% sample.

3. We showed the Forest Service the map prepared by the Corps of Engineers indicating prospective acquisition of land, the land over which we hope to extend restrictive covenants, and the national forest land in the locality. In the course of the discussion, we suggested the possibility of transferring to the Forest Service title to the wooded area on the west of the site, with the understanding that the right to use it for observatory purposes would be reserved. Such a transfer would have many advantages from our point of view. Among others, it would make it possible to straighten out the western boundary of the site.

4. We discussed with the Forest Service the two islands of privately owned property lying in the national forest to which the road we want to block off leads. The suggestion that we acquire title and then transfer it to the Forest Service was gratefully received. Neither Olliver nor Sipe knew anything about the history or the occupancy of this property, but thought there was access to one of the pieces through a small town to the west of the river.

5. We brought up the problem raised for us by occupying a large amount of cleared land of which only a comparatively small portion will actually be used by the observatory. The Forest Service suggested the possibility of what is called an operating agreement under which it would take custody of the unused land and let it for grazing purposes. It seems that the Forest Service issues permits to private individuals to graze cattle in the forest itself. These permits are a great nuisance, and the Forest Service would prefer to abandon the practice if it could do so without serious loss of good will. If we could let them use the unoccupied land, the Forest Service would supply lime and fertilizer, maintain the fences, and let it for grazing purposes. This would enable it to revoke the grazing permits covering the forest itself, and the small grazing fees it charges could be used, so far as legally possible, to maintain the property. Callender and I indicated readiness to pay a small charge to get rid of the burden of keeping the land usable. The Forest Service understands that the land would have to remain available for the observatory if and when needed. This arrangement, if it can be worked out, has many advantages from our point of view. It gets both NSF and AUI out of the real estate business. We would not have to work out grazing leases with a number of different individuals, but the land not used for the observatory will serve some useful purpose, which is important as a matter of public relations. Furthermore, it seems probable that 25% of the grazing fees would revert to the county and town for schools and roads, just as 25% of the revenue from sales of stumpage does. The same advantage would be available in the case of sales of stumpage on any wooded land transferred to the Forest Service.

6. Olliver and Sipe asked about the buildings on the property. We said we were going to use some and demolish others. They said they were looking for two houses for two men stationed at Bartow and wondered whether some arrangement could be worked out for them to use two of the houses we did not want. We expressed the opinion that such an arrangement might be possible, particularly if the Forest Service employees in question were charged with responsibility for the land used by the Forest Service, in the manner described above.

On the whole, Callender and I were very well satisfied with the visit. We discussed the general plans for the project, and Messrs. Olliver and Sipe seemed interested. We promised to keep them advised of developments and particularly of progress in the land acquisition program.

CFD:VN

EASEMENT DEED
NATIONAL SCIENCE FOUNDATION
RADIO ASTRONOMY OBSERVATORY PROJECT

Tract No. _____

This deed made this _____ day of _____, 19____,
by and between _____, part ____ of the
first part and the UNITED STATES OF AMERICA, party of the second part,

WITNESSETH:

WHEREAS, a major Radio Astronomy Facility will be constructed and operated in the vicinity of Greenbank, Pocahontas County, West Virginia; and

WHEREAS, the part ____ of the first part _____ owner (s) of the premises hereinafter described, designated by the Government as Tract No. _____; and

WHEREAS, the operation of said Radio Astronomy Facility can be seriously impaired by emanations from unshielded electrical equipment operating in the vicinity of the reception equipment of said Radio Astronomy Facility; and

WHEREAS, the part ____ of the first part _____ willing to restrict the use of _____ property so as not to interfere with the operation of said Radio Astronomy Facility;

NOW THEREFORE, the part ____ of the first part for and in consideration of the sum of _____ (\$ _____) and other valuable considerations, to _____ paid by the party of the second part, the receipt whereof is hereby acknowledged, do ____ hereby GIVE, GRANT, BARGAIN, SELL AND CONVEY unto the party of the second part, the United States of America, and its assigns forever the perpetual and assignable right, power, privilege and easement to enter upon and to restrict the use of the following described land in the manner and for the purposes hereinafter described:

(a) That the United States of America, acting by or through its duly authorized representatives or agents, shall have the right, power and privilege, at any time, to enter upon the above-described land for the purpose of conducting tests upon any electrical equipment located or operated upon said premises to determine the extent, if any, of interference caused by said electrical equipment, and to make such corrections as in the opinion of said representatives or agents may be required or necessary to eliminate such interference; it being understood that said corrections, if any, shall be without cost or expense to the part ____ of the first part and shall be accomplished in such a manner as to cause minimum inconvenience to said part ____ of the first part. It is further understood that the right to make such corrections is not in derogation of any of the other rights granted by this easement.

(b) That the part ___ of the first part will not operate or cause to be operated on said land any electrical equipment, including but not limited to the equipment listed on Exhibit A attached hereto and made part hereof, which in any manner whatsoever causes or might cause interference with reception by said Radio Astronomy Facility of radio waves emanating from any non-terrestrial source.

RESERVING, however, to the part ___ of the first part and _____ heirs and assigns all right, title, interest and privileges as may be exercised and enjoyed without interference or abridgment of the easement and rights herein granted.

The part ___ of the first part for _____ and _____ heirs and assigns do ___ hereby covenant and agree with the United States of America and its assigns that the easement and rights herein granted are and shall be construed to be covenants running with the land and shall be binding upon all persons claiming title to the aforesaid land by, from, through or under said part ___ of the first part.

WITNESS the following signature ___ the day and year first above written.

STATE OF WEST VIRGINIA
COUNTY OF POCAHONTAS, to wit:

I, _____, a Notary Public in and for the County and State aforesaid, do certify that

whose name (s) _____ signed to the writing above bearing date on the _____ day of _____, 19____, _____ this day acknowledged the same before me in my said County.

Given under my hand this _____ day of _____, 19____.

Notary Public

My Commission expires _____.