

ASSOCIATED UNIVERSITIES, INC.

10 Columbus Circle
New York 19, New York

May 13, 1958

MEMO FOR RADIO ASTRONOMY FILE

FROM: Richard M. Emberson

SUBJECT: Notes on a Meeting at the NSF Monday, May 5, 1958

1. Inasmuch as it was impossible for NSF staff members to meet at Green Bank on May 2, and no AUI/NSF meeting had been held April 25, a meeting was held at the NSF offices on Monday, May 5. Those present for all or part of the meeting were: Messrs. Eckhardt, Keller, Luton from the NSF, and Berkner, Callender, Emberson and Miss Bruhn from AUI.
2. The items discussed included the status of the Supplemental request, the possibility of starting some of the work listed in this Supplemental during the coming summer, and the Capital Budget for FY 1960.
3. It was the understanding of Mr. Luton, from advice received from the NSF budget office, and of Dr. Berkner from information gleaned from visits within the Bureau of the Budget, that the Supplemental for NRAO would be sent to Congress on May 16 as a part of the first FY 1959 Supplemental appropriation. This would mean that funds could not possibly be available until after July 1, and in view of the steps needed to be taken before the NSF could amend the AUI contract, AUI might not have the money available until late in July or early August. Dr. Berkner reported that there seemed to be support for the NRAO work in all the offices he had visited, and that from discussions with Mr. Alger in the BOB, he had developed a possible procedure to permit an earlier start on some of the work at Green Bank.
 - 3.1 AUI now has in its contract a considerable sum of money, but not enough to complete the 140-foot telescope.
 - 3.2 Assuming favorable action by the House Committee ^{for} the House, the Senate, or Congress (?), the BOB would authorize to the NSF to write to AUI, essentially guaranteeing the money in the Supplemental request, and authorizing AUI to proceed with some items in the Supplemental budget, for example, with the concrete foundation for the 140-foot telescope, the Works Area Building, the Dormitory and Cafeteria, and the Central Laboratory. Mr. Luton said

that this was a rather unusual procedure within the Government, but that he would be glad to explore it further within the NSF and the BOB.

- 3.3 At this point Dr. Berkner submitted a draft of a letter which AUI might like to receive from the NSF. This draft is appended hereto as Attachment "A".
4. Dr. Berkner reported that he had discussed the 140-foot telescope with representatives of the Advanced Research Projects Agency (ARPA), which is essentially carrying the full burden of the U.S. Satellite Program until the new space agency is established. He reported that ARPA has placed orders for prompt delivery of 85-foot telescopes and are negotiating for the use of the British 250-foot telescope for tracking purposes, and when the 140-foot telescope is in operation it would be desired as a back-up instrument. Accordingly, ARPA representatives are interested, ready, and willing to testify in behalf of the 140-foot telescope and the NRAO Supplemental appropriation. Dr. Emberson pointed out that the capabilities desired by ARPA would be built into the 140-foot telescope, and that it could be called on in a real emergency. He cautioned against giving ARPA entree to Green Bank inasmuch as it would appear that other telescopes might be available for the military and satellite programs (the Navy installation; the Lincoln Laboratory 120-140'; Air Force Cambridge Research Center's 300', etc.). We might, unnecessarily, be selling a part of the NRAO "privacy". Mr. Luton commented that the NSF had maintained that the NRAO was to be for astronomical research, and any deviation would be a basic change in policy which he would want to take up with Dr. Waterman. In addition, Mr. Luton pointed out that Congressman Bow, whose district includes Canton, Ohio, was interested in the early availability of money for the 140-foot telescope program and through his efforts there might be a better guarantee of early affirmative action than from supporting testimony from ARPA representatives. Dr. Berkner indicated that he would be happy to drop the ARPA aspects entirely if he could have a guarantee that the NRAO Supplemental would receive prompt affirmative action in the absence of ARPA support.
5. Assuming that prompt action would be taken on the Supplemental request, and that procedures could be devised whereby AUI would be authorized to proceed, using presently available monies, the following schedule would apply: (Attachment "B" is a summary of schedules and other information concerning the work that might be initiated early in the summer of 1958).
 - 5.1 Works Area: IBA will complete plans and specifications for bids to be taken for three phases of work; the central section of approximately 3600 sq. ft. will automatically provide space for the central electric power distribution station and the stand-by diesel generator.

Phase II: The Southern section will provide 6000 sq. ft.

Phase III: The Northern section will provide approximately 4000 sq. ft. with a clear overhead of 16' or more.

Phases II and III: Will be on 30 or 45 day option. AUI plans to go ahead on Phase I even in the absence of any action on the entire Supplemental, because space is so desperately needed at Green Bank, and something must be provided before the next winter season.

- 5.2 Residence Hall and Cafeteria: IBA will complete plans and specifications for bidding by June 15, 1958. Plans and specifications for Phase II (2 apartments and 8 rooms) will also be included. In the event bids should come in far below the estimates in the Supplemental request, it might be possible for all the work to be done at one time.
 - 5.3 Laboratory: Plans and specifications will be prepared on the central section only, and we should be ready to invite bids by about July 15.
 - 5.4 140-foot Foundation: By May 7 IBA will submit to AUI complete details for finishing the 140-foot foundation, (interior, control room, etc. and exterior, grading, sidewalks, drainage fields, etc.). AUI will forward this to Bliss with the request that prior to June 15 we be given a lump-sum figure for the basic foundation work, plus a figure for finishing the foundation. Assuming that the NSF may find it possible to issue an authorizing letter, work on the foundation could start at once. In the event the Bliss estimate on finishing the foundation is compatible with the A-E estimate, this work would be negotiated as an extra, rather than putting it out on bids and possibly confusing the work situation at Green Bank by the introduction of one or more construction companies during the erection period of the 140-foot telescope.
 - 5.5 140-foot Materials: By June 15 Bliss will submit to AUI a list of critical components and materials that should be ordered immediately to permit fabrication during the winter of 1958-59, and erection before the end of 1959.
6. The Capital Budget for FY 1960 will include the foregoing items, with the amounts shown in some instances, subject to refinement pending the completion of studies and discussions now underway. The table discussed at the meeting is replaced by a budget subsequently discussed with the AUI Trustees' Executive Committee on May 16.
 7. Dr. Berkner advised that further study of the easement program at Green Bank had led to the conclusion that it probably would not be much protection in addition to that already offered by the State Zoning Act. Accordingly, it was his proposal that AUI use any funds remaining for the straight-out acquisition of land laying

to the East and North of the present site. He also proposed that a reserve fund of approximately \$40,000. be kept on hand for the acquisition of any land, the development of which would threaten the observing activities of the Observatory.

8. It was confirmed that the NSF staff will meet at Green Bank on Monday, June 16.

Copies to:
All AUI staff members
Mr. Luton, NSF (5 copies)

Attachment "A" to
May 5 Minutes

Dear Sirs:

As a result of recent Congressional action, we intend to increase the funds obligated under Contract No. NSF-C50 by _____ making the total contract obligation _____. We will issue a formal contract amendment as soon as we receive the necessary authorization from the Bureau of the Budget.

Under the circumstances, we consider it appropriate and desirable that Associated Universities, Inc. begin at once to make the contractual arrangements necessary to carry out the construction program covered by the FY 1957 and FY 1958 budget and the Supplemental Estimates for FY 1958. It is understood that AUI will make no commitments in excess of the amount presently obligated under Contract No. NSF-C50 until the contract has been amended as above indicated.

Summary of Schedules & Other Information
Concerning Construction at the NRAO Propos
for Initiation During the Summer of 1958

<u>Item Description</u>	<u>Estimated Cost** (\$1000)</u>	<u>Budgeted Date and Amount</u>	<u>Status of Funds</u>
Works Area			
I Central Section	162	Supplemental \$130,000 FY 1960	* available
II South Section			# pending
III North Section			# pending
Dormitory & Cafeteria			
II (2 apts, 8 rooms)	585	Supplemental \$423,000 (II) FY 1960	# pending ⊗ pending
Laboratory			
Central Section	466	Supplemental \$450,000 FY 1960 FY 1960	# pending
Wing I	257		
Wing II	310		
140-foot Foundation			
Shell	400	FY 1956	* available
Finish	100	Supplemental	# pending

Notes:

- * propose to build in summer of 1958, using part of money remaining from
- # if Congress acts favorably on Supplemental, propose to start using available
- ⊗ would proceed only if bids came in so low that supplemental item would
- ** March 21, 1958 revised estimates used, except for earlier estimate on

National Radio Astronomy Observatory

Capital and Development Budget

FY 1957 - 1960

	Requested and Appropriated Through FY 1959	Requested FY 1960	Total Require- ments through FY 1960
A. <u>Site Development and Protection</u>			
1. Site Acquisition	\$ 650,000	\$ -0-	\$ 650,000
2. Site Protection	-0-	250,000	250,000
3. On-Site Secondary Road System	133,000	50,000	183,000
4. Water Supply and Sewer System	108,000	-0-	108,000
5. Electric Power System and Communications	<u>285,000</u>	<u>750,000</u>	<u>1,035,000</u>
Sub-Total	<u>\$1,176,000</u>	<u>\$1,050,000</u>	<u>\$ 2,226,000</u>
B. <u>Buildings and Housing</u>			
1. Control Buildings	\$ 37,000	\$ -0-	\$ 37,000
2. Maintenance Building	162,000	50,000	212,000
3. Laboratory	461,000	550,000	1,011,000
4. Renovation of On-Site Buildings	68,000	-0-	68,000
5. Residence Hall and Cafeteria	<u>462,000</u>	<u>100,000</u>	<u>562,000</u>
Sub-Total	<u>\$1,190,000</u>	<u>\$ 700,000</u>	<u>\$ 1,890,000</u>
C. <u>Radio Telescopes</u>			
1. 140-foot Radio Telescope	\$5,740,000	\$ -0-	\$ 5,740,000
2. 85-foot Radio Telescope	310,000	-0-	310,000
3. A fixed zenith antenna with a diameter of 200-300 ft.	-0-	100,000	100,000
4. RF Components & Electronic Equip.	<u>595,000</u>	<u>500,000</u>	<u>1,095,000</u>
Sub-Total	<u>\$6,645,000</u>	<u>\$ 600,000</u>	<u>\$ 7,245,000</u>
D. <u>Other Observatory Equipment</u>			
1. Electronic Test & Repair Equip.	\$ 100,000	\$ 250,000	\$ 350,000
2. Maintenance, Shop, & Repair Equip.	78,000	-0-	78,000
3. Office Furniture & Equipment	40,000	15,000	55,000
4. Living Quarters Furniture & Equip.	<u>77,000</u>	<u>15,000</u>	<u>92,000</u>
Sub-Total	<u>\$ 295,000</u>	<u>\$ 280,000</u>	<u>\$ 575,000</u>
TOTAL	<u>\$9,306,000</u>	<u>\$2,630,000</u>	<u>\$11,936,000</u>