

AGENDA

NRAO Staff Meeting

March 27, 1958

1. Personnel
 - 1.1 Dr. Heeschen at Jodrell Bank
 - 1.2 Proposals to Mr. Campbell and Mr. Alberts
 - 1.3 Summer travel plans
 - 1.4 Schedules for review
 - 1.5 Recruitment: MLW, draftsman, machinist, etc.
2. Budgets and Plans
 - 2.1 Status of the supplemental request
 - 2.2 Revised "financial plan"
 - 2.3 Operating budget for FY 1959
3. Status Reports on Work in Progress
 - 3.1 Site acquisition - easements, local building zone, FCC, CAA
 - 3.2 Tax relief
 - 3.3 AIL Receiver
 - 3.4 Ewen-Knight Receiver
 - 3.5 Blaw-Knox 85-foot telescope
 - 3.6 Ivy Construction - foundation and control building
 - 3.7 Bayliss & Ramey - electric power distribution
4. Status Reports on Other Activities
 - 4.1 Bliss contract negotiations
 - 4.1.1 Franklin Institute - polar bearing
 - 4.1.2 Drive and control
 - 4.2 Precision Indicators for 85-foot telescope
 - 4.3 12-foot precision paraboloid
 - 4.4 House renovation program
 - 4.5 Meeting with Mr. Wolaver
5. Technical Programs
 - 5.1 Receiver development
 - 5.2 RF problems
 - 5.3 Very Large Antenna
6. Other Reports
 - 6.1 Site management
 - 6.2 Activity - for NSF
7. Miscellaneous
8. Schedule of future meetings
 - 8.1 April 22 at Harvard College Observatory
 - 8.2 May 1 and 2 vs. April 24 and 25 at Green Bank
 - 8.3 May 29 and 30th; June 26 and 27th

NATIONAL RADIO ASTRONOMY OBSERVATORY

file

Staff Meeting

March 27, 1958

Copy of agenda attached.

Present: Lloyd V. Berkner
Lewis R. Burchill
Frank J. Callender
Frank D. Drake
Charles F. Dunbar
Richard M. Emberson
John W. Findlay

1. Personnel: Berkner asked Callender to prepare personnel classifications for approval by the Board of Trustees at the April meeting. Callender's draft will be discussed at Brookhaven on the morning of April 17.

1.1 Dr. Heeschen at Jodrell Bank: Findlay said he had heard from Heeschen since the latter's arrival in England. He and Heeschen have decided not to ship any more equipment for 21 centimeter work. If the British equipment is not effective, Heeschen will cut his visit short. Berkner said that from his own observation there was a serious lack of electronic equipment at Manchester because of the shortage of funds. In his opinion, the NRAO budget for electronic equipment is too small.

1.2 Proposals to Messrs. Campbell and Alberts: Emberson said John A. Campbell, formerly at the Harvard College Observatory and now with Ewen-Knight Corporation, is prepared to consider an offer of employment at Green Bank. He should be classed as a Technical Specialist. Findlay wishes to build the next receiver with the Observatory's own forces. This plan will save money and also provide valuable training for the technicians. It is essential that there be at least one experienced man, and Campbell seems like a good candidate.

Emberson said that Karelitz had interviewed Russell Alberts when he was at Berkeley. Alberts has been employed by the Kaiser Aluminum Company as a mechanical engineer. Emberson is looking for an experienced mechanical engineer to review the mechanical parts of the 140' Telescope and to act as an understudy to Karelitz. His relationship to the latter will be analogous to that of Carroll's relationship to Ashton. The mechanical engineer should be stationed at Green Bank. Karelitz considers Alberts a good candidate, and Emberson proposes to invite Alberts East for interviews. If these are satisfactory, he will offer him a two year appointment.

1.3 Summer Personnel Plans: The question of what members of the staff should go to Paris and/or Moscow was discussed extensively. Findlay would prefer to stay at Green Bank and assist in the installation and tuning up of the 85' Telescope. He believes the early troubles are likely to be electronic, and so he should be available at all times. He would like to plan a European trip in October or November, so that he can bring himself up to date on electronic developments in France, Holland, Germany, and England.

Berkner and Emberson agreed that Findlay should remain in the country.

Emberson has had a letter from Armain Deutsch at Cal-Tech asking whether AUI would be interested in preparing an exhibit of some sort for the International

Astronomical Union meeting at Moscow. Berkner said this request should go to the Foundation and not to AUI, although of course AUI should cooperate. He suggested an exhibit containing the topographical model of the site with appropriate descriptive text and pictures, models of the 85' and 140' telescopes, and an outline of the essential features of the research program. AUI should be prepared to contribute staff time, but not any portion of the direct cost.

Callender said that NSF spent about \$25,000 on an exhibit at Stockholm in 1956. He recommended that if an exhibit is to be prepared, consideration be given to employing Design and Production, Inc., of Alexandria, Virginia, of which Leonard Rennie is the President. He was impressed with the work done for the Stockholm exhibit.

Berkner said the whole matter should be discussed with NSF on the 1st of April. The possibility of negotiating a contract for preparation of the exhibit and then assigning it to the Foundation was discussed. Emberson said Blaw-Knox could make a model of the 85' Telescope for about \$1,500.

Emberson said both Drake and Heeschen have been invited to give papers at the Paris meeting, and at least one of them should go on to Moscow. Berkner said that if there is to be an exhibit, it should be manned by two members of the staff so that somebody can be on duty at all critical times.

1.5 Recruitment: Emberson said there were a number of problems with respect to the staff at Green Bank. Westman has resigned. Grote Reber will be working at Green Bank during the summer and will need the services of a draftsman. There should be a mechanical engineer stationed at Green Bank during the period of erection of the telescopes. As the scientific staff increases, it will be necessary to find someone to do drawings, etc. for papers. There is also the question of what provision should be made for inspection of the work at the site under the contract with E. W. Bliss Company.

Carroll and Callender agree that full time inspection at the Canton plant is not necessary. Bliss will establish inspection standards in advance which must be satisfactory to AUI. We will have access to Bliss's test records and will be able to make independent spot checks, all with a view to determining that the inspection standards have been met. On the other hand, a full-time inspector at Green Bank for all types of construction may prove necessary, and Strode, presently employed by Bowman, seems like a good candidate.

After discussion, Berkner made the following decisions:

- 1) No effort will be made to replace Westman.
- 2) Increased responsibility for site management will be placed on Callender.
- 3) General engineering responsibility in connection with construction will be placed on Carroll.
- 4) The new mechanical engineer will be stationed at Green Bank and will work with Carroll.
- 5) An inspector will be recruited for Green Bank. If possible, he should be a civil engineer.
- 6) An adequate draftsman will be recruited.

7) A mechanical technician will be recruited.

Berkner instructed Callender and Emberson to revise the memorandum defining staff responsibilities.

2. Budgets and Plans

2.1 Status of the Supplemental Request: Emberson said the Foundation's request for a supplemental appropriation for the current fiscal year has been submitted to the Bureau of the Budget. NSF probably will want Berkner to attend a meeting at the Bureau of the Budget in the near future.

2.2 Revised Financial Plan: The summary sheet covering the supplemental request can serve as a basis for a revised financial plan.

2.3 Operating Budget for FY 1959: Emberson said Callender had revised the operating budget for FY 1959 (\$400,000) in collaboration with Burchill. He is also preparing a budget for FY 1960 (\$450,000). Both revised budgets will be submitted to NSF.

Berkner emphasized the importance of utilizing the site to the greatest possible extent, and doing so in such a way as to bring in some revenue which can be added to the reserve for contingencies. He would like to see contracts for use of the site made by NSF but administered by AUI.

3. Status Reports on Work in Progress

3.1 Site Acquisition -- Easements, Local Building Zone, FCC, CAA: Callender reported that the whole site was now either actually available or would be in the near future. The Corps of Engineers, however, is not going ahead with the acquisition of easements. A form of agreement has been worked out, but not a table of rates. Both the Corps of Engineers and Currence doubt the advisability of pushing forward with the acquisition of easements. They recommend waiting until there is some actual interference, and then handling each case as it comes up. The rates of payment are bound to become controversial, with resulting poor effect on public relations. Furthermore, there is always the West Virginia statute to rely on, and it seems highly unlikely that a troublemaker will be deterred by the existence of an easement.

Callender said there will probably be a balance of between \$50,000 and \$75,000 after acquisition of the site had been completed.

Berkner said there were a number of problems. The Observatory may want to own the property to the east of Route 28 in the comparatively near future, and it would be unfortunate to be blocked by private development. The land across Route 28 will be close to the telescopes, and private development involves some risk. The land could certainly be used in the future.

Callender urged that the easement program be dropped and that any balance of funds be used for the acquisition of full title to additional land.

Berkner directed that the cost of acquiring additional land be studied, so that a definite plan can be presented to NSF on May 1. The Corps of Engineers should be consulted.

With respect to FCC, it was agreed that Findlay will get in touch with Porter and have a report available by May 1. He will also get information on the prospect of action by CAA.

1.4 Schedules for Review: Callender said he had prepared a chart of personnel classifications closely following that of Brookhaven, although with some differences in the scale of wages and salaries. He distributed copies. The telescope operators coincide with pile operators at Brookhaven.

Callender raised the question of the need for a watchman. Berkner is reluctant to assume the cost of a watchman on a 24-hour basis, and it was decided to take no final decision until there had been an opportunity for consideration.

6.1 Site Management: Callender has discussed the problems of site management with the Soil Conservation Service, the Forest Service, and the County Agricultural Agent. The Soil Conservation Service will prepare a soil map and the Forest Service is prepared to undertake tree planting wherever it seems appropriate. All three will survey the site and prepare alternative plans for its utilization.

For the current year, Callender suggested the desirability of leasing the land back to the former owners at a nominal rent for haying and grazing, with an agreement to maintain fences, etc. Berkner fears establishing a pattern, with resulting trouble when any departure was made from it. Burchill pointed out the need for setting rents at the going rate to satisfy the Bureau of the Budget, the advantage of keeping the land productive, as against the disadvantage of the distraction involved in undertaking an active problem of site utilization.

Callender said that the services of at least four men would be needed, if AUI undertook to use the site itself for grazing purposes.

Berkner said a definite plan should be worked out as speedily as possible and that a site manager should be on the payroll by the fall of 1958.

3.2 Tax Relief: Callender has talked with Currence about AUI's request for exemption from the Sales and Use Tax. Currence ascertained that the Attorney General expected to get a letter prepared in the near future.

3.3 A.I.L. Receiver: Findlay said the Airborne Instruments Laboratory's receiver should be completed by May 24, 1958. A change order has been issued adding two recorders.

3.4 Ewen-Knight Receiver: Drake said that Ewen-Knight has a prototype receiver under construction, and tests are going forward. In his opinion, the receiver should be ready for delivery by August 15, 1958.

3.5 Blaw-Knox 85' Telescope: Callender said a change order had been negotiated with Blaw-Knox covering the change in design necessary to make it possible to mount the telescope on tracks. Blaw-Knox is talking about beginning shipment May 15, 1958. About 25,000 pounds of lead are still needed.

3.6 Ivy Construction Corporation -- Control Building and Foundation: Callender said that Ivy had begun work on the control building and the foundation. It has been necessary to redesign the foundation to make provision for putting the telescope on rails, and in addition Ivy claims that bad weather has caused about 18 days' delay.

Findlay emphasized the importance of having a definite schedule indicating when the control building and foundation will be completed. Carroll said the foundation should unquestionably be ready by May 1, 1958.

Berkner directed that a schedule be completed as soon as possible showing the completion dates for all component parts.

Emberson raised the question of the Bliss schedule. If Bliss cannot begin work until August, there will be at least a six months' delay in completion of the instrument. Berkner directed that alternative schedules be prepared for the Bureau of the Budget.

3.7 Bayliss & Ramey, Inc. - Electrical Power Distribution: Callender said six bids had been received for the electrical power distribution system on the site and a contract has been awarded to Bayliss & Ramey, who are ready to start work as soon as the weather permits. Monongahela Power Company will be able to meet the observatory's requirements in the foreseeable future.

4. Bliss Negotiations: Emberson said that Bliss will probably render a bill in the near future for engineering work. It will also be necessary to give Bliss an extension of time and additional funds for the engineering. As a condition precedent to paying any bill, Burchill considers that there should be some record of what work has been done.

Carroll has been following Bliss's work to date. The specifications are almost complete, and Bliss is preparing a bill of materials. Both Ashton and Carroll are in regular contact with Bliss.

Berkner wishes complete schedules, if possible by May 1, 1958, covering both detailed engineering and construction under the agreement with Bliss.

4.1.1 Franklin Institute - Polar Bearing : Carroll said the Franklin Institute had now come to a decision with respect to the polar bearing and is running calculations preliminary to a design.

4.1.2 Drive & Control: Findlay now has a system designed for a completely servo operated drive and control system for the big telescope. This will produce a speed of 50° per minute. The drive probably will be hydraulic, but electrical is still a possibility. No cost estimate has yet been made. Bliss is preparing complete specifications based on Findlay's performance specifications, and bids will be solicited as soon as they are completed. The system will permit tracking the moon, the sun and the planets, and can be modified to permit tracking of satellites.

4.2 Precision Indicators for 85' Telescope: Findlay reported that bids for precision indicators for the 85' Telescope have been solicited from six different firms. Time for submission of bids was extended for one week from March 24, 1958. He does not plan to place an order until it is clear that the necessary funds will be available. The possibility of splitting the order was discussed.

4.3 12' Precision Paraboloid: Findlay said NSF had approved purchase in England of the 12' aluminum paraboloid. He is now looking for a suitable mount.

4.4 House Renovation Program: Findlay does not think that the house renovation program will provide enough laboratory space. He would like to acquire a prefabricated building with a floor area of about 1,000 square feet. Berkner suggested that additional structures of this type could be put up on the road behind the site for the Works Area.

Callender said work was going forward on three houses, and he is planning the renovation of three more. He has tentatively agreed to make one house available to Bliss at a suitable rent. Costs are running about 30 to 40 per cent less than during the earlier renovations, thanks to the efficiency of the new foreman. Callender is working out a rent schedule and will check General Service Administration prices on fuel oil and tanks.

4.5 Meeting with Mr. Wolaver: The suggestion received from an employee of Truscon Steel Corporation for the construction of a motel and restaurant on the east side of Route 28 opposite the entrance road was discussed. It was agreed that it would be undesirable to have a commercial establishment built so near the observatory site.

5. Technical Problems

5.1 Receiver Developments: Berkner proposed that NSF be asked to make a grant of \$25,000 to Henry Jasik, Westbury, Long Island, for paraboloid feed development. He proposes that AUI provide technical supervision for NSF and prepare a monthly report. Emberson is to call Dr. Menzel and determine his support for a grant of this kind.

5.2 R-F Problems: Findlay said he was designing a horn to use for the calibration of equipment. It will be set up on the site. It will be about 40' long with an opening 12 to 14 feet in diameter. He expects to do the work himself, with assistance from technicians.

5.3 Very Large Antenna: Findlay said that all the work on the very large antenna which can reasonably be expected to be done for nothing has now been completed, and the making of formal study contracts must be considered. He has talked with Air Force Cambridge Research Center, Henry Jasik, Lilly (Yale University), and Blaw-Knox.

Emberson said Haddock's ad hoc committee has not had a meeting yet, but one is planned for the latter part of April. The committee may have some ideas on specifications for the instrument. After the meeting a course of action can be worked out.

6. Other Reports

6.2 Activity - for NSF: Callender said he had not found time to prepare a regular monthly report for the Foundation, but he will definitely do so in the near future.

8. Schedule of Future Meetings

8.1 April 22 at Harvard College Observatory: Drake and Findlay will attend the meeting on April 22 at the Harvard College Observatory. Emberson will also go, if possible.

8.2 May 1 and 2 versus April 24 and 25 at Green Bank: NSF has not decided whether it will be possible to have representatives at Green Bank on May 1 and 2. It was decided to go ahead with the staff meeting on May 1, regardless of NSF's decision.

8.3 May 29 and 30 - June 26 and 27: It was decided to have another meeting at Green Bank on June 26 and 27.