

NRAO - Scientific Personnel  
and supporting technical staff

1. This note is intended as an addition to Heesch's note of November 12, 1957 to L.V. Berkner to bring that estimate in line with two new factors:
  - (a) That there will be a very large telescope ready for operation by the end of 1961.
  - (b) That the full development of the Observatory scientific staff, for which Phase III of the Laboratory is intended, should be estimated now in order that the adequacy of the building plans can be checked.
2. These two factors lead to personnel demands roughly as follows:-

(a) The Very Large Telescope (VLT)

This will provide research programs for about 6 senior radio astronomers. These will probably divide as 2 staff and 4 visiting radio astronomers.

Two additional electronics engineers will be needed on the staff. This need arises from the fact that the VLT will sacrifice feed simplicity to save construction costs. Very complex electrical and mechanical problems will need these men, and an additional mechanical/structural engineer on the staff. Maintenance of the structure will require 3 men, capable of working up to 500 feet above ground level. Eight (8) electronic technicians and one secretary will complete the staff for this project.

Summary VLT -

2 Staff radio astronomers  
4 Visiting radio astronomers  
2 electronic engineers  
1 Mechanical/structural engineer  
8 Technicians  
3 Maintenance Men  
1 Secretary

21 Total

(b) Phase III of Laboratory

There is an evident change of Observatory scientific policy which corresponds to the growth of the Laboratory from Phase II to Phase III. Phase II shows the Observatory as a high-grade research institute in radio astronomy and in the electronic sciences which directly assist and complement the radio astronomy. However, Phase III shows the growth of the Observatory into the fields of fundamental research into new techniques and new principles which may lead in turn to new researches in radio astronomy. In Phase III the Observatory is equipped to do high level research work into solid

state physics and low temperature physics. By this phase, the electronic research and development capability has been built up to include separate research projects on antennas, very large transmitters and the design and use of complex automatic data-handling and processing methods. This overall program is well supported by very adequate machine shops, sheet metal working and welding shops, a vacuum techniques laboratory and a glass blowing shop. Heavy machinery, carpentry and painting facilities are available in the Works Area.

This shift of emphasis in Phase III requires a considerable build-up of physicists as well as electronic engineers. Approximately the staff requirements are as follows:-

Low Temperature Research	2 Physicists
Solid State Research	1 Physicist
	1 Chemist
	1 Engineer
Vacuum Techniques	1 Engineer
Transmitter Development	2 Electronic Engineers
Computers and Data Handling	1 Mathematician
	1 Engineer
Mathematics	1 Mathematician

About 20 technicians of various grades and skills are needed, 3 secretaries, and a computing room staff of five.

39 Total

### 3. Visitors

The numbers of personnel outlined in paragraph 2 (b) will most probably be made up mostly of staff members. It is possible that there will be a few visitors working in these fields, probably about five (5) in all.

### 4. Summary

These conclusions are summarized in the additional table, which follows on from Heesch's table. The date of operation of the VLT is taken as the end of 1961, and the build up of the Observatory to the level envisaged in paragraph 2 (b) should be complete by late 1962.

TABLE

	As of 7/1/60 DSH Table	End 1961 VLT Optg.	End 1962
Director & D/Director	2	2	2
Staff Astronomers	6	8	8
Visiting Astronomers	15	19	19
<b>Total - Astronomical Research</b>	<b>23</b>	<b>29</b>	<b>29</b>
Scientists	0	0	6
Visiting Scientists	0	0	5
<b>Total - Scientific Research</b>	<b>0</b>	<b>0</b>	<b>11</b>
Engineers - Electronic and Mechanical	3	6	11
Technicians and Machinists	8	16	36
Secretaries and Librarian	5	8	12
Computing Staff	0	0	5
<b>Total - Engineering</b>	<b>16</b>	<b>30</b>	<del>57</del> 64
Business Office	6	14	16
Site and Telescope Maintenance	19	24	24
Guides and Lecturers	2	3	3
<b>Total - Staff</b>	<b>27</b>	<b>41</b>	<b>43</b>
<b>Total Staff &amp; Visitors</b>	<b>66</b>	<b>100</b>	<del>142</del> 147

John W. Findlay  
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