

Notes on the 12-m Telescope Meeting  
 March 24, 1981, 1330 EST

J. W. Findlay

1. We shall try to keep short notes of our meetings--this is my effort for the first meeting. I did not try to record all discussion, and may have given my own opinions too much space. So please make corrections when we next meet.
2. Present:
 

H. Hvatum	W. G. Horne (VLA)
J. W. Findlay	G. R. Peery (GB)
M. Balister	J. M. Payne (TU)
3. HH gave his reasons why we should try to improve/replace the 36-foot:
  - (a) We are sure we can make a better reflector structure and surface.
  - (b) The 25-meter may not be in use before 1986. It might be delayed beyond that date.
  - (c) But an improved 36-foot (which we will call a 12-meter telescope) could be a good step toward the 25-meter.
  - (d) Electronics is now instrumented to observe at 1.2 mm (250 GHz) with both the bolometer and a mixer front-end.

Difficulties which can be seen are:

- (a) Difficulties in funding.
  - (b) The opinion which may be held by some that improving the 36-foot will hurt the 25-meter prospects.
4. In a general discussion of what might be done, the following opinion/statements emerged:
    - (a) W. G. Horne - We should improve the 36-foot reflector. We should also study the rest of the telescope, measure the natural frequencies of the structure, work on the drive, improve the read-out, etc.
    - (b) J. M. Payne - Reported on tilt-meter measurements on the elevation axis. The meter was placed on the elevation bearing housing. He found:
      - (i) With the telescope fixed in position the tilt changed by 7 arc seconds over 10 hours. The temperature change was about 3° C.

- (ii) When the telescope was rotated in azimuth, the tilt meter showed a peak-to-peak tilt of as much as 50 arc seconds. Also, although the phase of this tilt remained unchanged, the amplitude did change. He saw no glitches in the tilt.

Payne also noted that the focus/temperature (empirical) equation has a slope discontinuity at about 10° C.

- (c) G. Peery - We should work to improve the drive. We need more torque, more speed and more acceleration. We should improve the pointing, improve the read-out, and re-build the dome door.
- (d) J. W. Findlay - We considered a totally improved telescope as long ago as 1972. It is still an ideal goal to make all the proposed improvements to the telescope. But we must also think of the need for an adequate improvement at a minimum cost in as short a time as possible.

#### 4. A First Plan

It seemed generally agreed:

- (a) We would concentrate our first efforts on how to make the 36-foot into a 12-meter telescope which is "adequate" for work at 1.2 mm.
- (b) We would continue to investigate the 36-foot drive and read-out system. JMP will do this.
- (c) We accept that our first choice for a telescope surface would be cast machined Al plates of the type planned for the 25-meter, but of a focal length of about (0.42x12) m = 5 meters. WGH will start looking at the time scale and costs of such a surface.
- (d) We should informally and carefully explore whether ESSCO might be able to supply a surface of their own design which could meet our needs. JWF and HH will do this.
- (e) We shall design one or more possible reflector structures. The start of this work should wait 2 weeks or so in case our enquiries of ESSCO prove fruitful.

The design should take account of:

- (i) The need to minimize thermal effects.
- (ii) Accommodation of the major electronics packages in the Cassegrain mode.
- (iii) Some prime-focus operation.
- (iv) Possible pre-erection and test of the structure.

When this work starts, I assume WGH will lead it.

5. Conclusion

WGH and JMP will be in Charlottesville within about 2-3 weeks, and there should be further discussion with them.