

Interoffice

National Radio Astronomy Observatory
Charlottesville, Virginia

To: J. Findlay

September 17, 1975

From: W.Y. Wong

Subject: Surface measuring for the 25-meter telescope

In reply to your memo of June 23, 1975, to Barry Turner, we are very much in need of your assistance in developing the measuring technique and equipment for the 25-meter telescope.

As you know the "Payne-Hollis and Findlay surface measurer" is the measuring technique proposed in the 25-meter proposal submitted to NSF. In the proposal it is stated the measuring system will have a $40 \mu\text{m}$ rms error.

The questions presented in your memo do need answers. Those questions are:

- 1) What is the absolute accuracy of the method when used over a distance of 12.5 meters?
- 2) Can the rms error of the method be reduced to give an average rms measurement of less than $40 \mu\text{m}$ over the entire 25-meter surface?
- 3) What means should be adopted to make the method work well on a surface with gaps between panels to maintain this accuracy? The gaps on the 25 meter will be $1.5\text{mm} \pm .5\text{mm}$.
- 4) We would add a fourth question. How many measurements should be made? This would establish the number of radial measurements and the number of repeats of the measurements. This would be expanded to include the question of how the measuring grid could be tied to the panel support points so the output data can be used to control a motor driven wrench adjusting the panels?

John Ralston from the engineering division will continue to work with you in developing the answers to these questions. The engineering division has a small budget, part of which will be made available to you for materials which you might need.

J. Findlay
September 17, 1975

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It is understood you are proceeding as outlined in the last part of the memo and that the test stand has been built and you have started some tests.

I am ready for detailed discussions on the fourth question if you think the time is ripe to incorporate this measuring technique with the present surface-plate design.