

National Radio Astronomy Observatory

Green Bank, West Virginia

To: B. Turner, and Design Group

August 22, 1974

From: S. von Hoerner

Subject: Proposals to manufacture surface plates.

Regarding B. Turner's Memo of August 19, the specifications given need some slight change, and some detailed explanation.

1) The dimension should be 55 x 29 inch, if not tapered.

Maybe we should order plates of average taper:

55 inch = length

32 inch = upper width

26 inch = lower width

2) The single deformations should be:

a) Manufacturing tolerance, $\Delta z_m = z(\text{measured}) - z(\text{paraboloid of design})$;

specify: $\text{rms}(\Delta z_m) \leq 1.4 \text{ mil}$, measured in horizontal position.

b) Gravitational deformation, $\Delta z_g = z(\text{vertical}) - z(\text{horizontal})$;

specify: $\text{rms}(\Delta z_g - \overline{\Delta z_g}) \leq 0.8 \text{ mil}$.

If vertical measurement is impossible or difficult, it can be replaced by horizontal measurement with an additional (equal distributed) load of the same weight as the plate.

c) Thermal deformation, $\Delta z_t = z(\Delta T) - z(0)$;

where ΔT is the temperature difference between skin and lower part of ribs;

specify: $\text{rms}(\Delta z_t) \leq 1.0 \text{ mil}$.