National Radio Astronomy Observatory

Charlottesville, Virginia

April 10, 1981

To: Bill Horne

From: Lee King

Subject: 36' "VLA" Design

In a memo. dated 3/4/81 to Buck Peery about the VLA wind pointing error analysis, I have proposed to scale down the VLA design for a 36' reflector by multiplying a reduction factor. Attached is a summary of the results for this "VLA" design. The only change in geometry is the re-arrangement of the ring beams. The stresses have not yet been calculated but should not be a factor. The weight is approximately equal to that of the present 36' telescope. The surface RMS errors are well within 40 mu.

cc: Buck Peery

SUMMARY OF 36' VLA DESIGN (L K)
(4-10-81)

A REDUCED VLA DESIGN HAS BEEN ANALYZED.
THE GEOMETRY IS IDENTICAL TO THAT OF VLA
EXCEPT ONLY TWO RING BEAMS USED IN THIS
DESIGN. THE RESULTS ARE AS FOLLOWS:

[I] DIAMETER = 36' = 432"
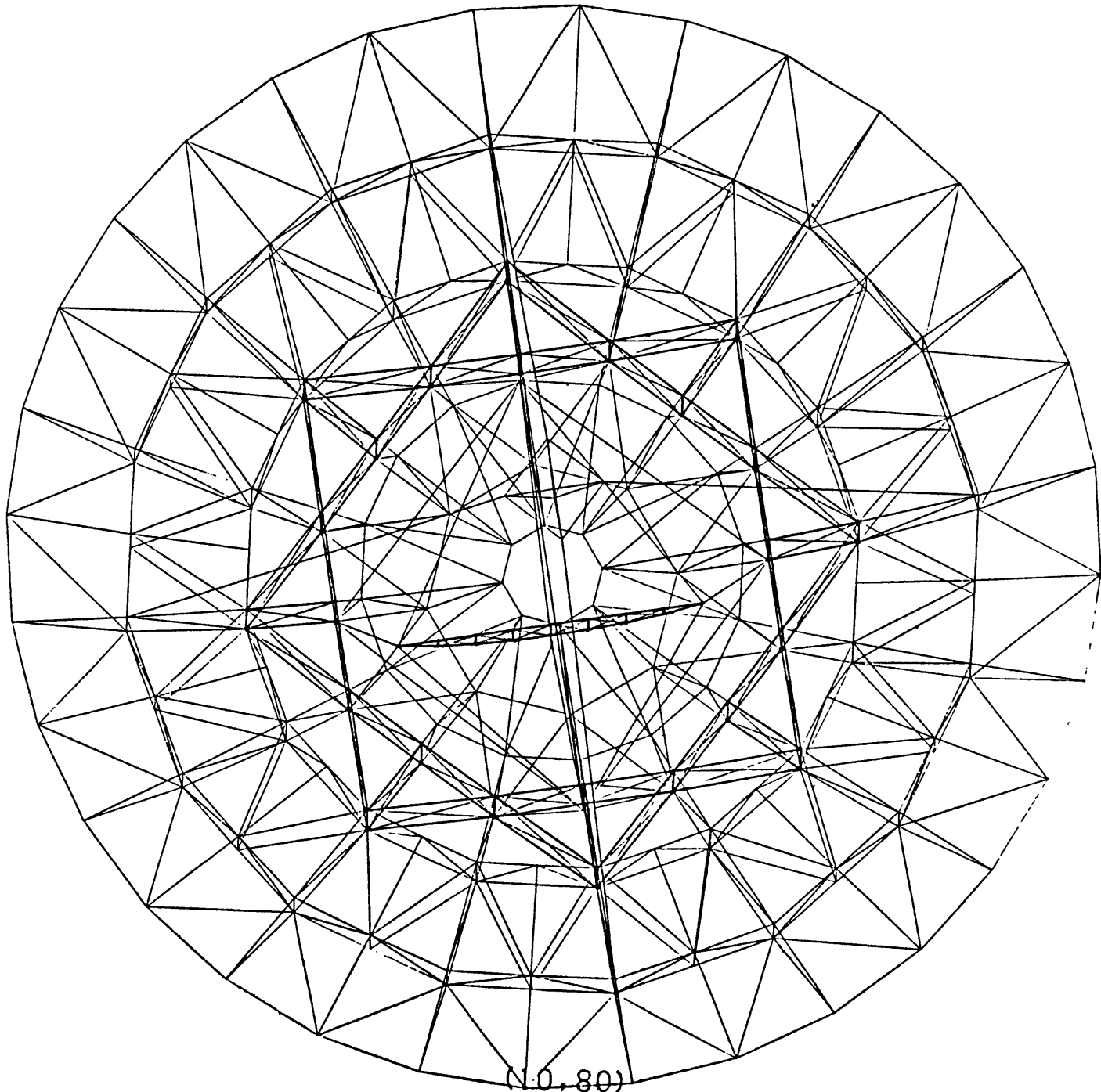   FOCAL LENGTH = 0.40 D = 172.8"

[II] WEIGHT

SURF PLATES (3.8 psf)	4224	
FEED	500	} 21 kips
REFL + FEED LEGS	16103	
WHEEL STR	5995	
CTWT	17332	
TOTAL =	44200 #	

[III] RMS (D.L. ONLY)

(a) ZENITH ($\alpha = 90°$)   27 μm
     HORIZON ($\alpha = 0°$)   45 μm
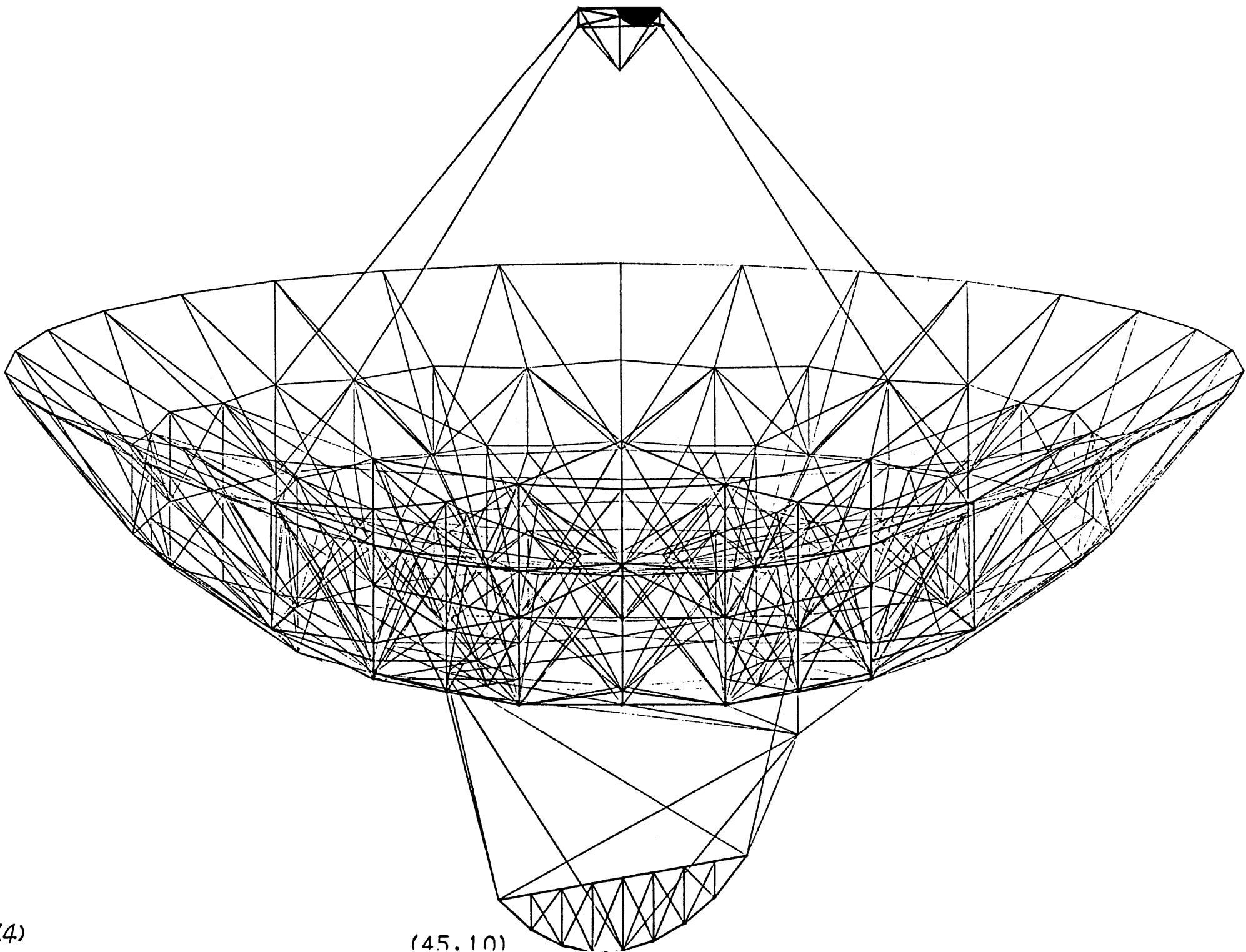
(b) ADJUSTMENT ANGLE @ $\alpha = \phi$

REFL @ \ ϕ	50°	55°	60°	
ZENITH	30	29	23	μm
HORIZON	26	27	33	μm

(4)   +

(10.80)

(4)

(45,10)