12 METER MILLIMETER WAVE TELESCOPE
MEMO No. 9

BILL,

ENCLOSED ARE:

(1) THERMAL CALC FOR 10.4 M REFLECTOR
(2) SOME ADDITIONAL VLA TEMP P.E. CALC FOR SVH.
(3) SKETCH OF 36' PLATFORM REQ'D BY JWF

THE SURFACE RMS ERRORS FOR SEVERAL 36' TELESCOPES WHICH WE HAVE DISCUSSED OVER THE PHONE IS SUMMERIZED ON THE NEXT PAGE. THE D.L. SURFACE RMS REQUIREMENT FOR A mm-WAVE 36' IS COMPARABLE W/ THAT OF 1.2 cm VLA. THUS, ANY GOOD CONVENTIONAL BACKUP STRUCTURE DESIGN WOULD SERVE THE PURPOSES. A 40 μm OR BETTER DISH SHOULD BE OBTAINABLE W/O TO MUCH EFFORT IN DESIGN.

LEE

12/12/80

SUMMARY OF SURFACE RMS ERRORS ($\times 10^{-6}$ M or μm)

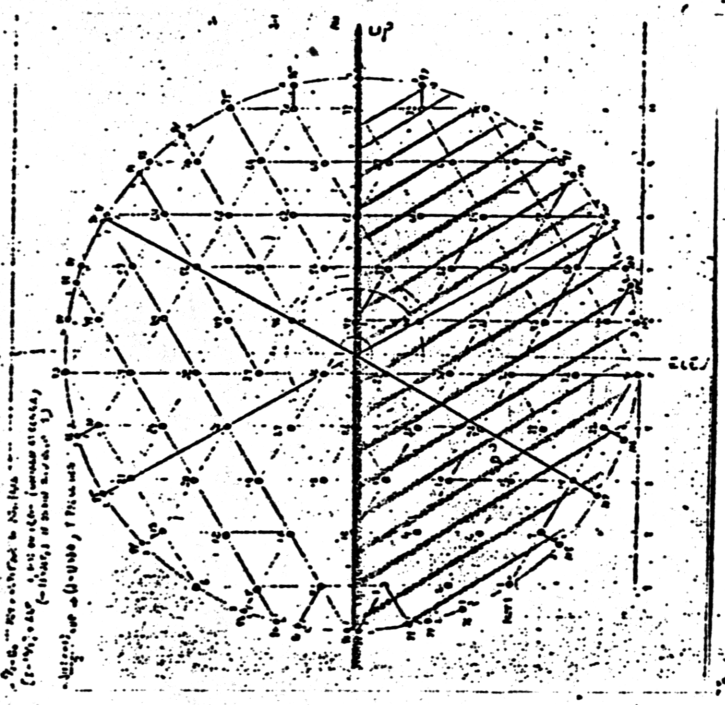
	REFLECTOR WEIGHT	ADJUSTED @ α=60° ZENITH	ADJUSTED @ α=60° HORIZON	PANEL MANUF.	SETTING	SUB-TOTAL	OTHER ERRORS: Thermal	OTHER ERRORS: Wind?	TOTAL *
① 36'	20000#	32 μm							
TUCSON	9100 kg	0° wrt 90° (14)	(18)	13.7	0	13.7			13.7
② 36'	23800#								
1972 DESIGN	10800 kg	42 (35)	48 (35) ¥	40 3.8 psf	40	74	(15)		(68) ✡
③ ESSCO									
				60 2.0 psf					100
④ 10.4 M									
(a) LEIGHTON'S REPORT	10400# 4735 kg	6 μm WEIGHTED RMS		25 3.0 psf	0	21.6			
(b) LEIGHTON'S PROGRAM	11100# 5040 kg	18	19	25	0	31			
(c) PREL. CHK	10600# 4810 kg	39	47	25	0	53	(22)		~~50~~ (58)

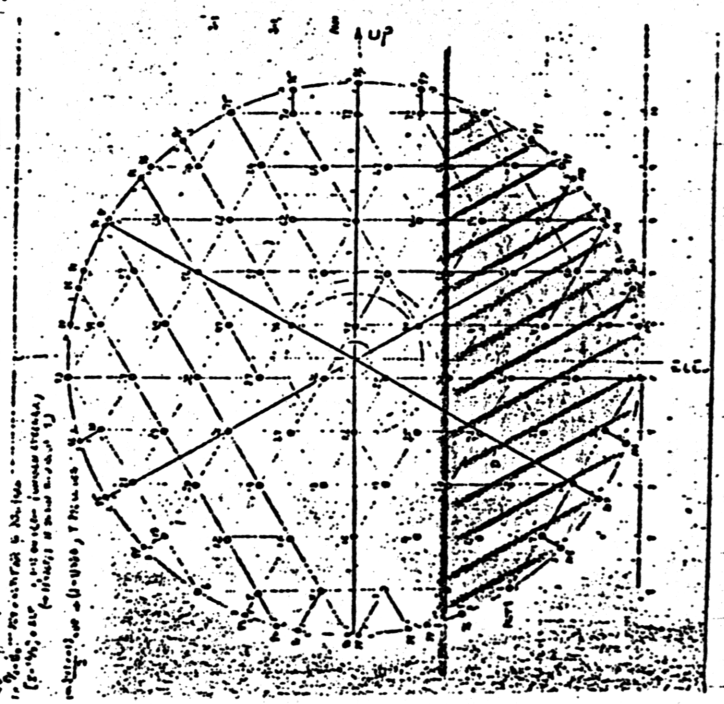
* REF M GORDON'S 4-17-80 MEMO

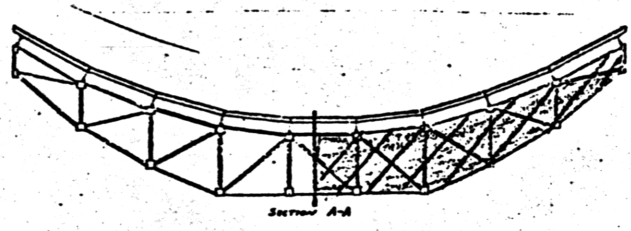
¥ GOAL FOR RE-DESIGN (CONVENTIONAL BACKUP STRUCTURE)

THERMAL ANALYSIS OF 10.4M REFLECTOR

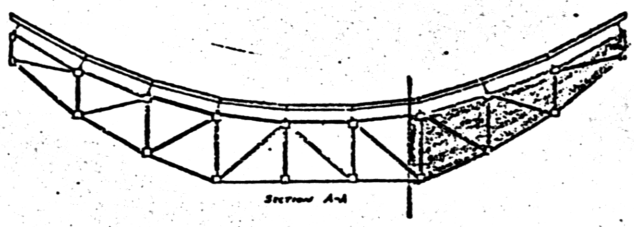
TEMPERATURE IN SHADED PORTIONS OF THE STRUCTURE ARE INCREASED BY 5°F



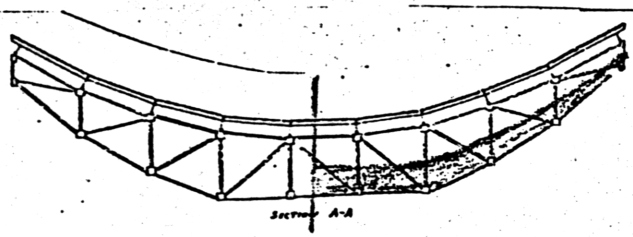




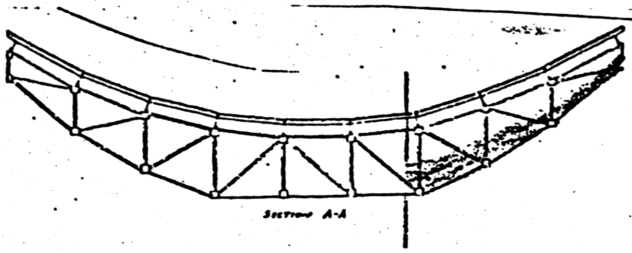
CASE 1



CASE 2



CASE 3



CASE 4

SUMMARY OF RESULTS

CASE	SURFACE RMS (μm)	INDUCED P.E. (ARC SEC)
1	11	5
2	15	4
3	17	65
4	25	54
1'	10	4
2'	10	1
3'	17	63
4'	25	55

CASES 1' THRU 4' ARE CORRESPONDING CASES OF 1 THRU 4 W/ AT ROTATED 90° SHOWN AS FOLLOWS