

National Radio Astronomy Observatory

Very Large Array

December 4, 1981

To: H. Hvatum

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Subject: VLBI ~ Cost Estimate Antennas

VLB ARRAY MEMO No. 50

Price of VLA type antenna purchased in 1982 for delivery in 1983.

Estimated 1977 price	\$916.5 ^k
Improved performance costs (Panel acc., feed legs, yoke str., Ins. & Shielding)	60.0 ^k
	<u>\$976.5^k</u>

Escalation 1977 - 78	6.5%
78 - 79	8 %
79 - 80	12 %
80 - 81	12 %
81 - 82	10.5%
82 - 83	10.5%
	<u>176 %</u>

Making the cost of <u>one</u> VLA type antenna = 976.5 ^k X 1.76 = 1718.6 ^k	
Plus tooling cost	114.4 ^k
Engineering cost	585.0 ^k

(1) Five Antennas delivered in 1983	
1718.6 X 5 X .935 =	8,034.5 ^k
Tooling	114.4 ^k
Engineering	585.0 ^k
	<u>\$8,734.0^k</u>

(2) Five Antennas delivered in 1884	
1718.6 X 1.105 X 5 X .935 =	8,878.0 ^k
TOTAL =	<u>\$17,612.0^k</u>

Table VI - 1

(1) Feed mounting ring (vertex cover)	12.5 ^k
(2) Subreflector and support structure	22 ^k
(3) Focus and rotation mount (lateral adj.)	24.5 ^k
(4) Electrical installation	4.0 ^k
Total each antenna	<u>63.0^k</u>

AGE 2
VLBI ~ Cost Estimate Antennas

VI - 7 Site Development. (I'm not sure where all these amounts in the February '81 report came from but some of them are quite low while others are fairly accurate).

(a) Site acquisition	25 ^k
(b) Control Building (1400 ft. ² X \$70/ft. ²)	98 ^k
(c) Telescope Fndns'	48 ^k
(d) Emergency Generator & Controls	35 ^k
(e) Roads	12 ^k
(f) Power Installation	8 ^k
(g) Water Supply and Disposal	10 ^k
(h) Furniture	6 ^k
(i) Maintenance equipment	20 ^k
	<hr/> 262 ^k

I haven't had time to review extensively a lot of the operating costs but certainly staff costs have been increased by exalation as well as materials and supplies.

Utilities were underestimated in my opinion in the original estimate by about 50% (I estimate 60 KVA for each site with a 150 KVA demand).

Travel was underestimated also but with tightened travel restrictions I couldn't ~~guess~~ guess at what the figure should be but remember we are talking about 10 wide spread sites.

Note that the 1981 operating cost for Tucson (1 telescope site, 1 office site, considerably less equipment, no management fee, much smaller staff) is budgeted at 980.0^k per year.