

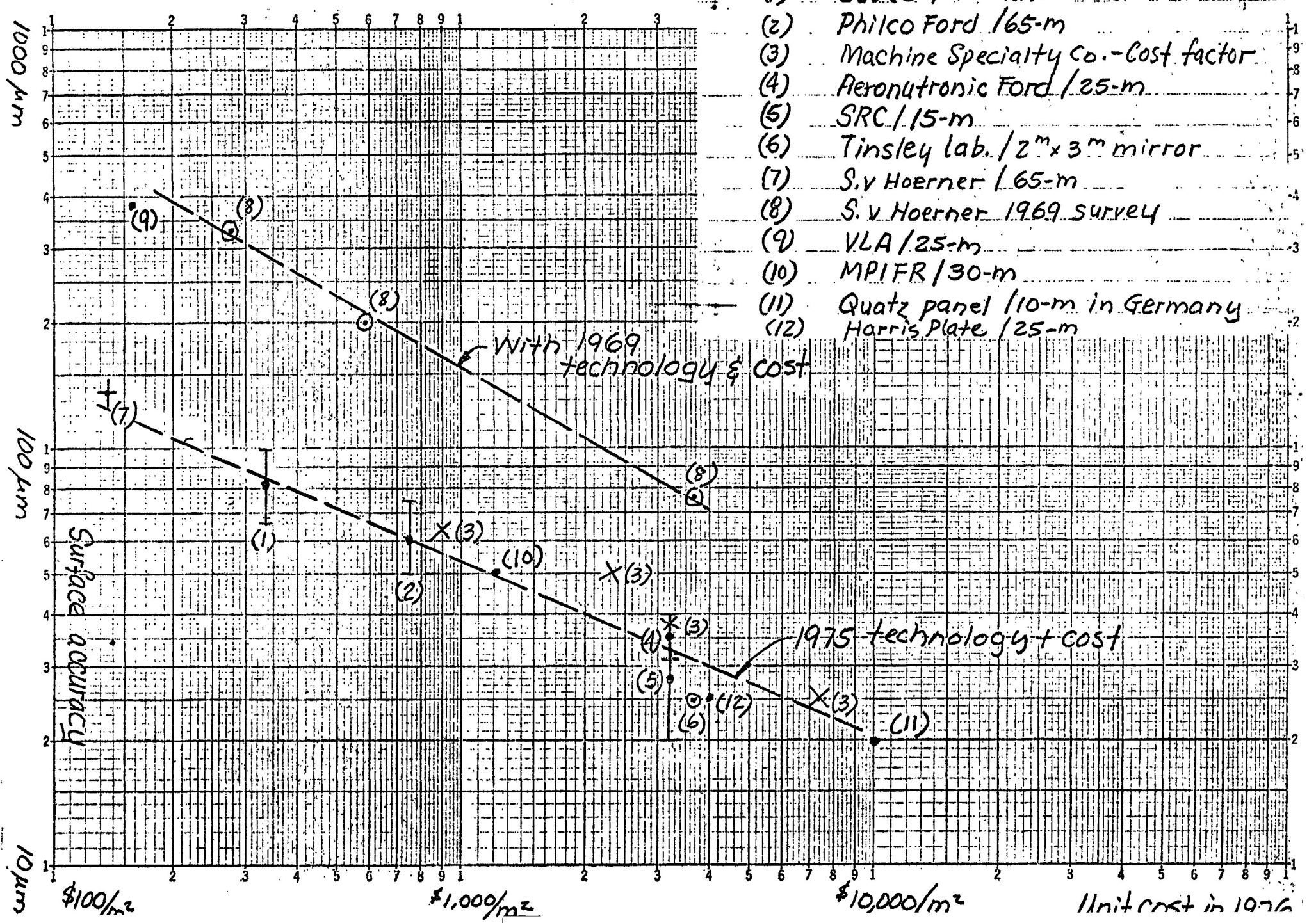
A MENTAL EXERCISE ON WJL COSTING FOR THE WONG ANTENNA

Part	Item from VLA contract 4/4/78	1973 quoted price (\$) per antenna	Total (x1000 \$)	8/14/80 WONG
VLB ARRAY MEMO No. 8				
<u>A</u>	1) Structure 8) Field erection 9) Trial assembly	279,332 77,007 9,625	<u>366.</u>	
<u>B</u>	3) Surface panels + Shipment	57,881	<u>58.</u>	
<u>C</u>	2) Servo 4) Equipment 5) Misc. items 10) Air cond. mod.	33,059 105,445 34,220 695	<u>173.</u>	
<u>D</u>	6) Eng. + Proj. mgmt. 7) Other charges	9,550 18,064	<u>28.</u>	

Part	As appeared on the invoice - no. 10, VLA-G	Adj. + Mod. due to more real. price, (73')	Fr. 73' → 80' escalation $(1+i)^n, i=.06, n=7$	Esystem to U. Manchester	Esystem to B. Horne
A	366.	338.	508.		up-graded
B	58.	81.	122.	1.2 M\$ (1976)	VLA antenn
C	173.	173.	260.		
D	28.	28.	41.		
Total	624. (1973)	619. (1973)	931. (1980)	1.4 M\$ (1980)	1.6 M\$ (1980)

Discussion:

- 1) Wong antenna + VLA antenna are having approx. same amount of steel (62T vs. 63T). Part A probably will have no change. Use a round off figure 500K
- 2) Spec. for drive & control are same for both antennae. Meaning no change on part C. Use a conservative figure 250
- 3) Engineering + proj. management is more flexible. presently, use part D. Use a round off figure 100K.
- 4) Ref. to chart, VLA surface panel are expensive. Roughly, adapting \$200/m² for 0.20 mm plate, with total surface of 526 m², the estim. cost is 200 x 526 = 105 K, use 150 K.
- 5) 500 + 250 + 100 + 150 = 1,000 K (1980)



- (1) ESSCO / U. mass
- (2) Philco Ford / 65-m
- (3) Machine Specialty Co. - Cost factor
- (4) Aeronutronic Ford / 25-m
- (5) SRC / 15-m
- (6) Tinsley lab. / 2m x 3m mirror
- (7) S. v Hoerner / 65-m
- (8) S. v Hoerner 1969 survey
- (9) VLA / 25-m
- (10) MPIFR / 30-m
- (11) Quartz panel / 10-m in Germany
- (12) Harris Plate / 25-m

With 1969 technology & cost

1975 technology + cost

Unit cost in 1976

Part	Item from VLA contract 4/4/78	1973 quoted price (\$) per antenna	Total (x1000 \$)	8/14/80
<u>A</u>	1) Structure	279,332	<u>366.</u>	
	8) Field erection	77,007		
	9) Trial assembly	9,625		
<u>B</u>	3) Surface panels + Shipment	57,881	<u>58.</u>	
<u>C</u>	2) Servo	33,059	<u>173.</u>	
	4) Equipment	105,445		
	5) Misc. Items	34,220		
	10) Air cond. mod.	605		
<u>D</u>	6) Eng. + Proj. mgmt.	9,550	<u>28.</u>	
	7) Other charges	18,064		

Part	As appeared on the invoice - no. 10, VLA-6	Adj. + Mod. due to more real. price, (73')	Fr. 73' → 80' escalation $(1+i)^n, i=.06, n=7, 70\%$	Esystem to U. Manchester $2 \frac{1}{2} \text{ mil } 1\%$	Esystem to B. Horne up-graded VLA antenn
A	366.	338.	508.		
B	58.	81.	122.	1.2 M\$ (1978)	
C	173.	173.	260.		
D	28.	28.	41.		
Total	624. (1973)	619. (1973)	931 \downarrow 12 (1980)	1.4 M\$ (1980)	1.6 M\$ (1980)

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2) Spec. for drive & control are same for both antennas meaning no change on part C. Use a conservative figure 250 presently.

3) Engineering + proj. management is more flexible. Use a round off figure 100K.

4) Ref. to chart, VLA surface panels are expensive. Roughly, adapting \$200/m² for 0.20 mm plate, with total surface of 526 m², the estm. cost is 200 x 526 = 105K, use 150K.

5) 500 + 250 + 100 + 150 = 1,000K (1980)