ELVA Cost Estimates May 27, 2001

Units   K$US(2001), meters, GHz

Parameter	Definition	Value	Value	Value	Value	Value	Value	Value	Value	Value	Value	Value	Value	Value	Value
C	Total array cost, fixed costs, elements, processing														
Cs	Total station cost, elements + combining electronics														
Ce	Total element cost, antenna + receivers														
Ns	Number of stations in array	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Ne	Number of elements per station	1	2	3	4	6	9	16	1	2	3	4	6	9	16
N	Total number of elements, N = Ns*Ne	1	2	3	4	6	9	16	1	2	3	4	6	9	16
D	Physical diameter of element (meters)	25.0	17.7	14.4	12.5	10.0	8.3	6.2	25.0	17.7	14.4	12.5	10.0	8.3	6.2
Ap	Physical area of element, Ap = 0.785*D^2	491	246	163	123	79	54	30	491	246	163	123	79	54	30
Ef	Aperature efficiency	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70
Ae	Effective area of element, Ae=Ap*Ef	343	172	114	86	55	38	21	343	172	114	86	55	38	21
A	Effective area of array, A=N*Ae	343	344	342	343	330	343	338	343	344	342	343	330	343	338
Tsys	System noise temperature at frequency, F	52	52	52	52	52	52	52	52	52	52	52	52	52	52
F	Frequency for system temperature specification	50	50	50	50	50	50	50	50	50	50	50	50	50	50
M	Array figure of merit, M = A/Tsys	6.6	6.6	6.6	6.6	6.3	6.6	6.5	6.6	6.6	6.6	6.6	6.3	6.6	6.5
B	Processed continuum bandwidth, per polarization	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Nl	Number of spectral line channels	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000
	Cost Models														
C	Ca = Co + Ns*Cs + Ns^2*Cp														
Co	Fixed cost per array - detailed system design costs														
Cp	Processing cost per baseline pair														
Cs	Cs = Cso + Ne*Ce	3,893	3,252	3,091	3,117	3,272	3,846	5,285	3,773	3,012	2,731	2,637	2,552	2,766	3,365
Cso	Fixed cost per station - land, power, bunker	850	850	850	850	850	850	850	850	850	850	850	850	850	850
Ce	Ce = Ca + Cel	3,043	1,201	747	567	404	333	277	2,923	1,081	627	447	284	213	157
Ca	Ca = 0.13*D^3.1	2,803	961	507	327	164	93	37	2,803	961	507	327	164	93	37
Cel	Electronics cost, receivers, LO, IF	240	240	240	240	240	240	240	120	120	120	120	120	120	120