



# National Radio Astronomy Observatory

P. O. Box O, Socorro, New Mexico 87801-0387

Telephone (505) 835-7000 TWX 910 9881710 FAX (505) 835-7027

December 5, 1990

Dr. J.W. Layland  
Manager, TDA Planning Office  
MS 303-401  
Jet Propulsion Laboratory  
4800 Oak Grove Drive  
Pasadena, CA  
91109

Dear Jim,

Bill Brundage and I have worked out in more detail the tasks and funding needed in FY '91 and '92 for support of the Galileo mission at the VLA. The first goal is to have a three antenna prototype array working with the fiber optic data transmission system by mid-1992. A full demonstration of the new delay cards at that time will depend on the progress of the correlator system controller hardware and software. The prototype array will be evaluated and final design changes would then be made. Quantity purchases for the full array would begin later in 1992 (FY '93). Assembly of the system and installation of the fiber optic cable would take place in 1993 and 1994 with the full system ready by early 1995. We would try to have a mid-project demonstration array operating in early 1994.

More specifically, in 1991 we would attempt a fast start on the new correlator controller. Software planning plus hardware procurement and construction would go on in parallel. We would complete the overall VLA system design including the electronics, fiber optic systems, and the civil works. Evaluation in the lab of a few fiber optic transmitter/receiver pairs would begin as well as the purchase of components for the additional VLA modules needed for the three antenna prototype array. Design and prototyping of the new delay cards would begin.

The time line for the project remains essentially as given in my October 23, 1990 report to you except that the dates have slipped by about three months.

My current best guess for the funding distribution is as follows:

FY '91	\$ 725 k
FY '92	1125
FY '93	2375
FY '94	2200
FY '95	525
FY '96	50

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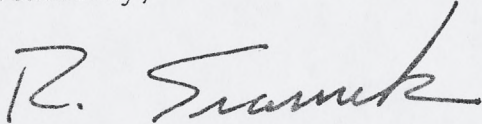
\$7000 k



All funds are in 1990 dollars and the time periods represent an October to October fiscal year. FY '91 represents a January to October 1991 expense. Uncertainties increase for the out years. A more detailed breakdown for FY '91 and FY '92 is enclosed.

Please let me know if you have any questions on this addition to the VLA-Galileo feasibility study.

Sincerely,



R. A. Sramek  
Dep. Asst. Director  
VLA/VLBA Operations

enclosures

xc:

P. Napier  
J. Campbell  
W. Brundage  
G. Hunt  
K. Sowinski  
W. M. Goss  
R. Perley  
P. Vanden Bout (NRAO/CV)  
J. Desmond (NRAO/CV)  
D. Brown (JPL)



ITEM	FY '91			FY '92		
	LABOR man*yr	LABOR \$k	M & S \$k	LABOR man*yr	LABOR \$k	M & S \$k
1 DUAL FIBER OPTIC - WAVEGUIDE SYSTEM						
FO cables and connectors			23			4
FO cable installation						27
engineer	0.15	7		0.15	7	
technician (splicing/testing)		0		0.25	6	
drafter/ documentation	0.10	4		0.10	4	
laborer/ equipment oper. (install.)				0.70	14	
FO xmtr/rcvr system			75			75
l.o. electronics (L9, L14, Sw )			30			10
engineer	0.60	27		0.80	36	
technician	0.25	6		0.80	20	
drafter/ documentation	0.10	4		0.10	4	
2 CORRELATOR & CORR. CONTROLLER						
controller VME			70			10
Modcomp IPS-2 I/O			40			0
engineer	0.70	31		0.50	23	
technician	0.20	5		0.50	13	
drafter/ documentation	0.10	4		0.20	7	
3 SOFTWARE DEVELOPEMENT						
correlator controller VME	0.30	14		0.90	41	
Modcomp	0.20	9		0.25	11	
drafter/ documentation	0.10	4		0.10	4	
4 DELAY CARD UPGRADE						
delay cards			8			16
engineer	0.50	23		0.40	18	
technician	0.25	6		0.75	19	
drafter/ documentation	0.10	4		0.10	4	
5 POWER SYSTEM						
recable to end of B config						
generator overhaul (2)						
6 PROJECT MANAGEMENT						
proj/sys engineer	0.60	27		0.80	36	
test equipment			25			150
travel			10			20
Overhead (1.234)	4.25	172	281	7.40	264	312
Benefits (0.280)		213			325	
		48			74	
Contingency		433	281		662	312
			11			151
TOTAL			725			1125