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COST OF A NORMALCONDUCTING LINAC STRUCTURE

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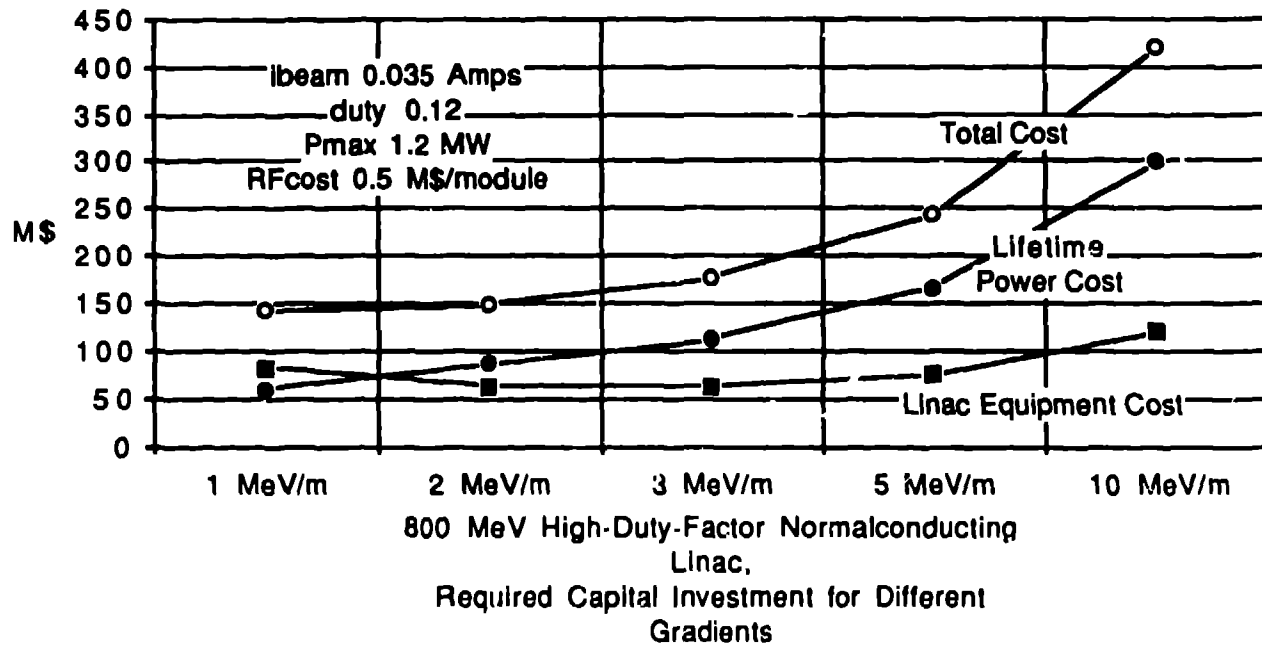
By the attached Chart 800.1n and Worksheet 800.1n, we would like to illustrate the cost variation for different gradients of a possible LAMPF linac extension, assuming a normalconducting structure.

The calculation is based on 800 MeV additional energy gain with an 805 MHz sidecoupled structure. The rf power units would be identical in performance with those presently used except that we have specified a higher overall efficiency of 50% instead of 30% (rf output vs mains input). The minimum of the linac equipment cost (without internal personnel cost) is situated between 2 and 3 MeV/m.

The 25 year lifetime power costs are of the order of \$100M for this minimum. With a gradient of 1 MeV/m, the lifetime power cost would drop by about \$40M, and the linac equipment cost would rise by about 20 M\$.

All assumptions made are subject to change by more detailed studies planned for the near future.

Chart 800.1n



Worksheet 800.1n

Hi Duty Factor Linac Cost Spreadsheet HAT 1/11/89+GSC 2/17/89							
Headroom	1.1						
Pmax	1.2	MW					
Pavg	0.144	MW					
eff	0.5						
RFcost	0.5	M\$/module		hrspyear	4000	hrs/yr	
Life	25	Years		kwh	0.05	\$/kW-hr	
Str	0.075	M\$/meter		Power	0.2	M\$/MWyear	
Zshunt	48	MOhm/meter (LAMPF SCL)					
dE	800	MeV					
ibeam	0.035	Amps Pulse		ibeam average	4.2	mA	
duty	0.12						
					Lifetime		Linac
	Structure	Peak RF		Structure	Power		Equipm.
Grad	Length	Power	RF Cost	Cost	Cost	Total1	Cost
(MeV/m)	(meters)	(MW)	(M\$)	(M\$)	(M\$)	(M\$)	(M\$)
1	800.00	50.23	23.02	60.00	60.28	143.30	83.02
2	400.00	72.47	33.21	30.00	86.96	150.17	63.21
3	266.67	94.70	43.40	20.00	113.64	177.04	63.40
5	160.00	139.16	63.78	12.00	167.00	242.78	75.78
10	80.00	250.33	114.73	6.00	300.39	421.12	120.73
2.5	320.00	83.58	38.31	24.00	100.30	162.61	62.31