

WBS Number	Description	Materials			Total Mat'ls	Labor Hours					Total Labor Cost	Total w/o Cont	Contingency Risk Factors						Cont	Cont \$	Total w/ Cont	
		<\$25000	>\$25000	>\$600000		Eng'r	Physicist	Design	Tech	DTS			Shops	Tech	WF	Design	Cost	WF				Sched
1.4.1	BOOSTER/AGS MODIFICATIONS				\$0							\$0							0%	\$0	\$0	
1.4.1.1	Project Support				\$0	0	0	0				\$0	\$0	3	2	8	1	1	2	17%	\$0	\$0
1.4.1.1.1	installation supervision				\$0					0		\$0	\$0	3	2	8	1	1	2	17%	\$0	\$0
1.4.1.2	Booster				\$0							\$0								0%	\$0	\$0
1.4.1.2.1	Electrical modifications				\$0							\$0								0%	\$0	\$0
	Project Support													3	2	8	1	2	4	20%		
	Cable Repair/Replacement	\$12,000	\$0		\$12,000	120	0	0	160	0	0	\$16,383	\$28,383	3	2	8	1	2	4	20%	\$5,677	\$34,060
	Cable Trays	\$1,500			\$1,500	80	0	0	80	0	0	\$9,529	\$11,029	3	2	8	1	2	4	20%	\$2,206	\$13,235
	Upgrade of PFN's	\$119,400	\$129,500		\$248,900	800	0	120	960	160	40	\$126,612	\$375,512	3	2	8	1	2	4	20%	\$75,102	\$450,615
	Magnet Coils - Mechanical	\$0	\$312,000		\$312,000	110	0	0	440	0	0	\$30,345	\$342,345	3	2	8	1	2	4	20%	\$68,469	\$410,814
1.4.1.2.2	Mechanical modifications				\$0							\$0								0%	\$0	\$0
	Project Support																					
	Spare Booster F6	\$0	\$28,000		\$28,000	220	0	0	1320	0	875	\$164,905	\$192,905	3	2	8	1	2	4	20%	\$38,581	\$231,487
	Booster Injection Collimators	\$0	\$85,000		\$85,000	220	110	440	1210	0	450	\$154,143	\$239,143	3	2	8	1	2	4	20%	\$47,829	\$286,971
1.4.1.2.3	RF System modifications				\$0							\$0								0%	\$0	\$0
	Project Support																					
	RF Feedback	\$120,000	\$240,000		\$360,000	1040	520	0	2080	160	40	\$240,863	\$600,863	3	2	8	1	2	4	20%	\$120,173	\$721,036
1.4.1.2.4	Instrumentation				\$0							\$0										
	Project Support	0	0	0	\$0	240	120	40	440	0	0	\$51,982	\$51,982	2	4	16	2	4	16	48%	\$24,952	\$76,934
	Loss Monitors	51000	0	0	\$51,000	400	0	120	800	0	0	\$75,259	\$126,259	1	2	8	1	2	8	20%	\$25,252	\$151,511
	WCM Upgrade (D6)	5000	0	0	\$5,000	880	80	80	880	0	40	\$120,145	\$125,145	1	2	12	1	4	8	26%	\$32,538	\$157,683
	Inflector protection (C3)	5000	0	0	\$5,000	80	0	40	160	0	0	\$15,947	\$20,947	1	2	12	4	2	8	30%	\$6,284	\$27,231
	Cables	10000	0	0	\$10,000	160	0	0	320	0	0	\$27,418	\$37,418	1	2	4	1	2	8	16%	\$5,987	\$43,404
	BTA	13000	0	0	\$13,000	80	0	20	320	0	0	\$23,188	\$36,188	1	2	4	1	2	8	16%	\$5,790	\$41,978
1.4.1.2.5	Controls				\$0							\$0										
	Project Support	0	0	0	\$0	0	0	0	0	0	0	\$0	\$0	0	0	0	0	0	0	0%	\$0	\$0
	Instrumentation Interfaces	4000	18454	0	\$22,454	96	0	0	114	0	0	\$12,375	\$34,829	1	2	8	4	1	8	22%	\$7,662	\$42,491
	Software & Database	0	0	0	\$0	594	0	0	0	0	0	\$39,715	\$39,715	2	2	15	1	1	8	28%	\$11,120	\$50,835
1.4.1.2.6	Safety				\$0							\$0										
	Project Support																					
	Shield Caps																					
1.4.1.3	AGS				\$0							\$0										
1.4.1.3.1	Electrical modifications				\$0							\$0										
	Project Support																					
	Cable Repair/Replacement	\$0	\$120,000		\$120,000	120	0	0	320	0	0	\$24,743	\$144,743	3	2	8	1	2	4	20%	\$28,949	\$173,692
	Cable Trays	\$1,500			\$1,500	80	0	0	80	0	0	\$9,529	\$11,029	3	2	8	1	2	4	20%	\$2,206	\$13,235
	Active Filter	\$0	\$110,000		\$110,000	120	0	0	120	0	0	\$14,293	\$124,293	3	2	8	1	2	4	20%	\$24,859	\$149,152
	F5 Power Supply	\$0	\$0		\$0	0	0	0	0	0	0	\$0	\$0	3	2	8	1	2	4	20%	\$0	\$0
	F10 Power Supply	\$0	\$250,000		\$250,000	120	0	0	120	0	0	\$14,293	\$264,293	3	2	8	1	2	4	20%	\$52,859	\$317,152
	H20 Power Supply	\$0	\$0		\$0	0	0	0	0	0	0	\$0	\$0	3	2	8	1	2	4	20%	\$0	\$0
	Upgrade of PFN's	\$143,500	\$180,000		\$323,500	640	0	120	1600	160	80	\$153,068	\$476,568	3	2	8	1	2	4	20%	\$95,314	\$571,882
	Magnet Coils - Mechanical	\$0	\$364,000		\$364,000	110	0	0	440	0	0	\$30,345	\$394,345	3	2	8	1	2	4	20%	\$78,869	\$473,214
	J10 Bump; Low ripple P.S.	\$0	\$225,000		\$225,000	120	0	0	120	0	0	\$14,293	\$239,293	3	2	8	1	2	4	20%	\$47,859	\$287,152
1.4.1.3.2	Mechanical modifications				\$0							\$0										
	Project Support																					
	AGS RC Networks	\$16,000	\$0		\$16,000	55	0	55	220	0	0	\$18,250	\$34,250	3	2	8	1	2	4	20%	\$6,850	\$41,100
	New F5 (2)	\$0	\$30,000		\$30,000	220	0	440	1760	0	1500	\$270,537	\$300,537	3	2	8	1	2	4	20%	\$60,107	\$360,644
	New F10 (2)	\$0	\$26,000		\$26,000	220	80	440	1320	0	1600	\$263,968	\$289,968	3	2	8	1	2	4	20%	\$57,994	\$347,962
	New H20 (2)	\$0	\$40,000		\$40,000	440	110	440	1760	0	2400	\$378,608	\$418,608	3	2	8	1	2	4	20%	\$83,722	\$502,330
	Collimators																					
	Sextupole Coils**	\$0	\$160,000		\$160,000	110	0	0	440	0	0	\$30,345	\$190,345	3	2	8	1	2	4	20%	\$38,069	\$228,414
1.4.1.3.3	Instrumentation				\$0							\$0										
	Project Support	0	0	0	\$0	240	120	80	440	0	0	\$54,221	\$54,221	2	4	16	2	4	16	48%	\$26,026	\$80,247
	Loss Monitors	20000	0	0	\$20,000	180	0	20	640	0	0	\$46,594	\$66,594	3	6	18	3	6	24	78%	\$51,943	\$118,537
	Wall Current Monitor	10000	0	0	\$10,000	880	20	20	880	0	0	\$107,721	\$117,721	1	2	10	1	3	8	23%	\$27,076	\$144,796
	IPM Servo	2000	0	0	\$2,000	40	0	0	80	0	0	\$6,854	\$8,854	1	2	2	1	2	2	8%	\$708	\$9,563
	Motion Systems	40000	0	0	\$40,000	80	0	20	160	0	0	\$14,828	\$54,828	1	2	4	1	2	4	12%	\$6,579	\$61,407
	Video	37000	0	0	\$37,000	80	0	20	160	840	0	\$80,642	\$117,642	1	2	4	1	2	4	12%	\$14,117	\$131,759
	Ring Grounds	25000	0	0	\$25,000	40	0	0	240	0	0	\$15,214	\$40,214	1	2	4	1	2	4	12%	\$4,826	\$45,040
	Cables	5000	0	0	\$5,000	20	0	0	120	0	0	\$7,607	\$12,607	1	2	2	1	2	2	8%	\$1,009	\$13,616
1.4.1.3.4	Controls				\$0							\$0										
	Project Support	0	0	0	\$0	0	0	0	0	0	0	\$0	\$0	0	0	0	0	0	0	0%	\$0	\$0
	Instrumentation Interfaces	21350	36124	0	\$57,474	68	0	0	180	0	0	\$13,951	\$71,425	1	2	8	4	1	8	22%	\$15,714	\$87,139
	Software & Database	0	0	0	\$0	152	0	0	0	0	0	\$10,163	\$10,163	2	2	15	1	1	8	28%	\$2,846	\$13,008
	Ring Ground Interface	8100	0	0	\$8,100	15	0	0	60	0	0	\$4,138	\$12,238	1	2	4	4	1	4	14%	\$1,713	\$13,951

	Software & DB	0	0	0	\$0	50	0	0	0	0	0	\$3,343	\$3,343	2	2	8	1	1	4	17%	\$568	\$3,911	
	Power Supply Interfaces	6310	5000	0	\$11,310	20	0	0	34	0	0	\$3,114	\$14,424	1	2	8	4	1	8	22%	\$3,173	\$17,597	
	Software & Database	0	0	0	\$0	52	0	0	0	0	0	\$3,477	\$3,477	2	2	15	1	1	8	28%	\$973	\$4,450	
1.4.1.3.5	Safety				\$0							\$0								0%	\$0	\$0	
	Project Support																						
	Shield Caps (PE Subcontract)			\$3,053,250	\$3,053,250							\$0		2	2	8	1	1	4	17%	\$519,053	\$3,572,303	
1.4.1.4	MECO AGS Modifications				\$0							\$0								0%	\$0	\$0	
1.4.1.4.1	AC-Dipole																						
	Project Support																						
	Magnet																						
	Power Supply																						
	Installation																						
1.4.1.4.2	Strip-line Kickers																						
	Project Support																						
	Strip-lines																						
	Power Supply/Pulsers																						
	Low Level Controls																						
	Installation																						
1.4.1.4.3	Simulations																						
	Mini-bunched extraction																						
1.4.1.5	KOPIO AGS Modifications				\$0							\$0									0%	\$0	\$0
1.4.1.5.1	Booster To AGS Kickers																						
	Project Support																						
1.4.1.5.2	25 MHz RF cavity																						
	Project Support																						
1.4.1.5.3	100 MHz RF Cavity																						
	Project Support																						
1.4.1.5.4	Simulations																						
1.4.1.6	Beam Development				\$0							\$0									0%	\$0	\$0
	Project Support																						
	Labor Hours					9392	1160	2515	20578	1320	7025										0%		
	FTE					5.4	0.7	1.4	11.7	0.8	4.0												
	TOTALS - DIRECT	\$676,660	\$2,359,078	\$3,053,250	\$6,088,988	\$627,949	\$103,507	\$140,739	\$1,075,201	\$103,422	\$652,131	\$2,702,949	\$5,738,687							30%	\$1,731,599	\$10,523,536	
					\$0							\$0										\$0	\$0
	indirect %	24.98%	13.19%	13.19%		39.47%	39.47%	39.47%	39.47%	12.05%	12.05%									45.53%	83.57%	0.00%	0.00%
					\$0							\$0										\$2,519,931	\$13,054,699
	TOTAL	\$845,674	\$2,670,323	\$3,456,081	\$6,972,078	\$875,820	\$144,364	\$196,294	\$1,499,616	\$115,884	\$730,713	\$3,562,691	\$10,534,768							30%	\$3,178,776	\$13,713,544	