E.L. Black
Printed on:10/23/00

Budgetary cost estimate for a 16.5m cooling section (6 modules 2.75m long)
Super FOFO FRONT END LATTICE (Lattice 1)

DESCRIPTION	UNITS	Qnt	$/UNIT	SUBTOTAL	Qnt	16.5 m Section	Uncertanty	COMMENTS
			(2.75m)	PER SECTION		EXTENDED $		Ref. DWG SFOFOSTART201MHZrev1
RF/CENTER COIL ASSEMBLY								
Vacuum Vessel w/support structure	Ass'y	1	$74,932	$74,932	6	$449,593	40%	from FNAL & NC Products, Inc
RF Cavity								
Modulator & Tube	Ass'y	1	$1,608,000	$1,608,000	6	$9,648,000	15%	
Cavity & Ancillary	Ass'y	1	$884,000	$884,000	6	$5,304,000	15%	FNAL Alfred Moretti BD-BS PROTON SRC
System Integration			$50,000	$50,000	6	$300,000		
Center low field large bore Coil	Ass'y	1	$219,600	$382,609	6	$2,295,652	30%	John Miller, Magnet Science & Technology
Cryostat/shielding & vac. chamber	Ass'y	1	$180,000	$180,000	6	$1,080,000		National High Magnetic Field Laboratory
Integration Assembly labor	MH	160	$65	$10,400	6	$62,400		
				$3,115,009		**$18,690,052**	25%	
Lh2 ABSORBER/COILS								
Vacuum Vessel	Ass'y	1	$16,078	$16,078	6	$96,469		
LH2 Absorber Chamber	Ass'y	1	$52,000	$52,000	6	$312,000	20%	Gerhard Designing& manufacturing Inc
Manifold safety & Cooling	Ass'y	1	$15,200	$15,200	6	$91,200		For Convection & Forced flow
Lh2 Circulating Pump	Unit	1	$30,350	$30,350	6	$182,100	10%	Barber-Nichols Inc.(Ref.: SMP-547) attached.
System Controls/Instrumentation	System	1	$39,000	$39,000	6	$234,000		
Higher-field Bucked Solenoids	Ass'y	2	$388,400	$678,261	6	$4,069,565	30%	John Miller, Magnet Science & Tech. NHMFL
Cryostat (for 2 bucked solenoids)	Ass'y	1	$220,000	$220,000	6	$1,320,000		
Integration Assembly labor	MH	240	$65	$15,600	6	$93,600		
				$1,066,489		**$6,398,934**	30%	
Refrigeration								
Liquid Helium	Liters	60	$200	$12,000	6	$72,000	30%	Calculated based Hrs. of He flow through
Liquid Hydrogen	Liters	20	$100	$2,000	6	$12,000		a heat exchanger
Refrigeration system		1	$350,000	$350,000	6	$2,100,000		
				$364,000		**$2,184,000**		
Ancillaries								
Internal Supports		Lot	$10,667	$10,667	6	$64,000		
Nuts bolts and seals		Lot	$2,000	$2,000	6	$12,000		
Plumbing		Lot	$2,333	$2,333	6	$14,000		
Vacuum System			$9,333	$9,333	6	$56,000		
				$24,333		**$146,000**	10%	from E.Black IIT/FNAL
Labor for final systems Integration	MH	320	$65	**$20,800**	6	**$124,800**		75% M/Hrs, millwrights, mechanical, electric
								25% M/hrs, Design engineering
TOTAL				**$4,665,563**		**$27,993,379**		
TOTAL LATTICE 1 (3 sections)				~	**3**	**$84,000,000**		