

Description	MATERIAL					LABOR						TOTALS					
	Unit	Mate	Cost	Unit	Total	Labor	Labor	Labor	Craft	Labor	Total	Total	Overhead	Sub	Cntng	Cntng	Totals
	Meas	No.	Basis	Cost	Material	No.	Unit	Total	Code	Rate	Labor	Labor +	Total	Total	%	K\$	K\$
		Units			K\$	Units	Hours	Hours		\$/Hr.	K\$	Material	(LBNL)				
NEXT-100												732.6	1,212.1	176.0	1,388.1	22%	1,693
1 LBNL Contributions					309.2	5,228.0					435.5	744.7	176.0	920.7	25%	232.8	1,153.4
1.1	EDI (Engineering, Design, Integration)				0.0	2,480.0					222.1	222.1	69.1	291.1	17%	48.5	339.6
1.1.1	Project Integration		pe		0.0	1	200	200	ME	94.69	18.9	18.9	5.9	24.8	15%	3.7	28.6
1.1.2	Pressure Vessel Design		pe		0.0	1	200	200	ME	94.69	18.9	18.9	5.9	24.8	15%	3.7	28.6
1.1.3	Pressure Vessel Specification		pe		0.0	1	160	160	ME	94.69	15.2	15.2	4.7	19.9	15%	3.0	22.8
1.1.4	Pressure Vessel Fab Supervision		pe		0.0	1	160	160	ME	94.69	15.2	15.2	4.7	19.9	15%	3.0	22.8
1.1.5	Pressure Vessel Assembly		pe		0.0	1	160	160	ME	94.69	15.2	15.2	4.7	19.9	15%	3.0	22.8
1.1.6	Energy Plane Mechanical Design (Cans, PMT bases, cable conduits)		pe		0.0	1	200	200	ME	94.69	18.9	18.9	5.9	24.8	15%	3.7	28.6
1.1.7	Field Cage Design (assist TAMU)		pe		0.0	1	200	200	ME	94.69	18.9	18.9	5.9	24.8	15%	3.7	28.6
1.1.8	HV feedthrough Design (assist TAMU)		pe		0.0	1	100	100	ME	94.69	9.5	9.5	2.9	12.4	15%	1.9	14.3
1.1.9	Tracking Plane Module Design		pe		0.0	1	600	600	EE	95.55	57.3	57.3	17.8	75.2	15%	11.3	86.4
1.1.10	"		pe		0.0	1	400	400	EI	61.46	24.6	24.6	7.6	32.2	30%	9.7	41.9
1.1.20	Electroluminescent (EL) Plane Design (assist TAMU)		pe		0.0	1	100	100	ME	94.69	9.5	9.5	2.9	12.4	15%	1.9	14.3
1.2 Energy Plane					196.7	1,848.0					158.1	354.8	75.0	429.8	29%	124.3	554.1
1.2.1	Procurements				173.3							173.3	22.7	196.0	28%	54.2	250.2
1.2.1.1	Sapphire Windows	ea	80 vq	1000	80.0							80.0	10.5	90.5	30%	27.1	117.6
1.2.1.2	ITO coating	ea	80 vq	100	8.0							8.0	1.0	9.0	20%	1.8	10.9
1.2.1.3	PMTs	ea	66 vq	0	0.0							0.0	0.0	0.0	15%	0.0	0.0
1.2.1.4	Helicoflex gaskets	ea	140 cp	200	28.0							28.0	3.7	31.7	30%	9.5	41.2
1.2.1.5	PMT base boards and components	ea	70 cp	300	21.0							21.0	2.8	23.8	30%	7.1	30.9
1.2.1.6	Test Pressure Vessel components	ea	1 cp	1000	1.0							1.0	0.1	1.1	30%	0.3	1.5
1.2.1.7	LED light sources	ea	3 cp	100	0.3							0.3	0.0	0.3	10%	0.0	0.4
1.2.1.8	PMT cable Feedthroughs (BNC floating shield 2500VDC	ea	65 cp	215	14.0							14.0	1.8	15.8	30%	4.7	20.5
1.2.1.9	Bolts, Shims and Misc. Parts	lot	1 pe	1000	1.0							1.0	0.1	1.1	30%	0.3	1.5
1.2.1.10	Cold trap, valves, plumbing and scaffolding for recovery system	lot	1 pe	3000	3.0							3.0	0.4	3.4	10%	0.3	3.7
1.2.1.20	Vacuum pump	lot	1 pe	3000	3.0							3.0	0.4	3.4	30%	1.0	4.4
1.2.1.30	Helium leak detector	lot	1 pe	10000	10.0							10.0	1.3	11.3	10%	1.1	12.4
1.2.1.40	Deuterium light source	lot	1 pe	4000	4.0							4.0	0.5	4.5	15%	0.7	5.2
1.2.2 Fabrications					23.4	1,072.0					93.7	117.1	32.2	149.3	30%	44.8	194.0
1.2.2.1	Can Prototype	lot	1 se	500	0.5	1	40	40	MS	87.38	3.5	4.0	1.2	5.1	30%	1.5	6.7
1.2.2.2	Test Pressure Vessel	lot	1 se	400	0.4	1	40	40	MS	87.38	3.5	3.9	1.1	5.0	30%	1.5	6.5
1.2.2.3	Cans and Lids	lot	64 se	200	12.8	64	8	512	MS	87.38	44.7	57.5	15.6	73.1	30%	21.9	95.1
1.2.2.4	PMT heat sinks and base prep	lot	64 se	50	3.2	64	1	64	MS	87.38	5.6	8.8	2.2	11.0	30%	3.3	14.2
1.2.2.5	Carrier plate	lot	1 se	500	0.5	1	80	80	MS	87.38	7.0	7.5	2.2	9.7	30%	2.9	12.6
1.2.2.6	Central manifold	lot	1 se	500	0.5	1	80	80	MS	87.38	7.0	7.5	2.2	9.7	30%	2.9	12.6
1.2.2.7	Assembly table	lot	1 se	500	0.5	1	40	40	MS	87.38	3.5	4.0	1.2	5.1	30%	1.5	6.7
1.2.2.8	Cable conduits	lot	70 se	50	3.5	70	2	140	MS	87.38	12.2	15.7	4.3	20.0	30%	6.0	26.0
1.2.2.9	Window pressure test fixture	lot	1 se	500	0.5	1	16	16	MS	87.38	1.4	1.9	0.5	2.4	30%	0.7	3.1
1.2.2.10	recovery gas system fab	lot	1 se	1000	1.0	1	60	60	MS	87.38	5.2	6.2	1.8	8.0	30%	2.4	10.4
1.2.3 Assembly					0.0	776.0					64.5	64.5	20.1	84.5	30%	25.4	109.9
1.2.3.1	Test prototype (gas tightness, heat transfer, optical efficiency, etc.)	lot	1 se	0	0.0	1	80	80	MA	83.09	6.6	6.6	2.1	8.7	30%	2.6	11.3
1.2.3.2	Pressure Test windows	lot	1 se	0	0.0	80	0.5	40	MA	83.09	3.3	3.3	1.0	4.4	30%	1.3	5.7
1.2.3.3	Assemble PMT's to enclosures	lot	1 se	0	0.0	64	2	128	MA	83.09	10.6	10.6	3.3	13.9	30%	4.2	18.1
1.2.3.4	Assemble PMT/enclosure assemblies to carrier plate	lot	1 se	0	0.0	64	2	128	MA	83.09	10.6	10.6	3.3	13.9	30%	4.2	18.1
1.2.3.5	Assemble cables into conduits	lot	1 se	0	0.0	64	2	128	MA	83.09	10.6	10.6	3.3	13.9	30%	4.2	18.1
1.2.3.6	Assemble cable/conduit assemblies to PMT/carrier plate assembly, test	lot	1 se	0	0.0	64	3	192	MA	83.09	16.0	16.0	5.0	20.9	30%	6.3	27.2
1.2.3.7	Assemble recovery gas system	lot	1 se	0	0.0	1	80	80	MA	83.09	6.6	6.6	2.1	8.7	30%	2.6	11.3
1.3 Tracking Plane Electronics					112.5	900.0					55.3	167.8	32.0	199.8	30%	59.9	259.7
1.3.1	Fabrications				112.5						0.0	112.5	14.7	127.2	30%	38.2	165.4
1.3.1.1	Production Boards	ea	128 pe	500	64.0							64.0	8.4	72.4	30%	21.7	94.1
1.3.1.2	Ribbon Cables	ea	850 pe	30	25.5							25.5	3.3	28.8	30%	8.7	37.5
1.3.1.3	Materials and Equipment	ea	1 pe	10000	10.0							10.0	1.3	11.3	30%	3.4	14.7
1.3.1.4	Travel	ea	1 cp	13000	13.0							13.0	1.7	14.7	30%	4.4	19.1
1.3.2 Assembly					0.0	900.0					55.3	55.3	17.2	72.5	30%	21.8	94.3
1.3.2.1	Board and Cable Assembly	lot	0 pe	50	0.0	1	900	900	EI	61.46	55.3	55.3	17.2	72.5	30%	21.8	94.3
1.3.2.2	"	lot	0 pe	50	0.0	0	4	0	MS	87.38	0.0	0.0	0.0	0.0	30%	0.0	0.0

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	Unit Meas	Material No.	Cost Basis	Unit Cost	Total Material K\$	Labor No. Units	Labor Unit Hours	Labor Total Hours	Craft Code	Labor Rate \$/Hr.	Total Labor K\$	Total Labor + Material	Overhead Total (LBNL)	Sub Total	Cntng %	Cntng K\$	Totals K\$
2 Texas A&M (TAMU) Contributions					137.4			2,549.0			197.0	334.4	0.0	334.4	20%	67.1	401.5
2.1 EDI (Engineering, Design, Integration)					0.0			1,417.0			100.0	100.0	0.0	100.0	0%	0.0	100.0
2.1.1 Experiment Design			pe		0.0	1	160	160	FC	125.14	20.0	20.0	0.0	20.0	0%	0.0	20.0
2.1.2 "			pe		0.0	1	1257	1257	PD	63.64	80.0	80.0	0.0	80.0	0%	0.0	80.0
2.2 Field Cage and HV feedthrough/Gas distribution					13.4			1,132.0			97.0	110.4	0.0	110.4	29%	32.4	142.8
2.2.1 Procurements					7.5							7.5	0.0	7.5	20%	1.5	9.0
2.2.1.1 resistors (proto& final)	lot	300	pe	5	1.5							1.5	0.0	1.5	20%	0.3	1.8
2.2.1.2 HV cable (proto & final)	ea	2	pe	500	1.0							1.0	0.0	1.0	20%	0.2	1.2
2.2.1.3 PMTs	ea	0	cp	0	0.0							0.0	0.0	0.0	20%	0.0	0.0
2.2.1.4 HV connectors (proto& final)	ea	1	pe	2000	2.0							2.0	0.0	2.0	20%	0.4	2.4
2.2.1.5 Clean room setup materials for final assembly	ea	1	pe	3000	3.0							3.0	0.0	3.0	20%	0.6	3.6
2.2.2 Fabrication					5.9			688.0			60.1	66.0	0.0	66.0	30%	19.8	85.8
2.2.2.1 support cylinder, prototype	lot	1	se	500	0.5	1	80	80	MS	87.38	7.0	7.5	0.0	7.5	30%	2.2	9.7
2.2.2.2 field cage rings, prototype	lot	1	se	300	0.3	100	1	100	MS	87.38	8.7	9.0	0.0	9.0	30%	2.7	11.7
2.2.2.3 prototype test vessel	lot	1	se	500	0.5	1	60	60	MS	87.38	5.2	5.7	0.0	5.7	30%	1.7	7.5
2.2.2.4 PMT holders (proto)	lot	1	se	200	0.2	1	16	16	MS	87.38	1.4	1.6	0.0	1.6	30%	0.5	2.1
2.2.2.5 stress control spinnings (proto)	lot	1	se	400	0.4	1	32	32	MS	87.38	2.8	3.2	0.0	3.2	30%	1.0	4.2
2.2.2.6 support cyl, final	lot	1	se	3000	3.0	1	200	200	MS	87.38	17.5	20.5	0.0	20.5	30%	6.1	26.6
2.2.2.7 rings, final	lot	1	se	1000	1.0	1	200	200	MS	87.38	17.5	18.5	0.0	18.5	30%	5.5	24.0
2.2.3 Assembly					0.0			444.0			36.9	36.9	0.0	36.9	30%	11.1	48.0
2.2.3.1 prototype ring assembly	lot	1	pe	0	0.0	1	32	32	MA	83.09	2.7	2.7	0.0	2.7	30%	0.8	3.5
2.2.3.2 resistor assembly	lot	1	pe	0	0.0	1	32	32	MA	83.09	2.7	2.7	0.0	2.7	30%	0.8	3.5
2.2.3.3 pressure chamber assembly and test	lot	1	pe	0	0.0	1	40	40	MA	83.09	3.3	3.3	0.0	3.3	30%	1.0	4.3
2.2.3.4 clean room setup	lot	1	pe	0	0.0	2	40	80	MA	83.09	6.6	6.6	0.0	6.6	30%	2.0	8.6
2.2.3.5 ring and support cleaning, final	lot	1	pe	0	0.0	1	40	40	MA	83.09	3.3	3.3	0.0	3.3	30%	1.0	4.3
2.2.3.6 ring assembly, final	lot	1	pe	0	0.0	2	80	160	MA	83.09	13.3	13.3	0.0	13.3	30%	4.0	17.3
2.2.3.7 resistor assembly, final	lot	1	pe	0	0.0	1	60	60	MA	83.09	5.0	5.0	0.0	5.0	30%	1.5	6.5
2.3 Electroluminescent Plane					124.0			0.0			0.0	124.0	0.0	124.0	28%	34.7	158.7
2.3.1 Procurements					99.0							99.0	0.0	99.0	30%	29.7	128.7
2.3.1.1 prototypes	ea	1	pe	37000	37.0							37.0	0.0	37.0	30%	11.1	48.1
2.3.1.2 materials and equipment	ea	1	pe	40000	40.0							40.0	0.0	40.0	30%	12.0	52.0
2.3.1.3 Travel	ea	1	cp	22000	22.0							22.0	0.0	22.0	30%	6.6	28.6
2.3.2 Fabrication					25.0			0.0			0.0	25.0	0.0	25.0	20%	5.0	30.0
2.3.2.1 Final Fabrication	ea	1	pe	25000	25.0	0	0	0	EI	61.46	0.0	25.0	0.0	25.0	20%	5.0	30.0
3 Iowa State University Contributions					33.0			1,417.0			100.0	133.0	0.0	133.0	4%	4.9	137.9
3.1 EDI (Engineering, Design, Integration)					0.0			1,417.0			100.0	100.0	0.0	100.0	0%	0.0	100.0
3.1.1 Experiment Design			pe		0.0	1	160	160	FC	125.14	20.0	20.0	0.0	20.0	0%	0.0	20.0
3.1.2 "			pe		0.0	1	1257	1257	PD	63.64	80.0	80.0	0.0	80.0	0%	0.0	80.0
3.2 Optimization and Calibration					33.0	0.0	0.0	0.0	0.0	0.0	0.0	33.0	0.0	33.0	15%	4.9	37.9
3.2.1 Procurements					33.0							33.0	0.0	33.0	15%	4.9	37.9
3.2.1.1 Materials and Equipment	ea	1	pe	20000	20.0							20.0	0.0	20.0	15%	3.0	23.0
3.2.1.2 Travel	ea	1	cp	13000	13.0							13.0	0.0	13.0	15%	1.9	14.9