

NuMI KICKER COOLING SYSTEM MATERIALS AND LABOR ESTIMATE

COMPONENT	QUANTIT Y	MANUFACTURER	PART NUMBER	UNIT COST (\$)	TOTAL (\$)	NOTES
PUMP	2	CRANE CHEMPUMP	PT-3	2196	4392	LIQUID COOLED, CANNED MOTOR - REGENERATIVE TURBINE
PUMP - SPARE PARTS	1	CRANE CHEMPUMP	KIA201	335	335	FRONT & REAR BEARINGS - CASING, ADAPTER, & FRONT BEARING O-RINGS
VARIABLE FREQUENCY DRIVE	2	AC TECH	MC SERIES M1000	599	1198	COST INCLUDED WITH PUMP - NEMA 4/12 ENCLOSURE
HEAT EXCHANGER	1	TRANTER	MX-03-0412-UP-012/0.060	935	935	316 S.S. ALL WELDED PLATE TYPE - RATED FOR FULL VACUUM
CONTROL VALVE	1	KAMMER	30057	2500	2500	SIMILAR TO VALVES USED IN LINAC
CONTROL VALVE SPARES	1	KAMMER	-----	500	500	SEALS, PACKING
PROCESS CONTROLLER	1	POWERS	535	850	850	P.I.D. TYPE SAME AS USED IN MAIN INJECTOR
FLOW METER	2	KOBOLD	TO BE DETERMINED	400	800	ONE FOR FLUORINERT, ONE FOR CHILLED WATER
SENSOR	1	KOBOLD	TO BE DETERMINED	200	200	INTERLOCKED TO PUMP
LEVEL INDICATOR	1	GEMS	DIPTAPE	200	200	FC-77 COMPATIBLE
LEVEL SWITCH	1	GEMS	TO BE DETERMINED	200	200	FC-77 COMPATIBLE
PRESSURE TRANSMITTER	4	KOBOLD	TO BE DETERMINED	200	800	FC-77 COMPATIBLE
PRESSURE INDICATOR	5	ASHCROFT	56841070	104.27	521.35	3 1/2" 0-15 PSI 316 SS GLYCERIN FILLED
PRESSURE INDICATOR	5	ASHCROFT	56480196	100.44	502.2	3 1/2" 0-60 PSI 316 SS GLYCERIN FILLED
PRESSURE INDICATOR	4	ASHCROFT	56841104	100.44	401.76	3 1/2" 0-100 PSI 316 SS GLYCERIN FILLED
PRESSURE INDICATOR	1	ASHCROFT	56841013	104.27	104.27	3 1/2" -15-0-15 PSI 316 SS GLYCERIN FILLED
TEMPERATURE TRANSMITTER	5	KODIAK CONTROLS	TO BE DETERMINED	145	725	FC-77 COMPATIBLE
EXPANSION TANK	1	HEIDEN, INC.	7812-2	1370	1370	316 SS - CUSTOM MADE FROM 12" SCH 10S PIPE, FLAT PLATE ENDS
ALUMINA FILTER HOUSING	1	3M	-----	2500	2500	316 SS - CUSTOM MADE
ACTIVATED ALUMINA FILTER	2	3M	-----	500	1000	NEUTRALIZES FLUORINERT DECOMPOSITION PRODUCTS - HYDROFLUORIC ACID, PFIB
PARTICULATE FILTER HOUSING	3	PARKER	BSSB20-1SD	467	1401	FULFLO 316 S.S. 1" NPT INLET/OUTLET FOR 20" CARTRIDGES - MSC ORDER# 37039203
PARTICULATE FILTER	15	PARKER	PM050-20AA-D0	33.94	509.1	1 BOX OF 20" PLEATED POLYPROPYLENE 5 MICRON FILTER ELEMENTS
LIQUID LINE FILTER/DRYER	2	PARKER	757S	50	100	REMOVES H2O FROM FLUORINERT
1" PIPE (FEET)	360	NSTRUMENT ASSOCIATES	-----	2.77	997.2	316L S.S. SCH 10S CHILLED WATER PIPING
1/2" PIPE (FEET)	10	NSTRUMENT ASSOCIATES	-----	1.65	16.5	316L S.S. SCH 10S CHILLED WATER PIPING FOR CONTROL VALVE
1" TUBING (FEET)	400	TW METALS	-----	1.65	660	.049 WALL, 316L S.S. TUBING
3/4" TUBING (FEET)	50	NSTRUMENT ASSOCIATES	-----	2.5	125	.083 WALL, 316L S.S. TUBING
1/2" TUBING (FEET)	50	NSTRUMENT ASSOCIATES	-----	1.83	91.5	.065 WALL, 316L S.S. TUBING
PIPE FITTINGS	20	NSTRUMENT ASSOCIATES	-----	20	400	ELBOWS, REDUCERS, TEES FOR CHILLED WATER
PIPE INSULATION (FEET)	800	MSC INDUSTRIAL	37030541	0.645	516	1/2" THICK ELASTOMERIC, 6' LENGTHS - SPLIT TYPE
PRESSURE SAFETY VALVE	2	McMASTER-CARR	5027K51	190.69	381.38	1/2" MNPT INLET AND 1/2" FNPT OUTLET, 316 SS, 30-100 PSI
1/4" BALL VALVES	30	PARKER	4A4F-B6LPKR-EPR-SSP	89.19	2675.7	HIGH Cv - LOW DELTA P - W/FC-77 COMPATIBLE SEALS - COMPRESSION FITTING 1 END, FNPT OTHER
1/2" BALL VALVES	5	PARKER	8A-B8LPKR-EPR-SSP	174.08	870.4	HIGH Cv - LOW DELTA P - W/FC-77 COMPATIBLE SEALS - COMPRESSION FITTING BOTH ENDS
3/4" BALL VALVES	5	SVF	3/4" \$86666UUET0	186.56	932.8	UHMWE SEATS AND SEALS - FNPT BOTH ENDS
1" BALL VALVES	15	SVF	1" \$86666UUET0	234.03	3510.45	UHMWE SEATS AND SEALS - FNPT BOTH ENDS
Y-STRAINER	4	McMASTER-CARR	4745K55	186.67	746.68	1" - (2-100 MESH & 2-60 MESH) 316 STAINLESS
SPARE STRAINER SCREENS	4	McMASTER-CARR	4745K75	19.56	78.24	REPLACEMENT MESH SCREENS
COMPRESSION FITTINGS	24	PARKER	MISC.	45	1080	FC-77 COMPATIBLE
3/4" ADAPTER FITTING	10	PARKER	12MSC12N-316	15.68	156.8	3/4" MNPT TO 3/4" TUBING
1" ADAPTER FITTING	30	PARKER	16MSC16N-316	27.54	826.2	1" MNPT TO 1" TUBING
3/4" TO 1"ADAPTER FITTING	4	PARKER	16MSC12N-316	29	116	3/4" MNPT TO 1" TUBING
TOTAL					36225.5	
T&M PIPING CONTRACT	1	S.E.A. MECHANICAL, INC.	-----	15876	15876	SEE ATTACHED DOCUMENT
FLUORINERT (GALLON)	15	3M	FC-77	400	6000	7 GALLONS IN USE - 8 GALLONS BACKUP
TOTAL					58101.5	