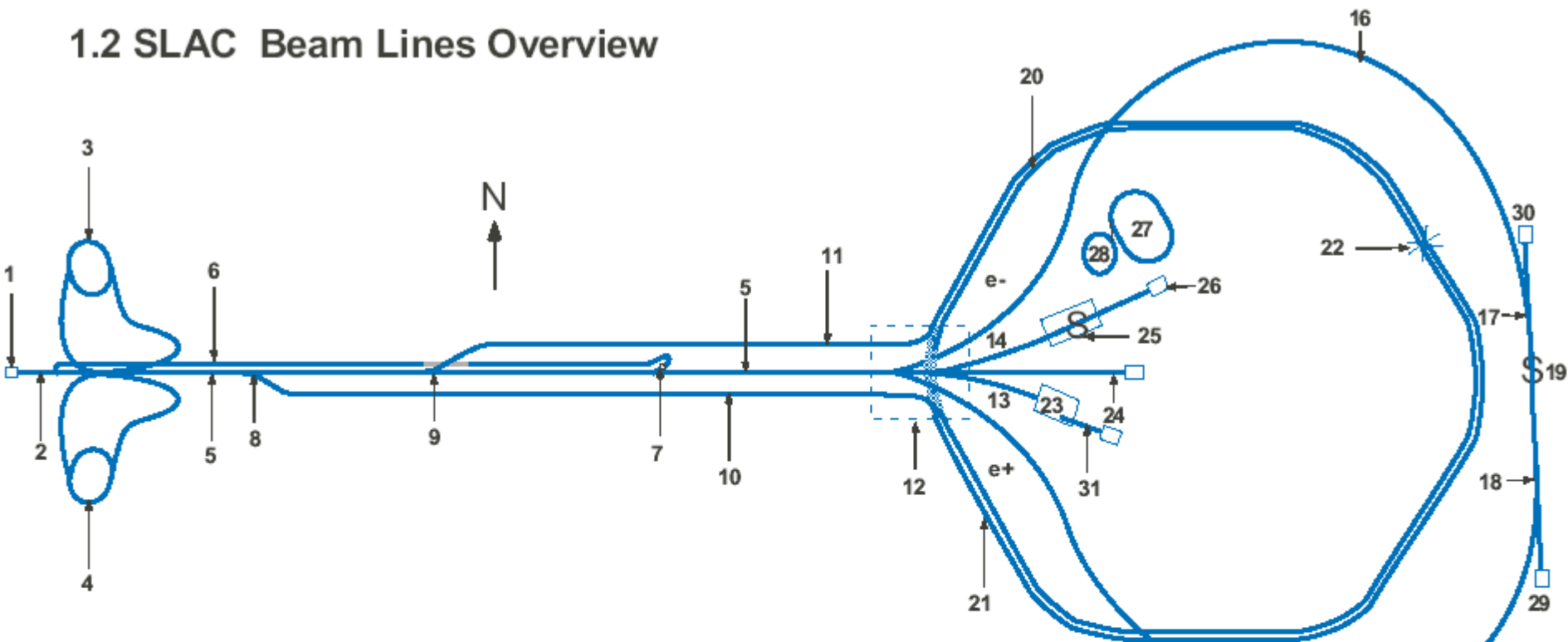


1.2 SLAC Beam Lines Overview



- | | | |
|------------------------------------|-------------------------------------|---|
| 1 e- gun | 12 Beam Switch Yard (BSY) | 22 IR-2 detector |
| 2 200 MeV injector | 13 B-Line | 23 End Station B (ESB) |
| 3 North damping ring [1.15 GeV] | 14 A-Line [50 GeV] | 24 FFTB |
| 4 South damping ring [1.15 GeV] | 15 SLC south arc [45 GeV] | 25 End Station A (ESA) |
| 5 Linac | 16 SLC north arc [45 GeV] | 26 Beam Dump East (BDE) |
| 6 Positron return line | 17 North final focus | 27 SPEAR [3 GeV] |
| 7 Positron source | 18 South final focus | 28 SPEAR Booster |
| 8 Sector-4 PEP II e+ injector | 19 Collider Experimenter Hall (CEH) | 29 Positron dump |
| 9 Sector-10 PEP II e- injector | 20 Low Energy Ring (LER) [3.1GeV] | 30 Electron dump |
| 10 PEP II Low Energy Bypass (HEB) | 21 High Energy Ring (HER) [9 GeV] | 31 Next Linear Collider Test Area (NLCTA) |
| 11 PEP II High Energy Bypass (LEB) | | |

One-time Costs to Startup SLC

		(\$K)
	Remove PM sextupoles	1
	Q3 magnet repair	6
	Install 52IV2	1
BSY	Re-insulate ARC magnet DC cables in BSY	10
	Re-install PS #2 to NARC/SARC	1
	Investigate BSY/NARC water-to-vacuum leak	4
	Remove SARC D1 dump	3
	NADIT & SADIT doors closed and locked	0
	Finish SARC leak checking	24
ARC's	Finish NARC leak checking	60
	Refurbish NARC and SARC BPM's	60
	Improve splash and drip protection, NFF & SFF	10
	Lock SLD/NFF/SFF doors	0
	Refurbish Collimators/wire scanners	21
FF	Replace NFF transformer	80
	Rebuild four large LCW pumps	80
	Superconducting Triplets	30
	Refurbish ion pump PS	3
	Refurbish/update smoke detectors	9
	Replace LCW flow switches	24
	Diagnose and repair compressed air system	10
General	Coordination and labor – flow sw. + comp. Air	50
	Supervision – flow sw. + comp. Air	20
	Check/repair/turn on PS	15
	Re-establish SLC PPS <i>Need estimate from Controls Dept.</i>	-
	Contingency + items not yet estimated	150
	Total	\$672

Notes to SLC Startup Estimate

1. Assumes Linac, damping rings, and positron source ok as is.
2. Additional problems may be uncovered during restoration.
3. Largest uncertainties are related to diagnostics, controls, and software. Estimates have ranged from >\$100K to “flat out impossible”.
4. Non-shop labor (e.g. EFD) could be used on a “best efforts” basis, with supervision from the Controls Dept., to restore BPM and magnet mover hardware and thereby test the low-level software control.
5. When PEP is running, there would always be one operator available for SLC. Commissioning would be done approximately two shifts/day with help from SLAC accelerator physicists. Repairs would be done on a “best efforts” basis.
6. There is enough 12 kV power available at the CEH if SLD is below 1/3 current (approximately 0.2 T field). Cooling tower and pumping capacity to run PEP and SLC should not be an issue on cool days and nights.
7. There must be a clear statement from management that maintaining and protecting the SLC arcs and FF has a reasonable priority, and they should not be a source of parts.
8. The incremental power to run 30 GeV beams in the ARC's and Final Focus is about 1 MW.

Cost of SLC Maintenance, Per Year

	(\$K)
Area Engineer	20
Keep tarps on ARC bend magnets	8
Lube ARC magnet movers	1
Check vacuum status	8
Maintain NARC, SARC, NFF and SFF vacuum	10
Keep ARC and FF ventilation system operational	0
Check for ground water leaks	8
Maintenance of LCW pumps	20
Control System <i>Need estimate from Controls Dept.</i>	-
Keep tunnel lights on	0
Keep AC wall outlets on	0
Keep compressed air system on	0
Total	\$75

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	(\$K)	
Damping Rings	168	
PM Quadrupoles	506	
PM Sextupoles	97	
Mechanical Installation	40	
FF Wiring Changes	55	
Sub total	\$866	
Contingency	250	
TOTAL	\$1,116	(\approx 50% labor)

Contributors to SLC Revival Estimate

- Al Baker
- Martin Berndt
- Eric Bong
- Art Candia
- Scott DeBarger
- Roger Erickson
- Leif Eriksson
- Rusty Humphrey
- Doug McCormick
- Lewis Keller
- Partick Krejcik
- Tom Markiewicz
- Nan Phinney
- Rainer Pitthan
- Pantaleo Raimondi
- Andy Ringwall
- Pete Segura
- Andrei Seryi
- Burl Skaggs
- Bob Traller
- John Weisend