

JPLS M&S List	Last Updated on February 5, 2018					
Mechanical	Conceptual Cost (unburdened)	Conceptual Cost (burdened)	Refined Cost for PDR (unburdened)	Refined Cost for PDR (burdened)	Estimated by	Basis of Estimate
2 Granite tbls (Standridge)	15000	23100	27000	41580	Daniel Bacescu	Vendor quote
3 sets of slides and screws	20000	30800	19025	29298.5	Daniel Bacescu	Vendor quote
Vibration isolation	11000	16940	11000	12540	Daniel Bacescu	Vendor quote
Silcon drift detector	20000	30800	20000	22800	Lonny Berman	Historical cost
Visualization hardware	20000	30800	10000	11400	Lonny Berman	Historical cost
Other hdw- Machining plates/parts	25000	38500	42057	64767.78	Daniel Bacescu	Historical cost (scaled)
Other hdw- Beam Stops for CCDs	15000	23100	20000	30800	Ben/Scott	Historical cost (scaled)
Other hdw- Reconditioning hardware (as required)	20000	30800	20000	30800	Ben Ocko	Professional Judgment
Other hdw- Flight paths and supports	10000	15400	10000	15400	Daniel Bacescu	Professional Judgment
Other hdw- Beam Monitors	30000	46200	30000	46200	Lonny Berman	Historical cost
Other hdw- Motorized beam slit	n/a	n/a	7144	11001.76	Ben Ocko	Vendor quote
Mechanical Sub Total	186000	286440	216226	316588.04		
Detectors	Conceptual Cost (unburdened)	Conceptual Cost (burdened)	Refined Cost for PDR (unburdened)	Refined Cost for PDR (burdened)	Estimated by	Basis of Estimate
Pilatus 1M detector	258000	312180	469000	529032	Ben Ocko	Vendor quote
Lambda 256k detector	n/a	n/a	25000	28200	Ben Ocko	Vendor quote
Detectors Sub Total	258000	312180	494000	557232		
Controls	Conceptual Cost (unburdened)	Conceptual Cost (burdened)	Refined Cost for PDR (unburdened)	Refined Cost for PDR (burdened)	Estimated by	Basis of Estimate
Network switch	9300	14322	9300	10602	ZY	Historical Cost
Linux IOC Server	4200	6468	5800	6612	ZY	Historical Cost
2 Workstations	6000	9240	6400	7296	ZY	Historical Cost
4 Computer Monitors	2000	3080	2000	2280	ZY	Historical Cost
4 Large Monitors/TVs	2400	3696	3000	3420	ZY	Historical Cost
2 GigE Cameras	2400	3696	2400	2736	ZY	Historical Cost
2 Camera lenses	600	924	600	684	ZY	Historical Cost
2 Webcams	2400	3696	2400	2736	ZY	Historical Cost
CAT-6 network cable	600	924	600	684	ZY	Historical Cost
Fiber distribution box	1200	1848	1200	1368	ZY	Historical Cost
PDU for IP controllers and server rack	1000	1540	1000	1140	ZY	Historical Cost
24 motor connectors	1200	1848	1200	1368	ZY	Historical Cost
24 Replacement motors	7200	11088	7200	8208	ZY	Historical Cost

16 encoders for motor axes	2000	3080	8000	9120	ZY	Historical Cost
16 motor connectors & cables	n/a	n/a	2000	2280	ZY	Historical Cost
2 Delta Tau motor controller (16 ch) & power supply	n/a	n/a	18000	20520	ZY	Historical Cost
Controls Sub Total	42500	65450	71100	81054		
EPS hardware	Conceptual Cost (unburdened)	Conceptual Cost (burdened)	Refined Cost for PDR (unburdened)	Refined Cost for PDR (burdened)	Responsible	Basis of Estimate
EPS hardware	5000	7700	5000	5700	Chris Stebbins	Historical Cost (scaled)
EPS Sub Total	5000	7700	5000	5700		
Control Station	Conceptual Cost (unburdened)	Conceptual Cost (burdened)	Refined Cost for PDR (unburdened)	Refined Cost for PDR (burdened)	Responsible	Basis of Estimate
Furniture & partitions	20000	30800	20000	22800	Chris Stebbins	Historical Cost (scaled)
Control Station Sub Total	20000	30800	20000	22800		
Grand Total Costs	511500	702570	806326	983374.04		