

Update of Human Resource Estimate for **ILC-250**

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Provided for discussions at KEK-ILC Int'l WG:
190526a

Updated: , 190602, 190618

HR Estimates for 250 GeV Staging Opt. (C-->) A

assuming a partly energy-scaling model

Area System	TDR Construct. + Install. [k p-hr]	TDR HR Sum [k p-hr]	Fraction unchanged	Fraction changed: Offset + E. Scaling	Staging 250-C [k p-hrs] (%)	Staring/T DR	Reduct. Ratio [%]
Common	6,076 + 1,050 =	7,126	0.3	<u>0.2</u> + 0.5 x 0.490	5,309	74.5%	- 25.5 %
e- Source	588 + 200 =	788	1.0	n/a	788	100	0
e+ Source	826 + 300 =	1,126	1.0	n/a	1,126	100	0
Damping Rings	996 + 1,000 =	1,996	1.0	1.00	1,996	100	0
RTML	1,318 + 250 =	1,568	0.3	<u>0.2</u> + 0.5 x 0.490	1,168	74.5	- 25.5
Main Linac	6,331 + 2,200 =	8,351	0	<u>0.2</u> + 0.8 x 0.490	5,050	59.2	- 40.8
BDS	933 + 700 =	1,663	1.0	n/a	1,633	100	0
IR	123 + 0 =	123	1.0	n/a	123	100	0
TOTAL	17,192 + 5,700 =	22,892			17,193	75.1 %	- 24.9 %
Notes;			0.3*: not for ML	0.2* : off set assumed 0.490 ** : (125x1.06 - 15) / (250x1.02-15)			

ILC250 Staff (HR) Annual Profile scaled from ILC500, originally 190602

	FTE-yrs									TOTAL	Avg
	1	2	3	4	5	6	7	8	9		
CFS-Civil construction	43.7	43.7	37.9	18.8	0.0	0.0	0.0	0.0	0.0	144	16.0
CFS-other	0.0	3.1	7.6	21.3	27.5	14.7	12.5	1.1	0.0	88	9.7
Survey and alignment	0.0	4.2	11.1	37.2	56.8	53.8	53.0	33.6	140.2	390	43.3
L-band Cavities and Cryomodules	14.2	180.0	180.0	180.5	180.0	171.7	151.8	152.2	62.8	1,273	141.4
L-band HLRF	49.6	49.6	49.6	49.7	49.6	48.2	47.3	19.7	0.0	363	40.4
Cryogenics	43.2	49.0	34.1	34.2	32.6	25.0	22.6	9.4	0.0	250	27.8
Magnets and Power Supplies	0.0	0.0	93.5	144.0	219.1	180.0	152.4	86.9	31.2	907	100.8
Integrated Controls and LLRF	29.5	22.0	40.4	54.5	110.3	104.4	100.2	81.6	39.6	582	64.7
Computing Infrastructure	69.7	69.7	69.7	69.9	69.7	69.7	69.7	69.9	52.1	610	67.8
Instrumentation	0.0	0.0	44.8	52.5	68.6	46.6	31.1	19.3	6.7	270	30.0
Dumps and Collimators	0.0	0.0	22.0	22.0	25.9	20.5	16.8	9.3	1.6	118	13.1
Vacuum	0.0	0.0	4.7	7.6	13.5	12.9	12.5	7.5	0.0	59	6.5
Other HLRF	0.0	0.0	4.7	10.7	10.6	7.9	5.9	0.0	0.0	40	4.4
Area system specific	0.0	75.6	90.9	111.6	111.2	111.2	79.3	40.2	8.4	628	69.8
Laboratory Management	56.5	169.5	226.0	226.6	226.0	226.0	226.0	226.6	169.0	1,752	194.7
Simulations and Operations	8.8	8.8	8.8	8.8	8.8	8.8	8.8	8.8	6.6	77	8.5
TS-Adjustment	70	-65	-36	0	0	-1	10	4	-68	(86)	
	385.1	610.1	889.7	1049.9	1210.1	1100.4	999.7	769.9	450.2	7465.2	829.5
Installation	0.0	0.0	59.5	59.6	59.5	654.0	959.8	502.4	230.4	2525.1	
Inst-Adjustment	0	0	1	0	1	1	0	-2	119	120	
TOTAL	385	610	950	1,110	1,271	1,755	1,959	1,270	800	10,110	1123.4

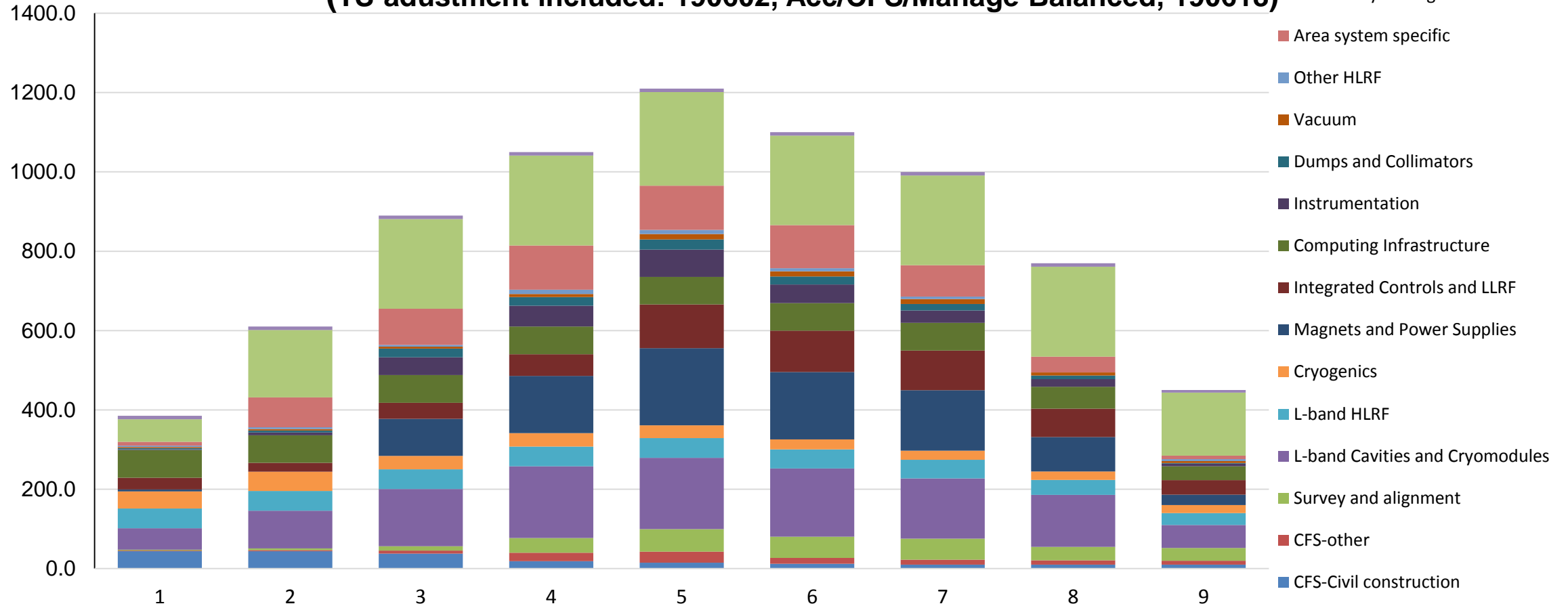
Some "zero" should be revised.

ILC250 Staff (HR) Annual Profile adjusted/updated for smoothing

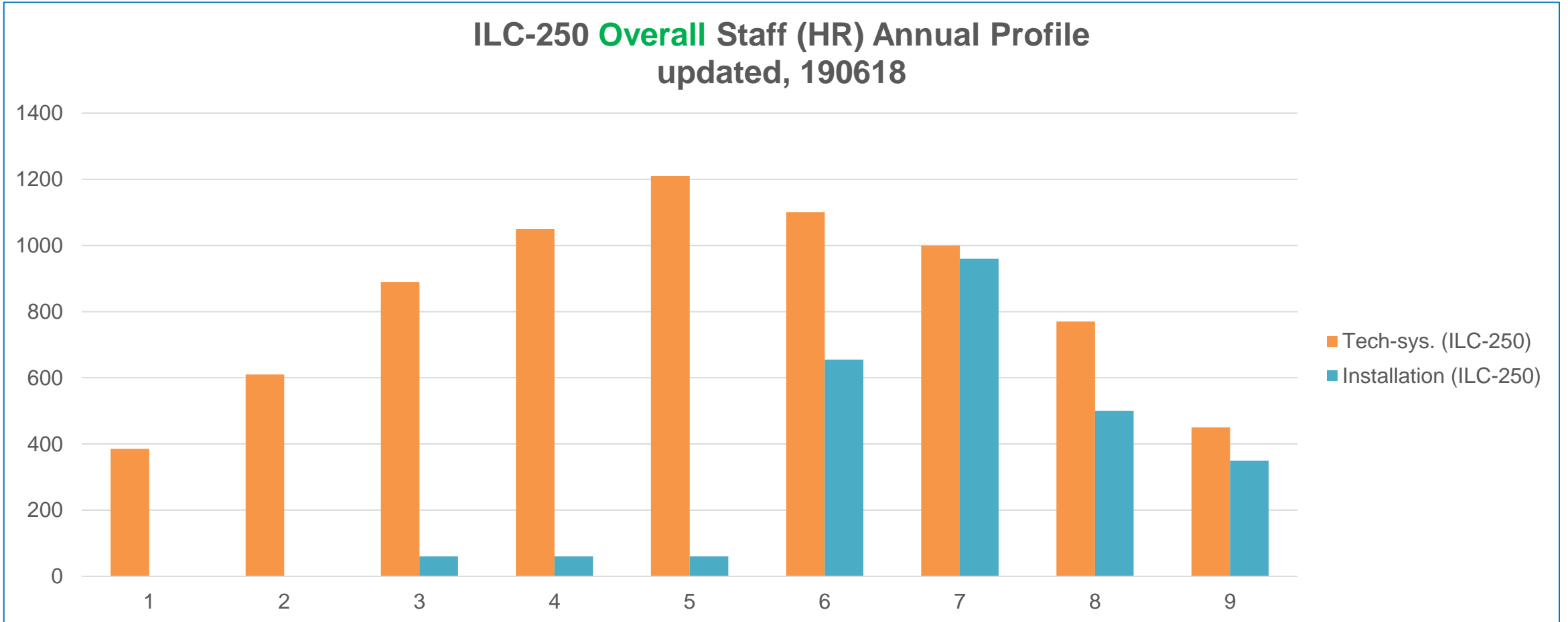
Also, matched to MEXT-report-2018, on Acc/CFS/Manage.

	1	2	3	4	5	6	7	8	9	Total	Avg.	Sum: CFS/ Acc/Man
CFS-Civil construction	43.7	43.7	37.9	18.8	15.0	12.0	10.0	10.0	10.0	201.1	22.3	594.9
CFS-other	2.0	3.1	7.6	21.3	27.5	14.7	12.5	11.1	10.0	109.7	12.2	
Survey and alignment	2.0	4.2	11.1	37.2	56.8	53.8	53.0	33.6	32.2	284.0	31.6	
L-band Cavities and Cryomodules	54.2	95.0	144.0	180.5	180.0	171.7	151.8	131.2	57.8	1165.9	129.5	5118.0
L-band HLRF	49.6	49.6	49.6	49.7	49.6	48.2	47.3	37.7	30.0	411.3	45.7	
Cryogenics	43.2	49.0	34.1	34.2	32.6	25.0	22.6	21.4	20.0	282.0	31.3	
Magnets and Power Supplies	5.0	0.0	93.5	144.0	194.1	170.0	152.4	86.9	26.2	872.1	96.9	
Integrated Controls and LLRF	29.5	22.0	40.4	54.5	110.3	104.4	100.2	71.6	36.6	569.2	63.2	
Computing Infrastructure	69.7	69.7	69.7	69.9	69.7	69.7	69.7	54.9	35.1	578.0	64.2	
Instrumentation	2.0	7.0	44.8	52.5	68.6	46.6	31.1	19.3	6.7	278.7	31.0	
Dumps and Collimators	3.0	5.0	22.0	22.0	25.9	20.5	16.8	9.3	1.6	126.0	14.0	
Vacuum	3.0	4.0	4.7	7.6	13.5	12.9	12.5	7.5	5.0	70.8	7.9	
Other HLRF	3.0	4.0	4.7	10.7	10.6	7.9	5.9	0.0	5.0	51.8	5.8	
Area system specific	10.0	75.6	90.9	111.6	111.2	108.2	79.3	40.2	8.4	635.5	70.6	
Laboratory Management	56.5	169.5	226.0	226.6	236.0	226.0	226.0	226.6	159.0	1752.2	194.7	1752.2
Simulations and Operations	8.8	8.8	8.8	8.8	8.8	8.8	8.8	8.8	6.6	76.7	8.5	
TS-Adjustment	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Tech-System-Total (Updated, 1906)	385.1	610.1	889.7	1049.9	1210.1	1100.4	999.7	769.9	450.2	7465.2	829.5	7465.2
Tech-System-Total (Original)	385.1	610.1	889.7	1049.9	1210.1	1100.4	999.7	769.9	450.2	7465.2	829.5	
Installation	0.0	0.0	59.5	59.6	60.5	655.0	959.8	500.4	350.4			
Inst-Adjustment	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0			
Tech-sys. (ILC-250)	385	610	890	1050	1210	1100	1000	770	450	7465	829	
Installation (ILC-250)	0	0	60	60	60	655	960	500	350	2645	294	
TOTAL (ILC-250A)	385	610	950	1110	1270	1755	1960	1270	800	10110	1123	

ILC-250 Tech. System Staff (HR) Annual-Profile (TS-adjustment included: 190602, Acc/CFS/Manage Balanced, 190618)



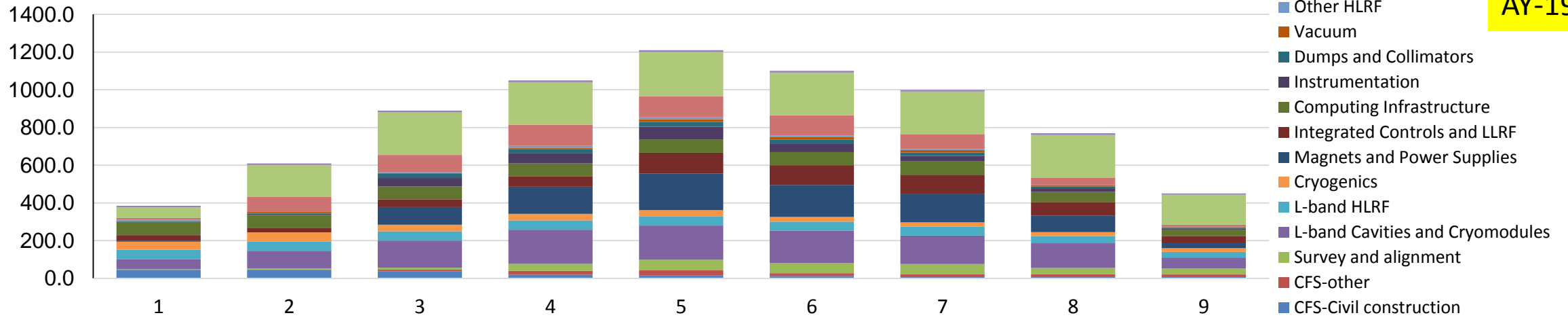
Excel Reference: TDR-schedule-Labor-resource-180118(v1)-180114-190602, Sheet: Tech Sys (2-ay)(ILC250) (2)



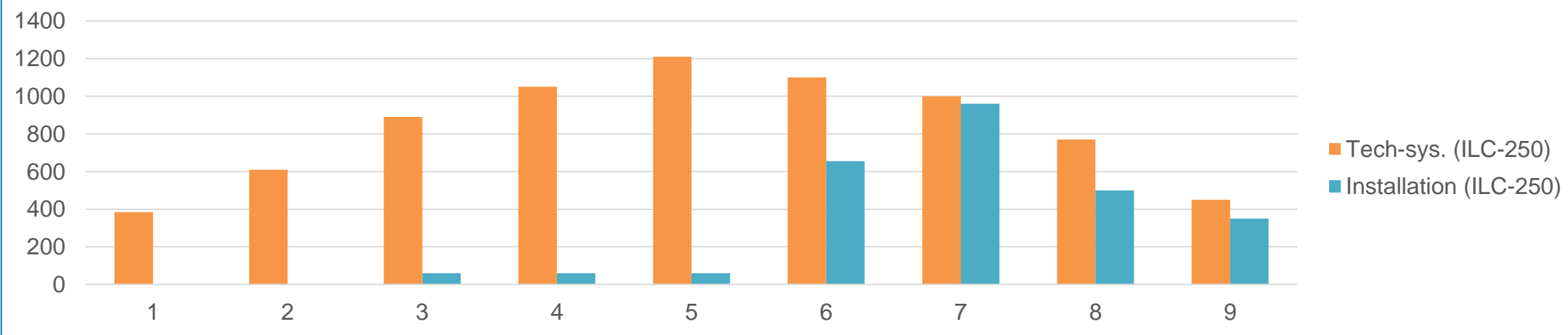
Excel Reference: TDR-schedule-Labor-resource-180118(v1)-180114-190602, Sheet: Tech Sys (2-ay)(ILC250) (2)

ILC-250 Tech. System Staff (HR) Annual-Profile (TS-adjustment included: 190602, Acc/CFS/Manage Balanced, 190618)

AY-190618



ILC-250 Overall Staff (HR) Annual Profile updated, 190618



Appendix

- Data before Adjustment
- ILC250A and A' Cryogenics Consideration,
- Previous Study.

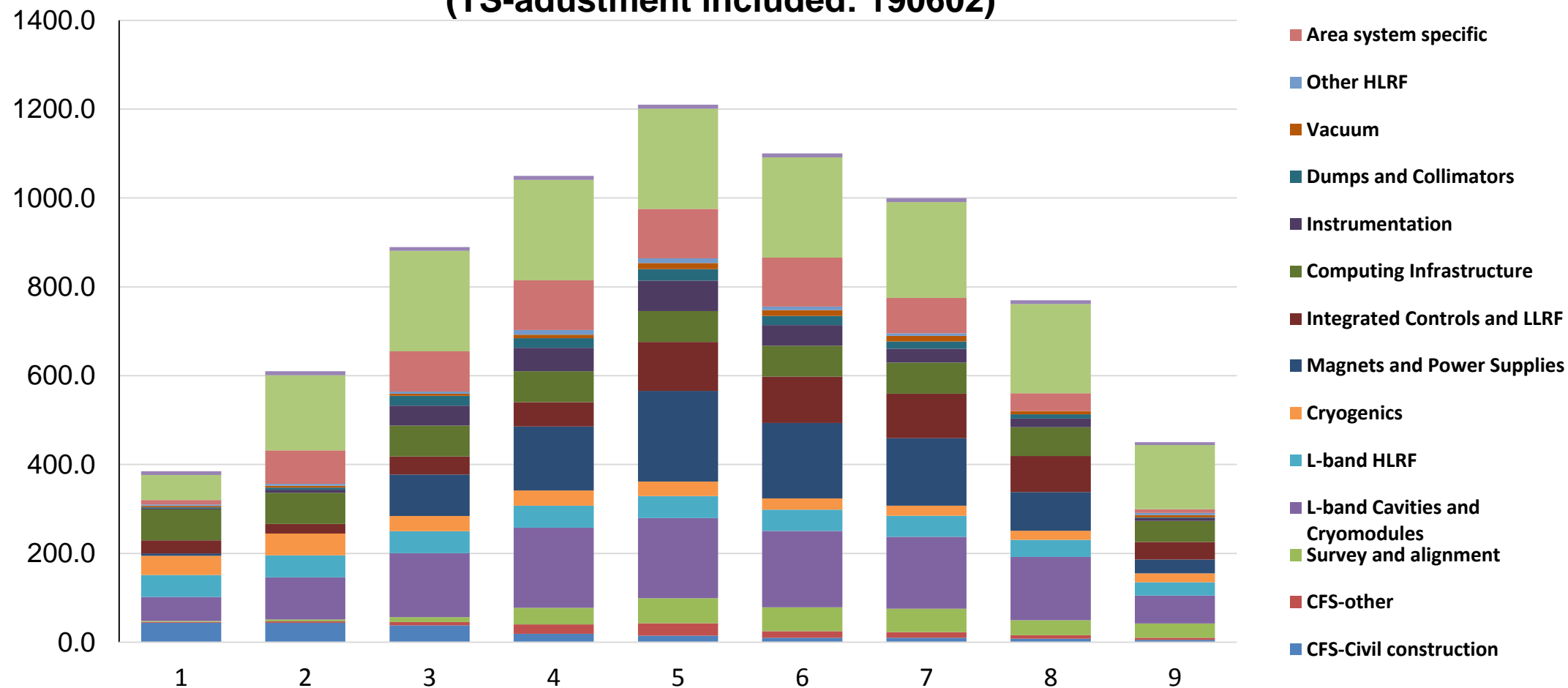
ILC250 Staff (HR) Annual Profile adjusted/updated for smoothing

AY-190602

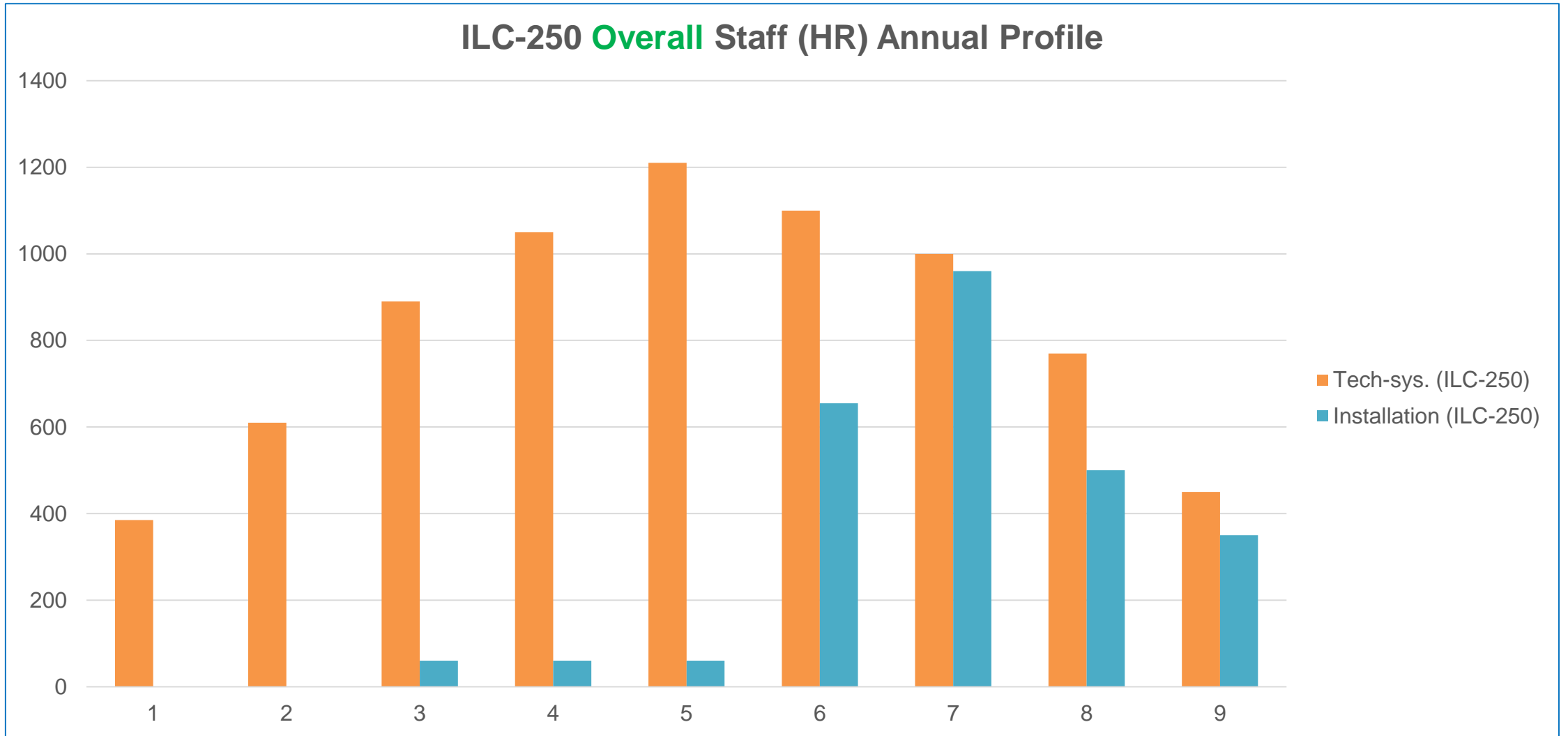
but Acc/CFS/Management balance not consistent with Report to MEXT in 2018

Year	1	2	3	4	5	6	7	8	9	Total	Avg.
CFS-Civil construction	43.7	43.7	37.9	18.8	15.0	10.0	10.0	8.0	5.0	192.1	21.3
CFS-other	2.0	3.1	7.6	21.3	27.5	14.7	12.5	8.1	5.0	101.7	11.3
Survey and alignment	2.0	4.2	11.1	37.2	56.8	53.8	53.0	33.6	32.2	284.0	31.6
L-band Cavities and Cryomodules	54.2	95.0	144.0	180.5	180.0	171.7	161.8	142.2	62.8	1191.9	132.4
L-band HLRF	49.6	49.6	49.6	49.7	49.6	48.2	47.3	38.7	30.0	412.3	45.8
Cryogenics	43.2	49.0	34.1	34.2	32.6	25.0	22.6	20.4	20.0	281.0	31.2
Magnets and Power Supplies	5.0	0.0	93.5	144.0	204.1	170.0	152.4	86.9	31.2	887.1	98.6
Integrated Controls and LLRF	29.5	22.0	40.4	54.5	110.3	104.4	100.2	81.6	39.6	582.2	64.7
Computing Infrastructure	69.7	69.7	69.7	69.9	69.7	69.7	69.7	64.9	47.1	600.0	66.7
Instrumentation	2.0	7.0	44.8	52.5	68.6	46.6	31.1	19.3	6.7	278.7	31.0
Dumps and Collimators	3.0	5.0	22.0	22.0	25.9	20.5	16.8	9.3	1.6	126.0	14.0
Vacuum	3.0	4.0	4.7	7.6	13.5	12.9	12.5	7.5	5.0	70.8	7.9
Other HLRF	3.0	4.0	4.7	10.7	10.6	7.9	5.9	0.0	5.0	51.8	5.8
Area system specific	10.0	75.6	90.9	111.6	111.2	110.2	79.3	40.2	8.4	637.5	70.8
Laboratory Management	56.5	169.5	226.0	226.6	226.0	226.0	216.0	200.6	144.0	1691.2	187.9
Simulations and Operations	8.8	8.8	8.8	8.8	8.8	8.8	8.8	8.8	6.6	76.7	8.5
Tech-System-Total (Updated, 190602)	385.1	610.1	889.7	1049.9	1210.1	1100.4	999.7	769.9	450.2	7465.2	829.5
Installation	0.0	0.0	59.5	59.6	60.5	655.0	959.8	500.4	350.4	2645	294
Year	1	2	3	4	5	6	7	8	9		
Tech-sys. (ILC-250)	385	610	890	1050	1210	1100	1000	770	450	7465	829
Installation (ILC-250)	0	0	60	60	60	655	960	500	350	2645	294
TOTAL (ILC-250A)	385	610	950	1110	1270	1755	1960	1270	800	10110	1123

ILC-250 Tech. System Staff (HR) Annual-Profile (TS-adjustment included: 190602)

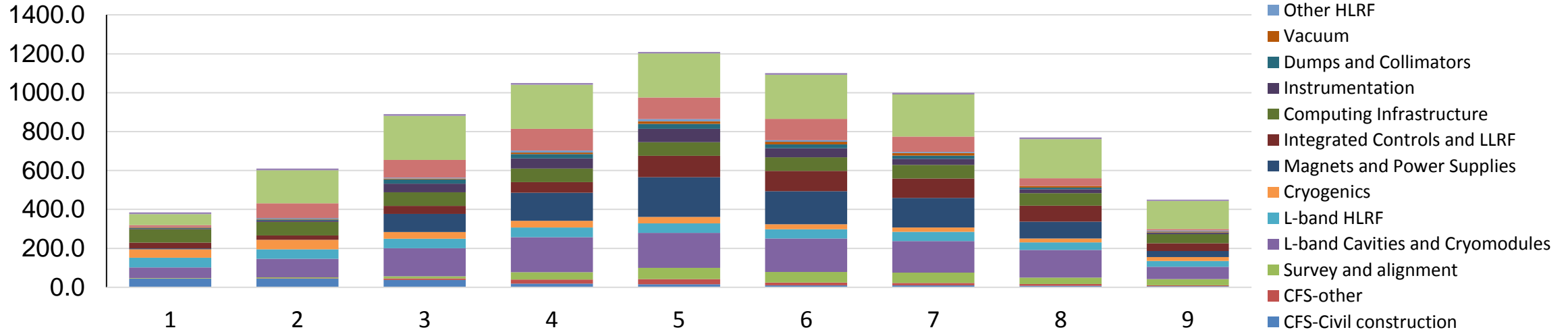


Excel Reference: TDR-schedule-Labor-resource-180118(v1)-180114-190602, Sheet: Tech Sys (2-ay)(ILC250)

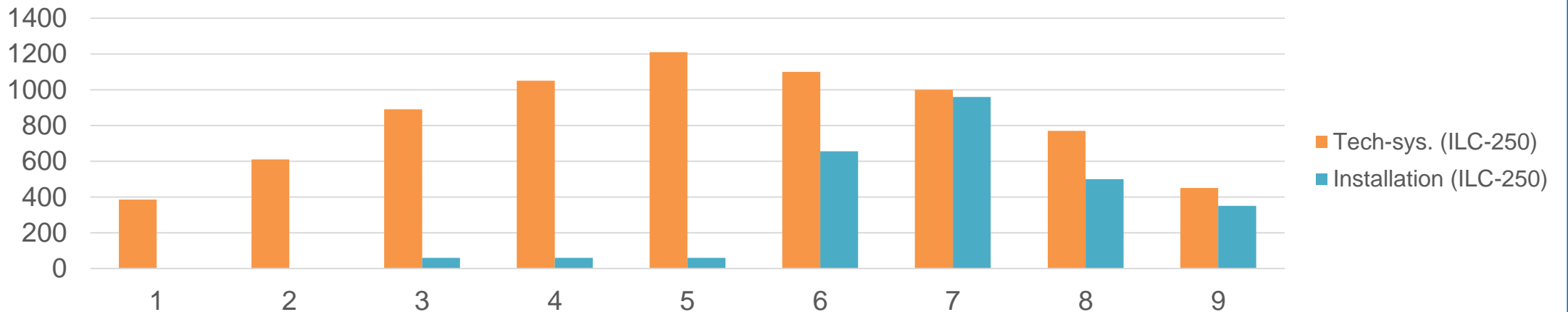


Excel Reference: TDR-schedule-Labor-resource-180118(v1)-180114-190602, Sheet: Tech Sys (2-ay)(ILC250)

ILC-250 Tech. System Staff (HR) Annual-Profile (TS-adustment included: 190602)



ILC-250 Overall Staff (HR) Annual Profile



ILC250 AC Plug-Power Estimates to be updated, re-estimated by NW/BL (190531)

AY-190602

	500 (DKS)	250A-Base L. 5Hz, 1312 L= 1.35E34	250A' (RD) 5Hz, 1312 L = 1.35E34	250A 5Hz, 2625 L=2.7E34	500 @ 250 10Hz, 2625 L= 5.4E34	500 5Hz, 2625 L = ?
Gradient	31.5	31.5	35	31.5	14.7	31.5
Qo	1E10	1E10	1.6E10	1E10	1E10	1E10
ML-Egain	470	220	220	220	220	470
E. Ratio	1	0.47	0.47	0.47	0.47	1
ML	104.1	48.0	47.3	61.1	100.4	130.6
e- Source	4.87	5.6	5.6	5.6	5.6	5.6
e+ Source	9.32	10.2	10.2	10.2	10.2	10.2
DR	15.72	13.6	13.6	21.5	30.3	21.5
RTML	10.40	10.4	10.4	13.9	13.9	13.9
BDS	12.38	9.3	9.3	9.3	9.3	12.4
Dumps	1.21	1.2	1.2	1.2	1.2	1.2
IR	5.76	5.8	5.8	5.8	5.8	5.8
Main Campus						
General Margin						
Total	163.8	104.0	103.3	128.5	178.6	201.1

Excel Reference: ILC TDR AC Power Scaling CR018-b (190602)

ILC250 AC Plug-Power Estimates to be updated

AY-190603

Adjustment suggested by AY, referring Re-estimate by NW/BL (190602)

	500 (DKS)	250A-Base L. 5Hz, 1312 L= 1.35E34	250A' (RD) 5Hz, 1312 L = 1.35E34	250A 5Hz, 2625 L=2.7E34	500 @ 250 10Hz, 2625 L= 5.4E34	500 5Hz, 2625 L = ?
Gradient	31.5	31.5	35	31.5	14.7	31.5
Qo	1E10	1E10	1.6E10	1E10	1E10	1E10
ML-Egain	470	220	220	220	220	470
E. Ratio	1	0.47	0.47	0.47	0.47	1
ML	104.1	49.4	48.5	62,6	103.0	133.8
e- Source	4.87	5.6	4.8	5.6	5.6	5.6
e+ Source	9.32	10.2	9.6	10.2	10.2	10.2
DR	15.72	13.6	13.6	21.5	30.3	21.5
RTML	10.40	10.4	8.4	13.9	13.9	13.9
BDS	12.38	9.3	9.3	9.3	9.3	12.4
Dumps	1.21	1.2	1.2	1.2	1.2	1.2
IR	5.76	5.8	5.8	5.8	5.8	5.8
Main Campus		2.7	2.7	2.7	2.7	2.7
General Margin		3.3	3.1	4.0	5.4	6.2
Total	163.8	111.5	106.9	136.7	184.5	213.2

Excel Reference: ILC TDR AC Power Scaling CR018-b (190602)

LIC Labor-Matrix in TDR (500 GeV) & Staging (250 GeV)

Updated, 170725

(Offset + Linear-Scaling – updated, 170725)

Area System	From GD-140311		TDR Cost Matrix DKS		TRR_Labor_Matrix-140311				TDR HR matrix: updated by GD, 2014-3-11								TOTAL
	OFS	Survey and alignment	L-band Cavities and Cryomodules	L-band HLRF	Cryogenics	Installation	Magnets and Power Supplies	Integrated Controls and LLRF	Computing Infrastructure	Instrumentation	Dumps and Collimators	Vacuum	Other HLRF	Area system specific	Laboratory Management	Simulations and Operations	
Common	71,791	-	-	-	-	1,050,000	-	438,639	1,392,000	-	-	-	-	-	3,998,400	175,000	7,125,830
e- Source	23,775	27,720	47,811	11,875	26,645	200,000	130,695	19,881	-	145,263	4,320	628	9,266	140,250	-	-	788,129
e+ Source	20,078	27,720	58,329	10,390	26,645	300,000	257,135	38,640	-	72,314	48,495	5,264	18,205	242,750	-	-	1,125,966
Damping Rings	49,624	48,576	-	-	21,300	1,000,000	340,807	95,052	-	51,000	-	19,617	40,239	330,197	-	-	1,996,411
RTML	56,413	29,040	195,069	50,468	31,226	250,000	542,484	74,337	-	100,000	39,314	59,890	-	140,250	-	-	1,568,492
Main Linac	441,373	252,560	3,253,063	841,629	431,429	2,200,000	274,900	615,724	-	80,000	-	-	-	140,250	-	-	8,530,927
BDS	50,370	137,104	-	-	15,101	700,000	246,600	76,713	-	68,000	118,457	34,000	-	187,000	-	-	1,633,345
IR	73,914	49,280	-	-	-	-	-	-	-	-	-	-	-	-	-	-	123,194
TOTAL	787,338	572,000	3,554,272	914,362	552,345	5,700,000	1,792,621	1,358,986	1,392,000	516,577	210,586	119,400	67,710	1,180,697	3,998,400	175,000	22,892,294

Area System	TDR (500GeV) Construct. + Install. [k p-hrs]	Scaling Factor (a model for 250 GeV) Unchange/offset + reduction, ratio	Staging (250 GeV) [k p-hrs] (%)	Reduct. Ratio [%]
Common	6,076 + 1,050 = 7,126	$0.3 + 0.2^* + 0.5 \times 0.490^{**} = 0.745$	5,309	- 25.5 %
e- Source	588 + 200 = 788	1.00	788	0 %
e+ Source	826 + 300 = 1,126	1.00	1,126	0 %
Damping Rings	996 + 1,000 = 1,996	1.00	1,996	0 %
RTML	1,318 + 250 = 1,568	$0.3 + 0.2^* + 0.5 \times 0.490^{**} = 0.745$	1,168	- 25.5 %
Main Linac	6,331 + 2,200 = 8,531	$0.2^* + 0.8 \times 0.490 = 0.592$	5,050	- 40.8 %
BDS	933 + 700 = 1,633	1.00	1,633	0 %
IR	123 + 0 = 123	1.00	123	0 %
TOTAL	17,192 + 5,700 = 22,892	--	17,193 (75.1 %)	- 24.9 %

Notes;

A. Yamamoto: 170628

- $0.3 \{=(22.89-7.13-8.53)/22.89\} + 0.2 = 0.5$
 → ratio (non-ML) + offset (ML): (0.2 for Labor
- ** ML energy staging ratio:
 $0.2 : \text{offset for the subject related the ML.}$
 $(125 \times 1.06 - 15) / (250 \times 1.02 - 15) = 0.490$

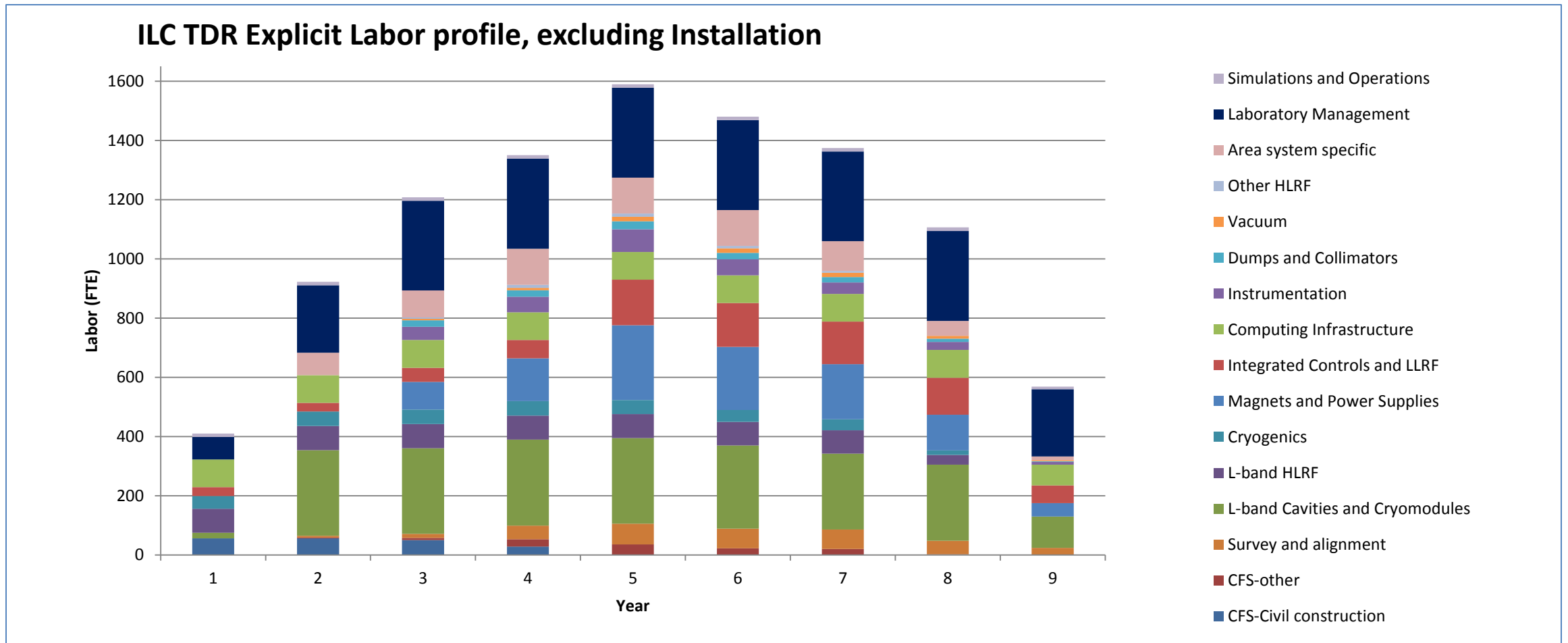
TDR HR: Annual Profile (P-Hrs) (File: TDR Schedule-Labor-130118(v1))

Technical Systems	1	2	3	4	5	6	7	8	9	Total
CFS-Civil construction	95.10554	95.10554	85.1901	47.64457	0	0	0	0	0	323
CFS-other	0	5.244321	12.85757	42.84532	59.99215	38.25649	34.5325	2.932897	0	197
Survey and alignment	0	9.62219	23.03445	78.10301	119.3178	112.5283	111.1512	78.16131	40.08175	572
L-band Cavities and Cryomodules	32.29786	491.9682	491.9682	493.316	491.9682	477.9638	435.7843	436.9782	180.2834	3,533
L-band HLRF	138.0417	138.0417	138.0417	138.4199	138.0417	135.754	134.1398	55.86098	0	1,016
Cryogenics	73.48326	83.2247	83.2247	83.45271	80.63323	67.66827	63.56516	26.47097	0	562
Magnets and Power Supplies	0	0	159.024	244.8363	429.245	362.6887	315.7261	204.5347	76.56634	1,793
Integrated Controls and LLRF	50.11056	50.11056	81.39559	105.4304	261.3907	251.3479	244.2615	212.8194	102.1197	1,359
Computing Infrastructure	159.0235	159.0235	159.0235	159.4592	159.0235	159.0235	159.0235	159.4592	118.9408	1,392
Instrumentation	0	0	76.23333	89.21837	129.7314	92.39265	66.04613	46.09397	16.86104	517
Dumps and Collimators	0	0	37.31793	37.42017	46.21967	37.15599	30.76059	18.029	3.682639	211
Vacuum	0	0	7.998691	12.93493	26.46036	25.44918	24.73569	16.21067	5.610076	119
Other HLRF	0	0	8.040918	18.14325	18.09368	13.37928	10.05276	0	0	68
Area system specific	0	128.5999	154.5202	206.846	206.2808	206.2808	171.1677	85.58764	21.4133	1,181
Laboratory Management	128.9237	386.771	515.6947	517.1076	515.6947	515.6947	515.6947	517.1076	385.7114	3,998
Simulations and Operations	19.99218	19.99218	19.99218	20.04695	19.99218	19.99218	19.99218	20.04695	14.95305	175
TOTAL w/o installation										
Installation	0	0	135.7336	136.1055	135.7336	1305.71	1937.996	1161.28	620.7742	5,433
TOTAL										22,448

TDR HR: Annual Profile: FTE-Yrs (File: TDR Schedule-Labor-130118(v1))

		1	2	3	4	5	6	7	8	9	Total	Average
CFS-Civil construction	55.94443	55.94443	50.11182	28.02622	0	0	0	0	0	0	190	21.1141
CFS-other	0	3.084895	7.563279	25.20313	35.2895	22.50382	20.31324	1.725234	0	0	116	12.85368
Survey and alignment	0	5.660112	13.54968	45.94295	70.18694	66.19312	65.38305	45.97724	23.5775	0	336	37.38562
L-band Cavities and Cryomodules	18.99874	289.393	289.393	290.1859	289.393	281.1552	256.3437	257.046	106.049	0	2,078	230.8842
L-band HLRF	81.20101	81.20101	81.20101	81.42348	81.20101	79.85532	78.90579	32.8594	0	0	598	66.42756
Cryogenics	43.22545	48.95571	48.95571	49.08983	47.43131	39.80486	37.39127	15.57116	0	0	330	36.71392
Magnets and Power Supplies	0	0	93.54351	144.0214	252.497	213.3463	185.7212	120.3145	45.03902	0	1,054	117.1648
Integrated Controls and LLRF	29.4768	29.4768	47.87976	62.01788	153.7593	147.8517	143.6833	125.1879	60.07042	0	799	88.82264
Computing Infrastructure	93.54322	93.54322	93.54322	93.7995	93.54322	93.54322	93.54322	93.7995	69.9652	0	819	90.98039
Instrumentation	0	0	44.84314	52.4814	76.31261	54.34862	38.85066	27.1141	9.91826	0	304	33.7632
Dumps and Collimators	0	0	21.95172	22.01187	27.18804	21.85647	18.09447	10.60529	2.166258	0	124	13.76379
Vacuum	0	0	4.705113	7.60878	15.56492	14.97011	14.5504	9.53569	3.300045	0	70	7.803896
Other HLRF	0	0	4.729952	10.6725	10.64334	7.870162	5.913388	0	0	0	40	4.425482
Area system specific	0	75.64702	90.89425	121.6741	121.3417	121.3417	100.6869	50.34567	12.59606	0	695	77.16971
Laboratory Management	75.83746	227.5124	303.3498	304.1809	303.3498	303.3498	303.3498	304.1809	226.889	0	2,352	261.3333
Simulations and Operations	11.7601	11.7601	11.7601	11.79232	11.7601	11.7601	11.7601	11.79232	8.795913	0	103	11.43791
	409.9872	922.1787	1207.975	1350.132	1589.462	1479.75	1374.491	1106.055	568.3668	0	10008.4	1112.044
Installation	0	0	79.8433	80.06205	79.8433	768.0648	1139.998	683.106	365.1613	0	3,196	
TOTAL	410	922	1,288	1,430	1,669	2,248	2,514	1,789	934	0	13,204	1467.164

TDR Technical Systems Annual Profile (FTE)



ILC-250A HR: Annual Profile: P-Hrs (File: TDR Schedule-Labor-130118-v1)

	1	2	3	4	5	6	7	8	9	TOTAL	
CFS-Civil construction	74.30722	74.30722	64.39179	32.03159	0	0	0	0	0	245	
CFS-other	0	5.244321	12.85757	36.17511	46.76047	25.02481	21.30082	1.809111	0	149	
Survey and alignment	0	7.168531	18.84947	63.31077	96.56763	91.50947	90.13235	57.08488	238.3608	663	
L-band Cavities and Cryomodules	24.0619	305.9322	305.9322	306.7704	305.9322	291.9278	257.9843	258.6911	106.7278	2,164	
L-band HLRF	84.30056	84.30056	84.30056	84.53152	84.30056	82.01288	80.39868	33.4811	0	618	
Cryogenics	73.48326	83.2247	57.99883	58.15773	55.40736	42.4424	38.3393	15.96595	0	425	
Magnets and Power Supplies	0	0	159.024	244.8363	372.5267	305.9705	259.0078	147.6611	53.10209	1,542	
Integrated Controls and LLRF	50.11056	37.33237	68.6174	92.61719	187.4385	177.3956	170.3093	138.6645	67.2547	990	
Computing Infrastructure	118.4725	118.4725	118.4725	118.7971	118.4725	118.4725	118.4725	118.7971	88.61093	1,037	
Instrumentation	0	0	76.23333	89.21837	116.567	79.2282	52.88167	32.89345	11.41493	458	
Dumps and Collimators	0	0	37.31793	37.42017	43.94973	34.88605	28.49065	15.75283	2.743566	201	
Vacuum	0	0	7.998691	12.93493	23.00237	21.99118	21.27769	12.7432	0	100	
Other HLRF	0	0	8.040918	18.14325	18.09368	13.37928	10.05276	0	0	68	
Area system specific	0	128.5999	154.5202	189.6403	189.1222	189.1222	134.7283	68.38198	14.31479	1,068	
Laboratory Management	96.04814	288.1444	384.1926	385.2451	384.1926	384.1926	384.1926	385.2451	287.355	2,979	
Simulations and Operations	14.89417	14.89417	14.89417	14.93498	14.89417	14.89417	14.89417	14.93498	11.14002	130	
TS-Adjustment											
Installation	0	0	101.1215	101.3986	101.1215	1111.749	1631.597	854.0416	391.6043	4,293	
Inst-Adjustment											
TOTAL										17,130	

ILC-250A HR: Annual Profile: FTE-Yrs (File: TDR Schedule-Labor-190526:ay)

	1	2	3	4	5	6	7	8	9	Total	Average
CFS-Civil construction	43.71013	43.71013	37.87752	18.84211	0	0	0	0	0	144	16.01554
CFS-other	0	3.084895	7.563279	21.27947	27.50616	14.72048	12.52989	1.064183	0	88	9.749818
Survey and alignment	0	4.216783	11.08792	37.24163	56.80449	53.8291	53.01903	33.57934	140.2122	390	43.33228
L-band Cavities and Cryomodules	14.15406	179.9601	179.9601	180.4532	179.9601	171.7222	151.7555	152.1712	62.78103	1,273	141.4353
L-band HLRF	49.58856	49.58856	49.58856	49.72442	49.58856	48.24287	47.29334	19.69476	0	363	40.36774
Cryogenics	43.22545	48.95571	34.11696	34.21043	32.59257	24.96612	22.55253	9.391738	0	250	27.77905
Magnets and Power Supplies	0	0	93.54351	144.0214	219.1334	179.9826	152.3576	86.85945	31.23652	907	100.7927
Integrated Controls and LLRF	29.4768	21.96022	40.36318	54.4807	110.2579	104.3504	100.1819	81.56736	39.56159	582	64.6889
Computing Infrastructure	69.6897	69.6897	69.6897	69.88063	69.6897	69.6897	69.6897	69.88063	52.12408	610	67.78039
Instrumentation	0	0	44.84314	52.4814	68.56881	46.60482	31.10687	19.34909	6.714662	270	29.9632
Dumps and Collimators	0	0	21.95172	22.01187	25.85278	20.52121	16.75921	9.266371	1.613862	118	13.10856
Vacuum	0	0	4.705113	7.60878	13.5308	12.93599	12.51629	7.496	0	59	6.532553
Other HLRF	0	0	4.729952	10.6725	10.64334	7.870162	5.913388	0	0	40	4.425482
Area system specific	0	75.64702	90.89425	111.5531	111.2484	111.2484	79.25192	40.22469	8.420464	628	69.83202
Laboratory Management	56.4989	169.4967	225.9956	226.6148	225.9956	225.9956	225.9956	226.6148	169.0323	1,752	194.6933
Simulations and Operations	8.761277	8.761277	8.761277	8.78528	8.761277	8.761277	8.761277	8.78528	6.552955	77	8.521242
TS-Adjustment	70	-65	-36	0	0	-1	10	4	-68	(86)	
	385.1049	610.0711	889.6718	1049.862	1210.134	1100.441	999.684	769.9449	450.2497	7,465	829.4626
Installation	0	0	59.48326	59.64622	59.48326	653.9699	959.7629	502.3774	230.3555	2,525	
Inst-Adjustment	0	0	1	0	1	1	0	-2	119	120	
TOTAL	385	610	950	1,110	1,271	1,755	1,959	1,270	800	10,110	1123.36