



LCLS Project		Baseline Change Request (BCR)				CR No. BCR-CF-55		LEVEL 2	
ORIGINATOR: David Saenz			PHONE: 2512		DATE: 11/7/2006 (SEP 2006)				
CHANGE TITLE: CONVENTIONAL FACILITIES SYSTEM - CF Estimate To Complete (ETC)									
BCR JUSTIFICATION: <input type="checkbox"/> Budget Addition <input type="checkbox"/> Budget Reduction <input type="checkbox"/> Budget Transfer <input type="checkbox"/> Underestimated Budget <input type="checkbox"/> Cost Growth <input type="checkbox"/> Cost Reduction <input checked="" type="checkbox"/> Schedule/Milestone Change <input checked="" type="checkbox"/> Other Revised Cost Estimate									
CF WBS has been updated to include Estimate To Complete (ETC) data. Areas impacted include 1.9.1 (Systems Management & Integration), 1.9.2 (A&E Design Support), 1.9.3 Construction T3 for non Turner Construction activities, and WBS 2.9 for OPC support. Information provided is based on engineering estimates, vendor quotes, or bids. This BCR does not include Trade Subcontractors cost related to Bid Groups #2-#4.									
IMPACTS (ESTIMATE THE IMPACTS OF IMPLEMENTING THE PROPOSED CHANGE):									
Fund Types effected by this BCR: <input type="checkbox"/> PED <input checked="" type="checkbox"/> CON <input type="checkbox"/> LLP <input type="checkbox"/> R&D <input checked="" type="checkbox"/> PreOps <input type="checkbox"/> Spares									
Description	WBS	Work Pkg No.	Thru FY2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	TOTAL
Current Baseline	1.09.01.01	multiple	1,374,861	479,760	861,191	418,261	407,514	96,417	3,638,004
	1.09.01.02	multiple	66,683	388,078	611,700	776,562	566,079	289,251	2,698,353
	1.09.01.03	multiple	0	589,228	3,207,013	6,012,652	4,934,594	1,009,950	15,753,437
	1.09.01.04	multiple	23,998	77,913	136,250	36,954	0	0	275,115
	1.09.01.05	multiple	13,217	128,128	140,813	0	0	0	282,158
	1.09.02.02	multiple	245,281	1,761,924	3,501,215	0	0	0	5,508,420
	1.09.02.03	multiple	0	264,875	17,384	0	0	0	282,259
	1.09.03.01	multiple	0	425,149	2,511,650	0	0	0	2,936,799
	1.09.03.02	multiple	0	274,902	2,898,978	0	0	0	3,173,880
	1.09.03.03	multiple	0	0	0	0	0	0	0
	1.09.03.04	multiple	0	60,765	32,016	1,060,947	0	0	1,153,728
	1.09.03.05	multiple	0	0	3,286,883	2,671,253	0	0	5,958,136
	1.09.03.06	multiple	0	0	36,324	178,398	0	0	214,722
	1.09.03.07	multiple	0	0	0	0	0	0	0
	1.09.03.08	multiple	0	0	0	10,411,398	50,928	0	10,462,326
	1.09.03.09	multiple	0	0	0	1,878,211	16,864	0	1,895,075
	1.09.03.10	multiple	0	0	0	1,983,355	222,394	0	2,205,749
	1.09.03.11	multiple	0	0	0	11,200,249	484,189	0	11,684,438
	1.09.03.12	multiple	0	0	0	6,829,739	134,166	0	6,963,905
	1.09.03.13	multiple	0	0	314,306	5,959,540	1,001,360	0	7,275,206
	1.09.03.14	multiple	0	0	0	9,990,091	166,789	0	10,156,880
	1.09.03.15	multiple	0	0	0	2,958,017	38,015	0	2,996,032
	1.09.03.16	multiple	0	0	12,676	2,016,893	31,685	0	2,061,254
	1.09.03.17	multiple	0	0	0	1,173,047	344,014	0	1,517,061
	1.09.03.18	multiple	0	0	0	6,384,238	43,173	0	6,427,411
	1.09.03.19	multiple	0	0	0	2,992,008	12,965,514	4,315,284	20,272,806
TEC Current Baseline			1,724,040	4,450,722	17,568,399	74,931,813	21,407,278	5,710,902	125,793,154
OPC Current Baseline	2.09.03.05	multiple	0	0	14,525	161,175	364,444	80,936	621,080
Proposed Baseline	1.09.01.01	multiple	1,374,861	479,760	1,059,633	518,729	229,913	94,169	3,757,065
	1.09.01.02	multiple	66,683	388,078	1,144,535	1,622,566	702,148	49,296	3,973,306
	1.09.01.03	multiple	0	589,228	4,261,044	6,591,181	3,823,017	1,313,440	16,577,910
	1.09.01.04	multiple	23,998	77,913	189,958	109,461	0	0	401,330
	1.09.01.05	multiple	13,217	128,128	123,454	16,545	0	0	281,344
	1.09.02.02	multiple	245,281	1,761,924	3,374,975	18,872	0	0	5,401,052
	1.09.02.03	multiple	0	264,875	17,384	0	0	0	282,259
	1.09.03.01	multiple	0	425,149	2,640,088	63,197	0	0	3,128,434
	1.09.03.02	multiple	0	274,902	3,154,472	24,848	0	0	3,454,222
	1.09.03.03 (new)	multiple	0	0	0	287,777	74,757	0	362,534
	1.09.03.04	multiple	0	60,765	127,239	960,735	0	0	1,148,739
Page 1 of 2	1.09.03.05	multiple	0	0	3,998,879	2,623,947	223,100	0	6,845,926
	1.09.03.06	multiple	0	0	37,150	177,572	0	0	214,722

LCLS Project	Baseline Change Request (BCR)					CR No. BCR-CF-55		LEVEL 2	
		1.09.03.07	multiple	0	0	0	0	0	0
	1.09.03.08	multiple	0	0	0	8,032,793	2,806,193	0	10,838,986
	1.09.03.09	multiple	0	0	0	1,644,144	248,215	0	1,892,359
	1.09.03.10	multiple	0	0	0	1,981,025	222,008	0	2,203,033
	1.09.03.11	multiple	0	0	0	11,400,227	491,096	0	11,891,323
	1.09.03.12	multiple	0	0	0	5,499,907	1,461,282	0	6,961,189
	1.09.03.13	multiple	0	0	0	4,681,563	2,276,622	0	6,958,185
	1.09.03.14	multiple	0	0	0	9,279,157	1,189,314	0	10,468,471
	1.09.03.15	multiple	0	0	0	2,955,216	40,816	0	2,996,032
	1.09.03.16	multiple	0	0	0	2,015,466	33,112	0	2,048,578
	1.09.03.17	multiple	0	0	0	1,107,165	422,572	0	1,529,737
	1.09.03.18	multiple	0	0	0	6,386,329	46,266	0	6,432,595
	1.09.03.19	multiple	0	0	0	2,992,008	12,965,514	4,312,497	20,270,019
<b>Proposed Baseline</b>			1,724,040	4,450,722	20,128,811	70,990,430	27,255,945	5,769,402	130,319,350
<b>OPC Propose Baseline</b>	2.09.03.05	multiple	0.0	0	0	168,832.0	646,339.0	245,237.0	1,060,408
<b>Total Increase (Decrease) to Baseline-TEC</b>				0	2,560,412	(3,941,383)	5,848,667	58,500	4,526,196
<b>Total Increase (Decrease) to Baseline-OPC</b>									439,328
<b>Total Increase (Decrease) to Baseline-TPC</b>									4,965,524

WBS/WBS/Milestone Dictionary or Level 1-3 Milestones (any change to WBS, WBS Dictionary or Milestone Dates/Dictionary required? Please enter change here):

Add new WBS 1.09.03.03 for BTH West and revise WBS Dictionary.

**SCHEDULE** (any impact on critical path(s)? What about impacts to adjoining systems?):

This Estimate to Complete incorporates the General Contractors proposed construction schedule dated Aug 14, 06 (related to the beam path only, see attached). The schedule reflects CF Level 4 milestones for both a co-occupancy and beneficial occupancy milestones. Specific dates for these milestones will be provided in BCR CF-57.

**TECHNICAL** (any impact on the LCLS Parameters?):

None

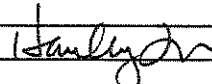
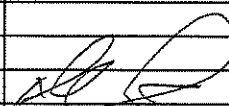
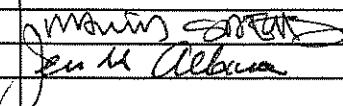
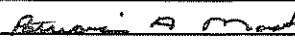
**INTEGRATION** (any impact on the global LCLS (controls, alignment, commissioning)? What about impacts to adjoining systems?):

Proposal has been reviewed with other System Managers. Impacts are minimal, proposed solutions include co-occupancy with the general contractor during their testing and balance (commissioning) phase. This will facilitate integration of such items as cable plant, stands, etc. by allowing the technical installation groups early access to the facilities.

**Impact of NOT Approving or Delaying Approval of this Request:**

Staff level increases required to manage the CM/GC will not be available in a manner to support the construction schedule.

~~LCLS~~

LCLS Project	Baseline Change Request (BCR)	CR No. BCR-CF-55	LEVEL 2
<b>APPROVALS:</b>			
	<b>NAME</b>	<b>SIGNATURE</b>	<b>DATE</b>
<b>LEVEL 2</b>			
DOE Federal Project Director	H. Lee		4/10/07
<b>CCB3 MEMBERS (SIGNATURES AS REQUIRED)</b>			
<b>LEVEL 3</b>			
Project Director	J. Galayda		11/9/06
Chief Engineer	M. Reichenadter		
<b>LEVEL 4</b>			
E-Beam System Manager	D. Schultz		
Photon Beam System Manager	J. Arthur		
Conventional Facilities System Manager	D. Saenz		11/7/06
Conventional Facilities	J. Albino		11/7/06
<b>OTHER</b>			
Control Account Manager (CAM)			
Cost & Schedule Manager	P. Mast		11/7/06
Finance Manager	W. Sisson		
System Physicist Liason			
ES&H Officer (if applicable)			
Procurement Officer (if applicable)			



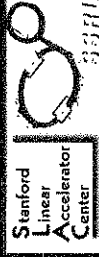
Stanford Linear Accelerator Center  
Stanford Synchrotron Radiation Laboratory

# LCLS BCR CF-55 (rev 2) Estimate To Complete (ETC) November 7, 2006

Nov 7, 2006

BCR CF 55 Presentation (r2)

David Saenz  
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## Summary & Background

### ■ CF-55

#### ■ Summary of BCR

- Request for increase to CF budget of \$4.96M for CF staff increases, contractor cost for conforming with revised standards and added scope due to design changes.

#### ■ Background

- Baseline WBS estimate has been updated. Increase in costs are results of design changes and re-planning staff levels due to late start, longer duration for the CF staff



## CF-55

- **Solution**
  - Authorize increase in budget to cover CF updated ETC
- **Stakeholders Review**
  - LCLS System Managers, WBS Managers and PO
- **Impact of this BCR**
  - Estimate to complete exceeds current budget
  - No cost-effective alternate funding source was identified (see next slide)
- **Impact of not approving this BCR**
  - Insufficient CF staff-levels
  - Inability to meet updated standards
  - Inability to re-capture Value-engineered savings

## Options Under Consideration

- Is there anything else we should know?
  - CF is evaluating opportunities to off-set the cost impact of this BCR
    - Additional VE items (**Potential \$.09M Savings**)
      - Delete BTH ceiling plug (WAG \$10K) – deleted (cost of change order too high)
      - Reduce BTH concrete wall thickness to exact RP requirement of 70" as opposed to 72" (\$80K) – deleted (cost of change order too high)
      - CLOC 2<sup>nd</sup> Floor shell build-out only (\$1.8M) – deleted with CLOC removal
      - Delete CLOC landscaping budget allowance (\$250K) – deleted with CLOC removal

Linac Coherent Light Source BCWS Profile (AYM\$)													CF55 AFTER				
WBS	System	FY02	FY03	FY04	FY05	FY06	FY07	FY08	FY09	Total							
1.1	Project Mgmt., Admin. & Integration	0.00	1.45	2.39	5.75	8.24	4.66	1.90	0.58	24.96							
1.2	Injector System	0.00	0.65	1.91	4.60	11.21	2.40	0.03	0.00	20.79							
1.3	Linac System	0.00	0.19	1.15	1.92	7.52	10.89	3.01	0.00	24.68							
1.4	Undulator System	0.00	0.59	1.58	5.86	15.88	13.49	3.56	0.13	41.09							
1.5	X-Ray Transport & Diagnostics	0.00	0.71	0.82	3.28	5.74	12.56	2.26	0.00	25.37							
1.6	X-Ray Endstations	0.00	0.00	0.20	0.54	1.36	6.07	6.11	0.29	14.55							
1.9	Conventional Facilities	0.00	0.12	1.60	4.45	21.06	76.92	20.37	5.77	130.30							
	<b>Estimated Base Cost</b>	<b>0.00</b>	<b>3.71</b>	<b>9.65</b>	<b>26.40</b>	<b>71.00</b>	<b>126.99</b>	<b>37.24</b>	<b>6.76</b>	<b>281.75</b>							
	Contingency	0.00	0.00	0.02	23.28	14.55	-21.09	13.26	3.24	33.25							
	Cumulative Contingency	0.00	0.00	0.02	23.30	37.85	16.75	30.01	33.25	33.25							
	% Contingency	0.0%	0.0%	0.0%	88.2%	20.5%	-16.6%	35.6%	47.9%	10.6%							
	<b>Total Estimated Cost (Base + Contingency)</b>	<b>0.00</b>	<b>3.71</b>	<b>9.67</b>	<b>49.68</b>	<b>85.54</b>	<b>105.90</b>	<b>50.50</b>	<b>10.00</b>	<b>315.00</b>							
2.1	Project Mgmt., Admin. & Integration	1.50	0.00	1.15	1.84	2.10	6.51	7.68	11.30	32.07							
2.2	Injector System	0.00	0.00	0.13	0.57	0.32	4.44	1.42	0.41	7.30							
2.3	Linac System	0.00	0.00	0.00	0.00	0.00	0.73	1.04	0.56	2.32							
2.4	Undulator System	0.00	0.00	0.45	0.30	0.23	2.35	0.87	0.44	4.63							
2.5	X-Ray Transport & Diagnostics	0.00	0.00	0.27	0.22	0.00	0.72	2.08	1.66	4.94							
2.6	X-Ray Endstations	0.00	0.00	0.00	0.13	0.60	1.38	2.44	1.00	5.55							
2.9	Conventional Facilities	0.00	0.00	0.00	0.00	0.00	0.17	0.65	0.25	1.06							
	<b>Other Project Costs</b>	<b>1.50</b>	<b>0.00</b>	<b>2.00</b>	<b>3.07</b>	<b>3.25</b>	<b>16.29</b>	<b>16.16</b>	<b>15.61</b>	<b>57.87</b>							
	Management Reserve	0.00	0.00	0.00	0.93	0.25	-0.29	-0.66	5.89	6.13							
	Cumulative Management Reserve	0.00	0.00	0.00	0.93	1.18	0.89	0.23	6.12	6.12							
	% Management Reserve	0.0%	0.0%	0.0%	30.4%	7.7%	-1.8%	-4.1%	37.8%	9.6%							
	<b>Total Other Project Cost (Base + MR)</b>	<b>1.50</b>	<b>0.00</b>	<b>2.00</b>	<b>4.00</b>	<b>3.50</b>	<b>16.00</b>	<b>15.50</b>	<b>21.50</b>	<b>64.00</b>							
	<b>Total Project Costs (Base + Cont. + OPC)</b>	<b>1.50</b>	<b>3.71</b>	<b>11.67</b>	<b>53.68</b>	<b>89.04</b>	<b>121.90</b>	<b>66.00</b>	<b>31.50</b>	<b>379.00</b>							
<b>Linac Coherent Light Source Funding Profile (AYM\$)</b>																	
		FY02	FY03	FY04	FY05	FY06	FY07	FY08	FY09	Total							
	TEC Funding	0.00	5.93	7.46	49.68	85.54	105.90	50.50	10.00	315.00							
	OPC Funding	1.50	0.00	2.00	4.00	3.50	16.00	15.50	21.50	64.00							
	Total Funding	1.50	5.93	9.46	53.68	89.04	121.90	66.00	31.50	379.00							

Linac Coherent Light Source BCWS Profile (AYM\$)													JULY 2006 BEFORE			
WBS	System	FY02	FY03	FY04	FY05	FY06	FY07	FY08	FY09	Total						
1.1	Project Mgmt., Admin. & Integration	BCWS	0.00	1.45	2.39	5.75	8.24	4.66	1.90	0.58	24.96					
1.2	Injector System	BCWS	0.00	0.65	1.91	4.60	11.21	2.40	0.03	0.00	20.79					
1.3	Linac System	BCWS	0.00	0.19	1.15	1.92	7.52	10.89	3.01	0.00	24.68					
1.4	Undulator System	BCWS	0.00	0.59	1.58	5.86	15.88	13.49	3.56	0.13	41.09					
1.5	X-Ray Transport & Diagnostics	BCWS	0.00	0.71	0.82	3.28	5.74	12.56	2.26	0.00	25.37					
1.6	X-Ray Endstations	BCWS	0.00	0.00	0.20	0.54	1.36	6.07	6.11	0.29	14.55					
1.9	Conventional Facilities	BCWS	0.00	0.12	1.60	4.45	17.57	74.93	21.41	5.71	125.79					
<b>Estimated Base Cost</b>		<b>BCWS</b>	<b>0.00</b>	<b>3.71</b>	<b>9.65</b>	<b>26.40</b>	<b>67.50</b>	<b>125.00</b>	<b>38.28</b>	<b>6.70</b>	<b>277.24</b>					
Contingency		BCWS	0.00	0.00	0.02	23.28	18.04	-19.10	12.22	3.30	37.76					
Cumulative Contingency		BCWS	0.00	0.00	0.02	23.30	41.34	22.24	34.46	37.76	37.76					
% Contingency		BCWS	0.0%	0.0%	0.0%	88.2%	26.7%	-15.3%	31.9%	49.1%	12.0%					
<b>Total Estimated Cost (Base + Contingency)</b>		<b>BCWS</b>	<b>0.00</b>	<b>3.71</b>	<b>9.67</b>	<b>49.68</b>	<b>85.54</b>	<b>105.90</b>	<b>50.50</b>	<b>10.00</b>	<b>315.00</b>					
2.1	Project Mgmt., Admin. & Integration	BCWS	1.50	0.00	1.15	1.84	2.10	6.51	7.68	11.30	32.07					
2.2	Injector System	BCWS	0.00	0.00	0.13	0.57	0.32	4.44	1.42	0.41	7.30					
2.3	Linac System	BCWS	0.00	0.00	0.00	0.00	0.00	0.73	1.04	0.56	2.32					
2.4	Undulator System	BCWS	0.00	0.00	0.45	0.30	0.23	2.35	0.87	0.44	4.63					
2.5	X-Ray Transport & Diagnostics	BCWS	0.00	0.00	0.27	0.22	0.00	0.72	2.08	1.66	4.94					
2.6	X-Ray Endstations	BCWS	0.00	0.00	0.00	0.13	0.60	1.38	2.44	1.00	5.55					
2.9	Conventional Facilities	BCWS	0.00	0.00	0.00	0.00	0.01	0.16	0.36	0.08	0.62					
<b>Other Project Costs</b>		<b>BCWS</b>	<b>1.50</b>	<b>0.00</b>	<b>2.00</b>	<b>3.07</b>	<b>3.26</b>	<b>16.28</b>	<b>15.88</b>	<b>15.44</b>	<b>57.44</b>					
Management Reserve		BCWS	0.00	0.00	0.00	0.93	0.24	-0.28	-0.38	6.06	6.56					
Cumulative Management Reserve		BCWS	0.00	0.00	0.00	0.93	1.17	0.89	0.50	6.56	6.56					
% Management Reserve		BCWS	0.0%	0.0%	0.0%	30.4%	7.2%	-1.7%	-2.4%	39.2%	10.3%					
<b>Total Other Project Cost (Base + MR)</b>		<b>BCWS</b>	<b>1.50</b>	<b>0.00</b>	<b>2.00</b>	<b>4.00</b>	<b>3.50</b>	<b>16.00</b>	<b>15.50</b>	<b>21.50</b>	<b>64.00</b>					
<b>Total Project Costs (Base + Cont. + OPC)</b>		<b>BCWS</b>	<b>1.50</b>	<b>3.71</b>	<b>11.67</b>	<b>53.68</b>	<b>89.04</b>	<b>121.90</b>	<b>66.00</b>	<b>31.50</b>	<b>379.00</b>					
Linac Coherent Light Source Funding Profile (AYM\$)																
			FY02	FY03	FY04	FY05	FY06	FY07	FY08	FY09	Total					
TEC Funding			0.00	5.93	7.46	49.68	85.54	105.90	50.50	10.00	315.00					
OPC Funding			1.50	0.00	2.00	4.00	3.50	16.00	15.50	21.50	64.00					
Total Funding			1.50	5.93	9.46	53.68	89.04	121.90	66.00	31.50	379.00					