

Detailed Cost Estimate  
INJECTOR SYSTEM

WBS Level						LCLA DCE Aug-2006 Description	Early Start	Early Finish	Fund Type	Res Code	Units	Work Rem. Bud. Qty		Work Rem. Full Burd and Escltd Cost			Contngcy %	Contingency \$
1	2	3	4	5	6							Hours	\$	Labor	M&S	Total		
1	02					<b>INJECTOR SYSTEM</b>						<b>20,294</b>	<b>2,155,050</b>	<b>1,844,815</b>	<b>2,268,687</b>	<b>4,113,502</b>		<b>1,047,814</b>
1	02	01				<b>Injector System Management &amp; Integration</b>						<b>2,441</b>	<b>30,327</b>	<b>237,018</b>	<b>34,202</b>	<b>271,221</b>		<b>62,332</b>
1	02	01	01			<b>Injector System Integration</b>						<b>453</b>	<b>-</b>	<b>40,438</b>	<b>-</b>	<b>40,438</b>		<b>16,175</b>
1	02	01	01	01		<b>Injector Region Integration</b>						<b>220</b>	<b>-</b>	<b>19,509</b>	<b>-</b>	<b>19,509</b>		<b>7,804</b>
1	02	01	01	01		Injector Region Infrastructure Support	1-May-06	29-Dec-06	C	SL_ME1	Hrs	40		3,931		3,931	40%	1,572
1	02	01	01	01		Injector Region Infrastructure Support	1-May-06	29-Dec-06	C	SL_MDD	Hrs	40		3,296		3,296	40%	1,318
1	02	01	01	01		Injector Region Installation Drawing	1-May-06	2-Oct-06	C	SL_MDD	Hrs	16		1,306		1,306	40%	522
1	02	01	01	01		Injector Water System Design	1-May-06	21-Nov-06	C	SL_ME1	Hrs	16		1,568		1,568	40%	627
1	02	01	01	01		Injector Water System Design	1-May-06	21-Nov-06	C	SL_MDD	Hrs	16		1,314		1,314	40%	526
1	02	01	01	01		Injector Water System Consultation	1-Jul-06	26-Sep-06	C	SL_ME1	Hrs	12		1,168		1,168	40%	467
1	02	01	01	01		Injector Water Vibration Consultation	1-Jul-06	26-Sep-06	C	SL_ME1	Hrs	20		1,947		1,947	40%	779
1	02	01	01	01		Integrate Water into Injector Top Install	1-Aug-06	23-Jan-07	C	SL_MDD	Hrs	60		4,980		4,980	40%	1,992
1	02	01	01	02		<b>Gun Area Integration</b>						<b>66</b>	<b>-</b>	<b>5,953</b>	<b>-</b>	<b>5,953</b>		<b>2,381</b>
1	02	01	01	02		Gun Region Installation Drawing	1-May-06	2-Oct-06	C	SL_MDD	Hrs	12		980		980	40%	392
1	02	01	01	02		Gun Area Installation Oversight	2-Aug-06	28-Sep-06	C	SL_ME1	Hrs	36		3,504		3,504	40%	1,402
1	02	01	01	02		Gun Area Installation Oversight	2-Aug-06	28-Sep-06	C	SL_MDD	Hrs	18		1,469		1,469	40%	588
1	02	01	01	02		Gun Region Procurement Support	1-May-06	1-Jul-06	C	SL_ME1	Hrs	-		-		-	40%	-
1	02	01	01	02		Gun Region Fabrication Oversight	1-May-06	1-Jul-06	C	SL_ME1	Hrs	-		-		-	40%	-
1	02	01	01	03		<b>Accelerator Area Integration</b>						<b>54</b>	<b>-</b>	<b>4,973</b>	<b>-</b>	<b>4,973</b>		<b>1,989</b>
1	02	01	01	03		Accelerator Area Installation Drawing	1-Jun-06	31-Aug-06	C	SL_MDD	Hrs	-		-		-	40%	-
1	02	01	01	03		Accelerator Area Table and Columns	1-May-06	30-Jun-06	C	SL_ME1	Hrs	-		-		-	40%	-
1	02	01	01	03		Accelerator Area Table and Columns	1-May-06	30-Jun-06	C	SL_MDD	Hrs	-		-		-	40%	-
1	02	01	01	03		Accelerator Area Top Assembly	1-May-06	30-Jun-06	C	SL_ME1	Hrs	-		-		-	40%	-
1	02	01	01	03		Accelerator Area Top Assembly	1-May-06	30-Jun-06	C	SL_MDD	Hrs	-		-		-	40%	-
1	02	01	01	03		Accelerator Area Procurement Support	1-May-06	28-Jul-06	C	SL_ME1	Hrs	-		-		-	40%	-
1	02	01	01	03		Accelerator Area Fabrication Oversight	1-May-06	30-Jul-06	C	SL_ME1	Hrs	-		-		-	40%	-
1	02	01	01	03		Accelerator Area Installation Oversight	1-Aug-06	28-Sep-06	C	SL_ME1	Hrs	36		3,504		3,504	40%	1,402
1	02	01	01	03		Accelerator Area Installation Oversight	1-Aug-06	28-Sep-06	C	SL_MDD	Hrs	18		1,469		1,469	40%	588
1	02	01	01	04		<b>Heater Area Integration</b>												
1	02	01	01	05		<b>Wall Area Integration</b>												
1	02	01	01	06		<b>Insertion Area Integration</b>						<b>27</b>	<b>-</b>	<b>2,519</b>	<b>-</b>	<b>2,519</b>		<b>1,007</b>
1	02	01	01	06		Insertion Area Drawing	1-May-06	30-Jul-06	C	SL_MDD	Hrs	-		-		-	40%	-
1	02	01	01	06		Insertion Area Procurement Support	1-May-06	30-Jul-06	C	SL_ME1	Hrs	-		-		-	40%	-
1	02	01	01	06		Insertion Area Fabrication Oversight	1-May-06	30-Jul-06	C	SL_ME1	Hrs	-		-		-	40%	-
1	02	01	01	06		Insertion Area Installation Oversight	1-Aug-06	30-Nov-06	C	SL_ME1	Hrs	18		1,775		1,775	40%	710
1	02	01	01	06		Insertion Area Installation Oversight	1-Aug-06	30-Nov-06	C	SL_MDD	Hrs	9		744		744	40%	298
1	02	01	01	07		<b>Spectrometer Area Integration</b>						<b>27</b>	<b>-</b>	<b>2,526</b>	<b>-</b>	<b>2,526</b>		<b>1,010</b>
1	02	01	01	07		Spectrometer Area Drawing	1-May-06	30-Jul-06	C	SL_MDD	Hrs	-		-		-	40%	-
1	02	01	01	07		Spectrometer Area Procurement Support	1-May-06	30-Jul-06	C	SL_ME1	Hrs	-		-		-	40%	-
1	02	01	01	07		Spectrometer Area Fabrication Oversight	1-Jun-06	30-Jul-06	C	SL_ME1	Hrs	-		-		-	40%	-
1	02	01	01	07		Spectrometer Area Installation Oversight	1-Aug-06	2-Jan-07	C	SL_ME1	Hrs	18		1,780		1,780	40%	712
1	02	01	01	07		Spectrometer Area Installation Oversight	1-Aug-06	2-Jan-07	C	SL_MDD	Hrs	9		746		746	40%	298
1	02	01	01	08		<b>Drive Laser Integration</b>						<b>59</b>	<b>-</b>	<b>4,959</b>	<b>-</b>	<b>4,959</b>		<b>1,983</b>
1	02	01	01	08		Drive Laser Drawing	1-Jul-06	28-Sep-06	C	SL_MDD	Hrs	30		2,448		2,448	40%	979
1	02	01	01	08		Drive Laser Top Assembly	1-May-06	2-Oct-06	C	SL_ME1	Hrs	4		389		389	40%	156
1	02	01	01	08		Drive Laser Top Assembly	1-May-06	2-Oct-06	C	SL_MDD	Hrs	12		980		980	40%	392
1	02	01	01	08		Drive Laser Procurement Support	1-May-06	30-Jul-06	C	SL_ME1	Hrs	-		-		-	40%	-
1	02	01	01	08		Drive Laser Fabrication Oversight	1-May-06	30-Jul-06	C	SL_ME1	Hrs	-		-		-	40%	-
1	02	01	01	08		Drive Laser Installation Oversight	1-May-06	30-Oct-06	C	SL_ME1	Hrs	10		977		977	40%	391
1	02	01	01	08		Drive Laser Installation Oversight	1-May-06	30-Oct-06	C	SL_MDD	Hrs	3		164		164	40%	66
1	02	01	04			<b>Injector System Integration Effort / M&amp;S</b>						<b>1,989</b>	<b>30,327</b>	<b>196,581</b>	<b>34,202</b>	<b>230,783</b>		<b>46,157</b>
1	02	01	04			Management - CONST	1-May-06	2-Jan-07	C	SL_TSM	Hrs	640		66,889		66,889	20%	13,378

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1	2	3	4	5	6							Hours	\$	Labor	M&S	Total		
1	02	01	04			Cost Account Managers - CONST	1-May-06	2-Jan-07	C	SL_ME1	Hrs	320		31,455		31,455	20%	6,291
1	02	01	04			Fabrication Coordination	1-May-06	2-Jan-07	C	SL_ME1	Hrs	320		31,455		31,455	20%	6,291
1	02	01	04			Computers - CONST	1-May-06	2-Jan-07	C	SL_MSE	\$\$		9,960		10,541		20%	2,108
1	02	01	04			Travel - CONST	1-May-06	2-Jan-07	C	SL_MST	\$\$		13,727		16,634		20%	3,327
1	02	01	04			Materials & Supplies - CONST	1-May-06	2-Jan-07	C	SL_MSC	\$\$		6,640		7,027		20%	1,405
1	02	01	04			Injector System Area Management	1-May-06	2-Jan-07	C	SL_ME1	Hrs	354		34,797		34,797	20%	6,959
1	02	01	04			Injector System Tooling Coordination	1-May-06	2-Jan-07	C	SL_MDD	Hrs	177		14,587		14,587	20%	2,917
1	02	01	04			Injector System Safety Coordination	1-May-06	2-Jan-07	C	SL_ME1	Hrs	177		17,398		17,398	20%	3,480
1	02	02				<b>Injector Controls Subsystem</b>						<b>7,416</b>	<b>1,163,055</b>	<b>656,774</b>	<b>1,228,607</b>	<b>1,885,381</b>		<b>399,385</b>
1	02	03				<b>Injector Lasers</b>						<b>3,428</b>	<b>515,008</b>	<b>349,489</b>	<b>539,434</b>	<b>888,924</b>		<b>214,023</b>
1	02	03	01			<b>Drive Laser Support</b>						<b>354</b>	<b>7,808</b>	<b>67,436</b>	<b>8,750</b>	<b>76,186</b>		<b>22,856</b>
1	02	03	01	01		<b>Drive Laser Support (ANL)</b>												
1	02	03	01	02		<b>Drive Laser Support (LLNL)</b>						<b>354</b>	<b>7,808</b>	<b>67,436</b>	<b>8,750</b>	<b>76,186</b>		<b>22,856</b>
1	02	03	01	02		Modeling - modeling and validation (to compl)	1-May-06	29-Dec-06	C	LL_MSE	(\$\$)		7,808		8,750		30%	2,625
1	02	03	01	02		Temporal Pulse Shaping - IR shaping (to compl)	1-May-06	29-Dec-06	C	LL_PHS	Hrs	92		17,526		17,526	30%	5,258
1	02	03	01	02		UV Diagnostics - activate (to compl)	1-May-06	29-Dec-06	C	LL_PHS	Hrs	12		2,286		2,286	30%	686
1	02	03	01	02		Shaping and Integration	1-May-06	29-Dec-06	C	LL_PHS	Hrs	250		47,624		47,624	30%	14,287
1	02	03	02			<b>Drive Laser System</b>						-	<b>108,980</b>	-	<b>108,980</b>	<b>108,980</b>		<b>10,898</b>
1	02	03	02			Drive Laser-Milestone 3	27-Jun-06	27-Jun-06	C	SL_MSS	(\$\$)		-		-		0%	-
1	02	03	02			Drive Laser-Milestone 4	16-Oct-06	16-Oct-06	C	SL_MSS	(\$\$)		108,980		108,980		10%	10,898
1	02	03	02			Reviews of Vendor's Progress (to compl)	1-May-06	26-Jun-06	C	SL_QAO	Hrs	-		-		-	0%	-
1	02	03	02			Reviews of Vendor's Progress (to compl)	1-May-06	26-Jun-06	C	SL_PHS	Hrs	-		-		-	0%	-
1	02	03	02			Reviews of Vendor's Progress (to compl)	1-May-06	26-Jun-06	C	SL_OE1	Hrs	-		-		-	0%	-
1	02	03	03			<b>Drive Laser Diagnostics</b>						<b>666</b>	<b>190,800</b>	<b>57,444</b>	<b>201,669</b>	<b>259,113</b>		<b>64,778</b>
1	02	03	03			Assemble & Checkout: Drive Laser Diagnostics	2-Jan-07	5-Jan-07	C	SL_PHS	Hrs	32		2,979		2,979	25%	745
1	02	03	03			Assemble & Checkout: Drive Laser Diagnostics	2-Jan-07	5-Jan-07	C	SL_OT1	Hrs	320		19,802		19,802	25%	4,951
1	02	03	03			Assemble & Checkout: Drive Laser Diagnostics	2-Jan-07	5-Jan-07	C	SL_OE1	Hrs	160		18,085		18,085	25%	4,521
1	02	03	03			Eng & Design of Drive Laser Diagnostics (Timing)	1-May-06	31-Jul-06	C	SL_PHS	Hrs	-		-		-	25%	-
1	02	03	03			Eng & Design of Drive Laser Diagnostics (Timing)	1-May-06	31-Jul-06	C	SL_OE1	Hrs	-		-		-	25%	-
1	02	03	03			Eng & Design of Drive Laser Diagnostics (Timing)	1-May-06	31-Jul-06	C	SL_MDD	Hrs	-		-		-	25%	-
1	02	03	03			Eng & Design of Cross Correlator	1-May-06	31-Aug-06	C	SL_PHS	Hrs	-		-		-	25%	-
1	02	03	03			Eng & Design of Cross Correlator	1-May-06	31-Aug-06	C	SL_OE1	Hrs	-		-		-	25%	-
1	02	03	03			Procure Cross Correlator Components	1-Sep-06	1-Dec-06	C	SL_OE1	Hrs	20		2,242		2,242	25%	560
1	02	03	03			Eng & Design of Drive Laser Diagnostics (general)	1-May-06	19-Jan-07	C	SL_PHS	Hrs	8		734		734	25%	183
1	02	03	03			Eng & Design of Drive Laser Diagnostics (general)	1-May-06	19-Jan-07	C	SL_OE1	Hrs	14		1,559		1,559	25%	390
1	02	03	03			Eng & Design of Drive Laser Diagnostics (general)	1-May-06	19-Jan-07	C	SL_MDD	Hrs	14		1,155		1,155	25%	289
1	02	03	03			Procure Drive Laser Diagnostics	1-May-06	15-Dec-06	C	SL_OE1	Hrs	98		10,889		10,889	25%	2,722
1	02	03	03			RCV: Drive Laser Diagnostics	1-May-06	15-Dec-06	C	SL_MSE	(\$\$)		190,800		201,669		25%	50,417
1	02	03	04			<b>Timing Stability Monitoring</b>						<b>527</b>	<b>84,420</b>	<b>46,829</b>	<b>88,472</b>	<b>135,301</b>		<b>27,060</b>
1	02	03	04			Assemble & C/O: Timing Stability Mon Apparatus	1-Dec-06	13-Mar-07	C	SL_PHS	Hrs	100		9,308		9,308	20%	1,862
1	02	03	04			Assemble & C/O: Timing Stability Mon Apparatus	1-Dec-06	13-Mar-07	C	SL_OT1	Hrs	190		11,757		11,757	20%	2,351
1	02	03	04			Assemble & C/O: Timing Stability Mon Apparatus	1-Dec-06	13-Mar-07	C	SL_OE1	Hrs	120		13,564		13,564	20%	2,713
1	02	03	04			Assemble & C/O: Timing Stability Mon Apparatus	1-Dec-06	13-Mar-07	C	SL_KE1	Hrs	40		4,521		4,521	20%	904
1	02	03	04			Eng & Dsn of Timing Stability Monitoring App	1-May-06	30-Nov-06	C	SL_PHS	Hrs	32		2,924		2,924	20%	585
1	02	03	04			Eng & Dsn of Timing Stability Monitoring App	1-May-06	30-Nov-06	C	SL_OE1	Hrs	8		888		888	20%	178
1	02	03	04			Eng & Dsn of Timing Stability Monitoring App	1-May-06	30-Nov-06	C	SL_MDD	Hrs	8		658		658	20%	132
1	02	03	04			Proc Timing Stability Apparatus	1-May-06	20-Sep-06	C	SL_MSE	(\$\$)		84,420		88,472		20%	17,694
1	02	03	04			Eng&Dsn of the Osc timing stability measurement	1-May-06	30-Oct-06	C	SL_OE1	Hrs	10		1,106		1,106	20%	221
1	02	03	04			Eng&Dsn of the Osc timing stability measurement	1-May-06	30-Oct-06	C	SL_KE1	Hrs	19		2,102		2,102	20%	420
1	02	03	05			<b>Steering Stability Feedback &amp; Msmts</b>						<b>12</b>	-	<b>981</b>	-	<b>981</b>		<b>98</b>
1	02	03	05			Procure Steering Stability Apparatus	1-May-06	31-Jul-06	C	SL_MSE	(\$\$)		-		-		0%	-
1	02	03	05			Assemble & Checkout: Steering Stabilization App	1-May-06	15-Dec-06	C	SL_OT1	Hrs	7		426		426	10%	43

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1	2	3	4	5	6							Hours	\$	Labor	M&S	Total			
1	02	03	05			Assemble & Checkout: Steering Stabilization App	1-May-06	15-Dec-06	C	SL_OE1	Hrs	5		556		556	10%	56	
1	02	03	06			<b>Pre Amp Low Power Comp</b>						<b>380</b>	<b>32,000</b>	<b>35,112</b>	<b>34,408</b>	<b>69,520</b>		<b>13,904</b>	
1	02	03	06			Define PreAmplifier Low Power Comp Specs	22-Jan-07	2-Feb-07	C	SL_PHS	Hrs	20		1,862		1,862	20%	372	
1	02	03	06			Define PreAmplifier Low Power Comp Specs	22-Jan-07	2-Feb-07	C	SL_OE1	Hrs	20		2,261		2,261	20%	452	
1	02	03	06			Design PreAmplifier Low Power Comp	5-Feb-07	2-Apr-07	C	SL_PHS	Hrs	30		2,793		2,793	20%	559	
1	02	03	06			Design PreAmplifier Low Power Comp	5-Feb-07	2-Apr-07	C	SL_OE1	Hrs	30		3,391		3,391	20%	678	
1	02	03	06			Design PreAmplifier Low Power Comp	5-Feb-07	2-Apr-07	C	SL_MDD	Hrs	160		13,397		13,397	20%	2,679	
1	02	03	06			Procure Low Power Compressor System Parts	3-Apr-07	26-Jun-07	C	SL_MSS	\$\$		32,000		34,408		34,408	20%	6,882
1	02	03	06			Fab (InHouse): Custom Low Power Compressor Parts	3-Apr-07	30-Apr-07	C	SL_MFM	Hrs	40		4,412		4,412	20%	882	
1	02	03	06			Assemble: Low Power Compressor	27-Jun-07	25-Jul-07	C	SL_OT1	Hrs	40		2,475		2,475	20%	495	
1	02	03	06			Assemble: Low Power Compressor	27-Jun-07	25-Jul-07	C	SL_OE1	Hrs	40		4,521		4,521	20%	904	
1	02	03	07			<b>Transport to Tunnel &amp; Relay Optics</b>													
1	02	03	08			<b>UV Launch, Conditioning &amp; Diagnostics</b>						<b>518</b>	<b>33,000</b>	<b>45,431</b>	<b>34,987</b>	<b>80,417</b>		<b>20,104</b>	
1	02	03	08			FAB (inhouse): Custom Parts	1-May-06	3-Oct-06	C	SL_MFM	Hrs	42		4,517		4,517	25%	1,129	
1	02	03	08			Procure Spatial Shaper and Custom Made Parts	1-May-06	2-Feb-07	C	SL_MSE	\$\$		33,000		34,987		34,987	25%	8,747
1	02	03	08			Assemble & C/O: UV Launch & Conditioning System	18-Sep-06	1-Feb-07	C	SL_PHS	Hrs	20		1,857		1,857	25%	464	
1	02	03	08			Assemble & C/O: UV Launch & Conditioning System	18-Sep-06	1-Feb-07	C	SL_OT1	Hrs	160		9,877		9,877	25%	2,469	
1	02	03	08			Assemble & C/O: UV Launch & Conditioning System	18-Sep-06	1-Feb-07	C	SL_OE1	Hrs	120		13,531		13,531	25%	3,383	
1	02	03	08			Assemble & C/O: UV Launch & Conditioning System	18-Sep-06	1-Feb-07	C	SL_CE1	Hrs	40		4,510		4,510	25%	1,128	
1	02	03	08			Eng & Dsn of the Laser Port Window	1-Jun-06	30-Jun-06	C	SL_OE1	Hrs	-		-		-	25%	-	
1	02	03	08			Eng & Dsn of the Laser Port Window	1-Jun-06	30-Jun-06	C	SL_MDD	Hrs	-		-		-	25%	-	
1	02	03	08			Procure UV Launch,Conditioning & Diag HW	1-May-06	31-Jul-06	C	SL_MSE	\$\$		-		-		25%	-	
1	02	03	08			Create Assembly Drawings	1-May-06	20-Oct-06	C	SL_MDD	Hrs	72		5,893		5,893	25%	1,473	
1	02	03	08			Release Drawings	1-Jun-06	30-Jun-06	C	SL_MDD	Hrs	-		-		-	25%	-	
1	02	03	08			Eng & Dsn of UV Diagnostic	1-May-06	31-Oct-06	C	SL_MDD	Hrs	64		5,245		5,245	25%	1,311	
1	02	03	09			<b>Load Lock Transport System</b>													
1	02	03	10			<b>Visible Optical Transport &amp; Optics</b>													
1	02	03	11			<b>LB Infrastructure &amp; LB System Wide Items</b>						<b>216</b>	<b>11,000</b>	<b>20,131</b>	<b>11,633</b>	<b>31,764</b>		<b>9,529</b>	
1	02	03	11			Assemble & C/O Optical Tables, Legs & Encl	1-May-06	31-Jul-06	C	SL_SEL1	Hrs	-		-		-	30%	-	
1	02	03	11			Assemble & C/O Optical Tables, Legs & Encl	1-May-06	31-Jul-06	C	SL_OT1	Hrs	-		-		-	30%	-	
1	02	03	11			Assemble & C/O Optical Tables, Legs & Encl	1-May-06	31-Jul-06	C	SL_OE1	Hrs	-		-		-	30%	-	
1	02	03	11			Procure Laser Bay Equipment	1-May-06	31-Oct-06	C	SL_MSE	\$\$		3,000		3,157		3,157	30%	947
1	02	03	11			Writing Final and Temporal SOP	1-May-06	31-Oct-06	C	SL_OE1	Hrs	8		885		885	30%	266	
1	02	03	11			Preparation for Final Laser Safety Review	1-May-06	31-Oct-06	C	SL_OE1	Hrs	20		2,213		2,213	30%	664	
1	02	03	11			Design Safety Equipment	1-May-06	31-Oct-06	C	SL_OE1	Hrs	24		2,655		2,655	30%	797	
1	02	03	11			Design Safety Equipment	1-May-06	31-Oct-06	C	SL_MDD	Hrs	48		3,934		3,934	30%	1,180	
1	02	03	11			Procure Beam Path Enclosures	1-Aug-06	14-Nov-06	C	SL_MSE	\$\$		8,000		8,475		8,475	30%	2,543
1	02	03	11			Create and Release Assembly Drawings	1-May-06	30-Nov-06	C	SL_MDD	Hrs	56		4,604		4,604	30%	1,381	
1	02	03	11			Procure Laser PPS	1-May-06	30-Jun-06	C	SL_MSE	\$\$		-		-		-	30%	-
1	02	03	11			Define Laser Bay Equipment	1-May-06	30-Aug-06	C	SL_OE1	Hrs	-		-		-	30%	-	
1	02	03	11			Define Laser Bay Equipment	1-May-06	30-Aug-06	C	SL_MDD	Hrs	-		-		-	30%	-	
1	02	03	11			Assemble Beam Path Enclosures	1-Aug-06	7-Sep-06	C	SL_ME1	Hrs	60		5,840		5,840	30%	1,752	
1	02	03	12			<b>Alignment Laser</b>						<b>180</b>	<b>20,000</b>	<b>17,624</b>	<b>21,505</b>	<b>39,129</b>		<b>9,782</b>	
1	02	03	12			Define alignment Laser System requirements	2-Feb-07	8-Feb-07	C	SL_PHS	Hrs	10		931		931	25%	233	
1	02	03	12			Define alignment Laser System requirements	2-Feb-07	8-Feb-07	C	SL_OE1	Hrs	20		2,261		2,261	25%	565	
1	02	03	12			Procure alignment Laser System off-shelf parts	26-Mar-07	18-Jun-07	C	SL_MSE	\$\$		20,000		21,505		21,505	25%	5,376
1	02	03	12			Fab (In House) Alignmt Laser System parts	26-Mar-07	4-May-07	C	SL_MFM	Hrs	40		4,412		4,412	25%	1,103	
1	02	03	12			Assemble: alignment Laser system	19-Jun-07	2-Jul-07	C	SL_OT1	Hrs	20		1,238		1,238	25%	309	
1	02	03	12			Assemble: alignment Laser system	19-Jun-07	2-Jul-07	C	SL_OE1	Hrs	20		2,261		2,261	25%	565	
1	02	03	12			Test : alignment Laser system	3-Jul-07	10-Jul-07	C	SL_OT1	Hrs	10		619		619	25%	155	
1	02	03	12			Test : alignment Laser system	3-Jul-07	10-Jul-07	C	SL_OE1	Hrs	10		1,130		1,130	25%	283	
1	02	03	12			Develop alignment Laser System Engrg & Design	9-Feb-07	23-Mar-07	C	SL_OE1	Hrs	20		2,261		2,261	25%	565	

Detailed Cost Estimate  
INJECTOR SYSTEM

WBS Level						LCLA DCE Aug-2006 Description	Early Start	Early Finish	Fund Type	Res Code	Units	Work Rem. Bud. Qty		Work Rem. Full Burd and Escltd Cost			Contngcy %	Contingency \$
1	2	3	4	5	6							Hours	\$	Labor	M&S	Total		
1	02	03	12			Develop alignment Laser System Engrg & Design	9-Feb-07	23-Mar-07	C	SL_MDD	Hrs	30		2,512		2,512	25%	628
1	02	03	13			<b>Light path to Streak Camera</b>						<b>576</b>	<b>27,000</b>	<b>58,501</b>	<b>29,032</b>	<b>87,533</b>		<b>35,013</b>
1	02	03	13			Procure Light Path off shelf parts	2-Feb-07	27-Apr-07	C	SL_MSE	\$\$		19,000		20,430	20,430	40%	8,172
1	02	03	13			FAB: Light Path transport tube/enclosure/supts	30-Apr-07	11-Jun-07	C	SL_MFM	Hrs	300		33,091		33,091	40%	13,236
1	02	03	13			Proc Light Path transport tube/enclosure/supts	2-Feb-07	27-Apr-07	C	SL_MSE	\$\$		8,000		8,602	8,602	40%	3,441
1	02	03	13			Assemble: Light Path System	12-Jun-07	10-Jul-07	C	SL_OT1	Hrs	40		2,475		2,475	40%	990
1	02	03	13			Assemble: Light Path System	12-Jun-07	10-Jul-07	C	SL_OE1	Hrs	40		4,521		4,521	40%	1,809
1	02	03	13			Assemble: Light Path System	12-Jun-07	10-Jul-07	C	SL_MFA	Hrs	20		1,724		1,724	40%	689
1	02	03	13			Test: Light Path system	11-Jul-07	24-Jul-07	C	SL_OT1	Hrs	20		1,238		1,238	40%	495
1	02	03	13			Test: Light Path system	11-Jul-07	24-Jul-07	C	SL_OE1	Hrs	20		2,261		2,261	40%	904
1	02	03	13			Develop Light Path System Engrg & Design	1-May-06	1-Feb-07	C	SL_OE1	Hrs	68		7,578		7,578	40%	3,031
1	02	03	13			Develop Light Path System Engrg & Design	1-May-06	1-Feb-07	C	SL_MDD	Hrs	68		5,614		5,614	40%	2,246
1	02	03	14			<b>LSR HTR - Beam Conditioning Optics (Laser Bay)</b>												
1	02	03	15			<b>LSR HTR - Transport Optics (Bay to Tunnel)</b>												
1	02	03	16			<b>LSR HTR - Photon Beam Diagnostics</b>												
1	02	03	21			<b>UV Conv Harmonic Generation Unit (Closed Account)</b>												
1	02	04				<b>Injector RF Subsystem</b>						<b>1,691</b>	<b>-</b>	<b>129,882</b>	<b>-</b>	<b>129,882</b>		<b>51,594</b>
1	02	04	01			<b>RF Gun &amp; Load Lock</b>						<b>1,351</b>	<b>-</b>	<b>97,913</b>	<b>-</b>	<b>97,913</b>		<b>44,061</b>
1	02	04	01	01		<b>RF Gun</b>						<b>1,351</b>	<b>-</b>	<b>97,913</b>	<b>-</b>	<b>97,913</b>		<b>44,061</b>
1	02	04	01	01		Procure Extra Valve for RF Gun (cont)	1-Jun-06	30-Jun-06	C	SL_MSE	\$\$						45%	-
1	02	04	01	01		QC Machine Parts (cont)	1-Jun-06	30-Jun-06	C	SL_MES	Hrs	-					45%	-
1	02	04	01	01		Clean & Plate Machine Parts (cont)	1-Jun-06	30-Jun-06	C	SL_MFP	Hrs	-					45%	-
1	02	04	01	01		Design Gun Hot Test (cont)	1-Jun-06	30-Jun-06	C	SL_KE1	Hrs	-					45%	-
1	02	04	01	01		Design/Draft RF Hot Test Components	1-May-06	30-Jun-06	C	SL_MDD	Hrs	-					45%	-
1	02	04	01	01		Procure RF Hot Test Parts	1-May-06	31-Aug-06	C	SL_MSE	\$\$						45%	-
1	02	04	01	01		Procure RF Hot Test Parts	1-May-06	31-Aug-06	C	SL_KCA	Hrs	-					45%	-
1	02	04	01	01		Fabricate RF Gun #1	1-Jun-06	31-Aug-06	C	SL_KT1	Hrs	-					45%	-
1	02	04	01	01		Cold Test RF Gun #1	1-Jun-06	31-Aug-06	C	SL_KE1	Hrs	-					45%	-
1	02	04	01	01		Bake RF Gun #1	2-Aug-06	15-Aug-06	C	SL_MFA	Hrs	4		336		336	45%	151
1	02	04	01	01		Post Bake Assembly #1	16-Aug-06	18-Aug-06	C	SL_MFA	Hrs	30		2,520		2,520	45%	1,134
1	02	04	01	01		Hot Test RF Gun #1	2-Oct-06	28-Nov-06	C	SL_KT1	Hrs	960		59,406		59,406	45%	26,733
1	02	04	01	01		Hot Test RF Gun #1	2-Oct-06	28-Nov-06	C	SL_KE1	Hrs	240		27,128		27,128	45%	12,207
1	02	04	01	01		Clean and Plate RF Hot Test Parts	1-Jun-06	31-Aug-06	C	SL_MFP	Hrs	-					45%	-
1	02	04	01	01		Fabricate RF Hot Test Parts	1-Jun-06	31-Aug-06	C	SL_KT1	Hrs	-					45%	-
1	02	04	01	01		Fabricate RF Gun #2	1-Jun-06	14-Nov-06	C	SL_KT1	Hrs	72		4,372		4,372	45%	1,968
1	02	04	01	01		Cold Test RF Gun #2	1-Jun-06	14-Nov-06	C	SL_KE1	Hrs	11		1,220		1,220	45%	549
1	02	04	01	01		Bake RF Gun #2	15-Nov-06	7-Dec-06	C	SL_MFA	Hrs	4		345		345	45%	155
1	02	04	01	01		Post Bake Assembly #2	8-Dec-06	8-Jan-07	C	SL_MFA	Hrs	30		2,586		2,586	45%	1,163
1	02	04	01	02		<b>RF Gun Supports</b>						<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>		<b>-</b>
1	02	04	01	02		Design RF Gun Support (cont)	1-May-06	31-May-06	C	SL_MDD	Hrs	-					0%	-
1	02	04	01	02		Procure RF Gun Support	1-Jun-06	30-Jun-06	C	SL_MSE	\$\$						0%	-
1	02	04	01	03		<b>Gun Load Lock</b>												
1	02	04	01	04		<b>Gun Load Lock Supports</b>												
1	02	04	01	05		<b>Gun Solenoid</b>						<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>		<b>-</b>
1	02	04	01	05		Perform Lab Tests on Sol Magnet Assembly	1-May-06	31-Aug-06	C	SL_MFA	Hrs	-					30%	-
1	02	04	01	05		Perform Lab Tests on Sol Magnet Assembly	1-May-06	31-Aug-06	C	SL_MES	Hrs	-					30%	-
1	02	04	01	06		<b>Gun Solenoid Supports</b>						<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>		<b>-</b>
1	02	04	01	06		Design Solenoid Supports (cont)	1-Jun-06	30-Jun-06	C	SL_ME1	Hrs	-					0%	-
1	02	04	01	06		Design Solenoid Supports (cont)	1-Jun-06	30-Jun-06	C	SL_MDD	Hrs	-					0%	-
1	02	04	01	06		Prep Bid Pak - Solenoid Supports	1-Jun-06	30-Jun-06	C	SL_ME1	Hrs	-					0%	-
1	02	04	01	06		Evaluate Proposals - Solenoid Supports	1-Jun-06	30-Jun-06	C	SL_ME1	Hrs	-					0%	-
1	02	04	01	06		Vendor Fab Solenoid Supports	1-Jun-06	30-Jun-06	C	SA_MSS	\$\$						0%	-

Detailed Cost Estimate  
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WBS Level						LCLA DCE Aug-2006 Description	Early Start	Early Finish	Fund Type	Res Code	Units	Work Rem. Bud. Qty		Work Rem. Full Burd and Escltd Cost			Contngcy %	Contingency \$
1	2	3	4	5	6							Hours	\$	Labor	M&S	Total		
1	02	04	01	07		Gun RF Feed												
1	02	04	01	08		Gun RF Feed Supports												
1	02	04	02			Cathode Processing (CP) Station												
1	02	04	02	01		CP Cathode Assembly & Supports												
1	02	04	02	02		CP Load Lock												
1	02	04	02	03		CP Load Lock Supports												
1	02	04	02	04		CP Station												
1	02	04	02	05		Cathode Lab Infrastructure												
1	02	04	03			S-Band Low Level Timing												
1	02	04	03	01		Controls Interface & Timing												
1	02	04	03	02		LLRF Phase Reference System												
1	02	04	03	03		LLRF Monitor & Control System												
1	02	04	03	04		Beam Phase Monitor Cavity												
1	02	04	03	05		RF System S/W Development / Docs												
1	02	04	04			S-Band High Power System												
1	02	04	04	01		RF Gun High Power												
1	02	04	04	02		L0 High Power												
1	02	04	04	03		Transverse Cavity High Power												
1	02	04	05			Injector RF Waveguide Subsystem					220	-	21,015	-	21,015		4,203	
1	02	04	05	01		RF Waveguides					220	-	21,015	-	21,015		4,203	
1	02	04	05	01		Fab Vault Waveguide (cont)	1-May-06	14-Nov-06	C	SL_MVE	Hrs	12		1,249		1,249	20%	250
1	02	04	05	01		Fab Vault Waveguide (cont)	1-May-06	14-Nov-06	C	SL_MFA	Hrs	20		1,690		1,690	20%	338
1	02	04	05	01		Fab KG Waveguide (cont)	1-May-06	14-Nov-06	C	SL_MVE	Hrs	12		1,249		1,249	20%	250
1	02	04	05	01		Fab KG Waveguide (cont)	1-May-06	14-Nov-06	C	SL_MFA	Hrs	25		2,112		2,112	20%	422
1	02	04	05	01		Post Process KG Waveguide (cont)	1-May-06	30-Nov-06	C	SL_MVE	Hrs	5		521		521	20%	104
1	02	04	05	01		Fab KG Supports (cont)	1-Jun-06	31-Aug-06	C	SL_MFA	Hrs	-		-		-	20%	-
1	02	04	05	01		High Power Gun WG Conditioning	1-Aug-06	30-Nov-06	C	SL_ME1	Hrs	5		394		394	20%	79
1	02	04	05	01		High Power Gun WG Conditioning	1-Aug-06	30-Nov-06	C	SL_KT1	Hrs	12		733		733	20%	147
1	02	04	05	01		High Power Gun WG Conditioning	1-Aug-06	30-Nov-06	C	SL_KE1	Hrs	32		3,571		3,571	20%	714
1	02	04	05	01		High Power ACC WG Conditioning	1-Aug-06	30-Nov-06	C	SL_ME1	Hrs	5		493		493	20%	99
1	02	04	05	01		High Power ACC WG Conditioning	1-Aug-06	30-Nov-06	C	SL_KT1	Hrs	12		733		733	20%	147
1	02	04	05	01		High Power ACC WG Conditioning	1-Aug-06	30-Nov-06	C	SL_KE1	Hrs	33		3,571		3,571	20%	714
1	02	04	05	01		High Power T-Cav WG Contidioning	1-Aug-06	30-Nov-06	C	SL_ME1	Hrs	5		394		394	20%	79
1	02	04	05	01		High Power T-Cav WG Contidioning	1-Aug-06	30-Nov-06	C	SL_KT1	Hrs	12		733		733	20%	147
1	02	04	05	01		High Power T-Cav WG Contidioning	1-Aug-06	30-Nov-06	C	SL_KE1	Hrs	32		3,571		3,571	20%	714
1	02	04	05	02		RF Waveguide Supports												
1	02	04	06			Injector Linac Structures					120	-	10,954	-	10,954		3,330	
1	02	04	06	01		L0A-0B Structure Assembly					80	-	7,593	-	7,593		2,657	
1	02	04	06	01		Fabricate and Modify L0A &B (cont)	1-May-06	30-Jul-06	C	SL_MFM	Hrs	-		-		-	35%	-
1	02	04	06	01		Integrate L0A &B onto Support Structure	1-Jun-06	31-Aug-06	C	SL_MFA	Hrs	-		-		-	35%	-
1	02	04	06	01		Cold Test L0A/L0B	1-Jul-06	30-Jul-06	C	SL_KE1	Hrs	-		-		-	35%	-
1	02	04	06	01		Perform L0A &B Waveguide Integration	1-Jul-06	31-Aug-06	C	SL_MFA	Hrs	-		-		-	35%	-
1	02	04	06	01		Prep for & Perform L0A &B RF tuning	1-Jul-06	30-Jul-06	C	SL_KE1	Hrs	-		-		-	35%	-
1	02	04	06	01		Perform L0A &B Vacuum Processing	1-Jul-06	6-Oct-06	C	SL_MVE	Hrs	40		4,145		4,145	35%	1,451
1	02	04	06	01		Integrate L0A & Solenoid	9-Oct-06	20-Oct-06	C	SL_MFA	Hrs	40		3,447		3,447	35%	1,207
1	02	04	06	03		Major Linac Support												
1	02	04	06	04		GTL RF Phase Cavity												
1	02	04	06	05		LTDL1 RF Kicker					40	-	3,361	-	3,361		672	
1	02	04	06	05		Conduct Test & RF Processing (cont)	1-Jun-06	30-Jun-06	C	SL_KE1	Hrs	-		-		-	0%	-
1	02	04	06	05		Procure Support Structure Materials (cont)	1-May-06	31-May-06	C	SL_MSE	\$\$	-		-		-	0%	-
1	02	04	06	05		Fab RF Kicker Support Structure (cont)	1-May-06	31-May-06	C	SL_MFM	Hrs	-		-		-	0%	-
1	02	04	06	05		Conduct Test & RF Processing (cont)	1-May-06	31-May-06	C	SL_KE1	Hrs	-		-		-	0%	-

Detailed Cost Estimate  
INJECTOR SYSTEM

WBS Level						LCLA DCE Aug-2006 Description	Early Start	Early Finish	Fund Type	Res Code	Units	Work Rem. Bud. Qty		Work Rem. Full Burd and Escltd Cost			Contngcy %	Contingency \$
1	2	3	4	5	6							Hours	\$	Labor	M&S	Total		
1	02	04	06	05		Integrate RF Kicker onto Supports	2-Aug-06	2-Oct-06	C	SL_MFA	Hrs	40		3,361		3,361	20%	672
1	02	05				<b>Injector Magnets &amp; Supports</b>						<b>268</b>	<b>16,000</b>	<b>23,036</b>	<b>16,797</b>	<b>39,833</b>		<b>13,589</b>
1	02	05	01			<b>Injector Dipoles</b>						<b>240</b>	<b>16,000</b>	<b>20,684</b>	<b>16,797</b>	<b>37,481</b>		<b>13,118</b>
1	02	05	01	01		<b>Gun Spectrometer Dipole</b>						<b>120</b>	<b>12,000</b>	<b>10,342</b>	<b>12,605</b>	<b>22,947</b>		<b>8,032</b>
1	02	05	01	01		Engineering Support Gun Spectrometer Magnet	1-May-06	30-Jun-06	C	SL_ME1	Hrs	-		-		-	35%	-
1	02	05	01	01		Purchase Materials	1-May-06	31-May-06	C	SL_MSE	\$\$	-		-		-	35%	-
1	02	05	01	01		Design Support	1-May-06	31-May-06	C	SL_ME1	Hrs	-		-		-	35%	-
1	02	05	01	01		Design Support	1-May-06	31-May-06	C	SL_MDD	Hrs	-		-		-	35%	-
1	02	05	01	01		Fabricate Support	1-May-06	31-May-06	C	SL_MSE	\$\$	-		-		-	35%	-
1	02	05	01	01		SLAC Fab Coils	1-Jun-06	30-Jun-06	C	SL_MFA	Hrs	-		-		-	35%	-
1	02	05	01	01		LBNL Fab Core	1-Jul-06	10-Oct-06	C	SL_MSP	\$\$		12,000		12,605	12,605	35%	4,412
1	02	05	01	01		SLAC Assemble Magnet	11-Oct-06	23-Oct-06	C	SL_MFA	Hrs	40		3,447		3,447	35%	1,207
1	02	05	01	01		Perform QC/MM on Dipole Assembly	24-Oct-06	7-Nov-06	C	SL_MFA	Hrs	80		6,895		6,895	35%	2,413
1	02	05	01	02		<b>DL1 B01 &amp; B02 Dipoles</b>						-	-	-	-	-		-
1	02	05	01	02		Fabricate Support	1-Jun-06	30-Jun-06	C	SL_MSE	\$\$	-		-		-	0%	-
1	02	05	01	02		Perform QC/MM on DL1 Dipole Assm	1-May-06	31-Aug-06	C	SL_MFA	Hrs	-		-		-	10%	-
1	02	05	01	03		<b>SAB Spectrometer Dipole</b>						<b>120</b>	<b>4,000</b>	<b>10,342</b>	<b>4,192</b>	<b>14,534</b>		<b>5,087</b>
1	02	05	01	03		Purchase Materials	1-May-06	31-May-06	C	SL_MSE	\$\$	-		-		-	35%	-
1	02	05	01	03		SLAC Fab Coils	1-Jun-06	30-Jul-06	C	SL_MFA	Hrs	-		-		-	35%	-
1	02	05	01	03		Design Support	1-May-06	31-May-06	C	SL_ME1	Hrs	-		-		-	35%	-
1	02	05	01	03		Design Support	1-May-06	31-May-06	C	SL_MDD	Hrs	-		-		-	35%	-
1	02	05	01	03		Fabricate Support	1-May-06	31-May-06	C	SL_MSE	\$\$	-		-		-	35%	-
1	02	05	01	03		LBNL Fab Core	1-Jun-06	26-Sep-06	C	SL_MSP	\$\$		4,000		4,192	4,192	35%	1,467
1	02	05	01	03		SLAC Assemble Magnet	6-Oct-06	18-Oct-06	C	SL_MFA	Hrs	40		3,447		3,447	35%	1,207
1	02	05	01	03		Perform QC/MM on SAB Dipole Assm	19-Oct-06	30-Oct-06	C	SL_MFA	Hrs	80		6,895		6,895	35%	2,413
1	02	05	01	04		<b>Chicane DIPOLES (4)</b>												
1	02	05	02			<b>Injector Quads</b>						-	-	-	-	-		-
1	02	05	02	01		<b>Gun Spectrometer Quadrupoles</b>						-	-	-	-	-		-
1	02	05	02	01		RCV: GS Quads Assy	1-May-06	31-May-06	C	SL_MSS	\$\$	-		-		-	0%	-
1	02	05	02	01		Fabricate Supports	1-May-06	30-Jul-06	C	SL_MSE	\$\$	-		-		-	0%	-
1	02	05	02	01		Perform QC/MM on GS Quads Assy	1-Aug-06	31-Aug-06	C	SL_MFA	Hrs	-		-		-	20%	-
1	02	05	02	02		<b>Injector Quadrupoles</b>						-	-	-	-	-		-
1	02	05	02	02		Perform QC/MM on Inj Quads Assy & Sppt	1-May-06	30-Jun-06	C	SL_MFA	Hrs	-		-		-	0%	-
1	02	05	03			<b>Injector Steering Coils</b>						<b>28</b>	<b>-</b>	<b>2,352</b>	<b>-</b>	<b>2,352</b>		<b>470</b>
1	02	05	03	01		<b>Gun Solenoid Correctors</b>												
1	02	05	03	02		<b>Gun Spectrometer Correctors</b>												
1	02	05	03	03		<b>Injector Correctors - A</b>						<b>28</b>	<b>-</b>	<b>2,352</b>	<b>-</b>	<b>2,352</b>		<b>470</b>
1	02	05	03	03		Design Corrector Type 1A	1-May-06	31-May-06	C	SL_ME1	Hrs	-		-		-	0%	-
1	02	05	03	03		Design Corrector Type 1A	1-May-06	31-May-06	C	SL_MDD	Hrs	-		-		-	0%	-
1	02	05	03	03		Design Corrector Type 1S	1-May-06	31-May-06	C	SL_ME1	Hrs	-		-		-	0%	-
1	02	05	03	03		Design Corrector Type 1S	1-May-06	31-May-06	C	SL_MDD	Hrs	-		-		-	0%	-
1	02	05	03	03		Design Corrector Type 1S-LOA	1-May-06	31-May-06	C	SL_ME1	Hrs	-		-		-	0%	-
1	02	05	03	03		Design Corrector Type 1S-LOA	1-May-06	31-May-06	C	SL_MDD	Hrs	-		-		-	0%	-
1	02	05	03	03		Design Corrector Type 1T	1-May-06	31-May-06	C	SL_ME1	Hrs	-		-		-	0%	-
1	02	05	03	03		Design Corrector Type 1T	1-May-06	31-May-06	C	SL_MDD	Hrs	-		-		-	0%	-
1	02	05	03	03		Design Corrector Type 1T Support	1-May-06	31-May-06	C	SL_ME1	Hrs	-		-		-	0%	-
1	02	05	03	03		Design Corrector Type 1T Support	1-May-06	31-May-06	C	SL_MDD	Hrs	-		-		-	0%	-
1	02	05	03	03		Design Corrector Type 1X	1-May-06	31-May-06	C	SL_ME1	Hrs	-		-		-	0%	-
1	02	05	03	03		Design Corrector Type 1X	1-May-06	31-May-06	C	SL_MDD	Hrs	-		-		-	0%	-
1	02	05	03	03		Fabricate Corrector Type 1A	1-Jun-06	31-Aug-06	C	SL_MSE	\$\$	-		-		-	20%	-
1	02	05	03	03		Fabricate Corrector Type 1S	1-Jun-06	31-Aug-06	C	SL_MSE	\$\$	-		-		-	20%	-
1	02	05	03	03		Fabricate Corrector Type 1S-LOA	1-Jun-06	31-Aug-06	C	SL_MSE	\$\$	-		-		-	20%	-

Detailed Cost Estimate  
INJECTOR SYSTEM

WBS Level						LCLA DCE Aug-2006 Description	Early Start	Early Finish	Fund Type	Res Code	Units	Work Rem. Bud. Qty		Work Rem. Full Burd and Escltd Cost			Contngcy %	Contingency \$
1	2	3	4	5	6							Hours	\$	Labor	M&S	Total		
1	02	05	03	03		Fabricate Corrector Type 1T	1-Jun-06	31-Aug-06	C	SL_MSE	\$\$		-		-	-	20%	-
1	02	05	03	03		Fabricate Corrector Type 1T Support	1-Jun-06	31-Aug-06	C	SL_MSE	\$\$		-		-	-	20%	-
1	02	05	03	03		Fabricate Corrector Type 1X	1-Jun-06	31-Aug-06	C	SL_MSE	\$\$		-		-	-	20%	-
1	02	05	03	03		Test Corrector Type 1A	2-Aug-06	31-Aug-06	C	SL_MFA	Hrs	8		672		672	20%	134
1	02	05	03	03		Test Corrector Type 1S	2-Aug-06	31-Aug-06	C	SL_MFA	Hrs	8		672		672	20%	134
1	02	05	03	03		Test Corrector Type 1S-LOA	2-Aug-06	31-Aug-06	C	SL_MFA	Hrs	4		336		336	20%	67
1	02	05	03	03		Test Corrector Type 1T	2-Aug-06	31-Aug-06	C	SL_MFA	Hrs	4		336		336	20%	67
1	02	05	03	03		Test Corrector Type 1X	2-Aug-06	31-Aug-06	C	SL_MFA	Hrs	4		336		336	20%	67
1	02	05	03	04		<b>Injector Correctors - D (Gun)</b>												
1	02	05	03	05		<b>Gun Solenoid Quadrupole Correctors</b>												
1	02	05	04			<b>Linac Solenoid</b>						-	-	-	-	-		-
1	02	05	04			Design Linac Solenoid Support	1-May-06	31-May-06	C	SL_ME1	Hrs	-		-		-	0%	-
1	02	05	04			Fabricate Linac Solenoid Support	15-May-06	31-May-06	C	SL_MSE	\$\$		-		-	-	0%	-
1	02	05	04			Perform QC/MM on Linac Solenoid Assy	1-May-06	31-Aug-06	C	SL_MFA	Hrs	-		-		-	10%	-
1	02	05	05			<b>Injector Laser Heater Subsystem</b>												
1	02	05	05	01		<b>System Design &amp; Optimization (LSR HTR)</b>												
1	02	05	05	02		<b>Injector Undulator</b>												
1	02	06				<b>Injector Vacuum &amp; Supports</b>						220	59,000	24,230	62,167	86,397		35,030
1	02	06	01			<b>Injector Vacuum Engineering</b>						-	-	-	-	-		-
1	02	06	01			GTL Chamber Engineering	1-May-06	30-Jun-06	C	SL_ME1	Hrs	-		-		-	0%	-
1	02	06	01			GTL Chamber Engineering	1-May-06	30-Jun-06	C	SL_MDD	Hrs	-		-		-	0%	-
1	02	06	01			Linac L0aL0b Engineering	1-May-06	30-Jun-06	C	SL_ME1	Hrs	-		-		-	0%	-
1	02	06	01			Linac L0aL0b Design	1-May-06	30-Jun-06	C	SL_MDD	Hrs	-		-		-	0%	-
1	02	06	01			INS/SAB Engineering	1-May-06	30-Jun-06	C	SL_ME1	Hrs	-		-		-	0%	-
1	02	06	01			INS/SAB Design	1-May-06	30-Jun-06	C	SL_MDD	Hrs	-		-		-	0%	-
1	02	06	01			Fabrication Support	1-Jun-06	31-Aug-06	C	SL_ME1	Hrs	-		-		-	0%	-
1	02	06	02			<b>Injector Vacuum Components</b>												
1	02	06	03			<b>Injector Vacuum Special Chambers</b>						220	50,000	24,230	52,735	76,965		30,786
1	02	06	03			Fabricate Linac Region Special Chambers	1-Jun-06	31-Aug-06	C	SL_MSE	\$\$		-		-	-	40%	-
1	02	06	03			Fabricate Heater Region Special Chambers	1-Jun-06	31-Aug-06	C	SL_MSE	\$\$		-		-	-	40%	-
1	02	06	03			Fabricate INS/SAB Region Special Chambers	1-Jul-06	31-Oct-06	C	SL_MSE	\$\$		40,000		42,188	42,188	40%	16,875
1	02	06	03			Fabricate Gun Region Special Chambers	1-Jul-06	31-Oct-06	C	SL_MSE	\$\$		10,000		10,547	10,547	40%	4,219
1	02	06	03			Vacuum Process Linac Region Special Chambers	1-Aug-06	31-Aug-06	C	SL_MFA	Hrs	-		-		-	40%	-
1	02	06	03			Vacuum Process Heater Region Special Chambers	1-Aug-06	31-Aug-06	C	SL_MFA	Hrs	-		-		-	40%	-
1	02	06	03			Vacuum Process INS/SAB Region Special Chambers	1-Nov-06	14-Nov-06	C	SL_MFA	Hrs	80		6,895		6,895	40%	2,758
1	02	06	03			Vacuum Process Gun Region Special Chambers	1-Nov-06	7-Nov-06	C	SL_MFA	Hrs	40		3,447		3,447	40%	1,379
1	02	06	03			Vacuum Process Special Chambers (LLNL)	1-Sep-06	27-Oct-06	C	LL_MFA	Hrs	100		13,887		13,887	40%	5,555
1	02	06	04			<b>Injector Vacuum Supports Engineering</b>												
1	02	06	05			<b>Injector Vacuum Support Components</b>						-	9,000	-	9,432	9,432		4,244
1	02	06	05			Proc - Special Beam Pump/Spool Support Material	1-May-06	31-Aug-06	C	SL_MSE	\$\$		-		-	-	45%	-
1	02	06	05			Proc - LTDL1 Support Structure Materials	1-May-06	31-Aug-06	C	SL_MSE	\$\$		-		-	-	45%	-
1	02	06	05			Proc - Misc Support Hardware (bolts, nuts, etc.)	1-May-06	31-Aug-06	C	SL_MSE	\$\$		-		-	-	45%	-
1	02	06	05			Fabricate Gun Region Vacuum Supports	1-Jul-06	29-Aug-06	C	SL_MSE	\$\$		4,000		4,192	4,192	45%	1,886
1	02	06	05			Fabricate Linac Region Vacuum Supports	1-Jul-06	31-Aug-06	C	SL_MSE	\$\$		-		-	-	45%	-
1	02	06	05			Fabricate Heater Region Vacuum Supports	1-Jun-06	31-Aug-06	C	SL_MSE	\$\$		-		-	-	45%	-
1	02	06	05			Fabricate INS/SAB Region Vacuum Supports	1-Aug-06	30-Aug-06	C	SL_MSE	\$\$		5,000		5,240	5,240	45%	2,358
1	02	06	05			Proc - LTDL1 Support Structure Materials	1-Dec-05	30-Dec-05	L	SL_MSE	\$\$		-		-	-	45%	-
1	02	06	05			Proc - Misc Support Hardware (bolts, nuts, etc.)	1-Dec-05	30-Dec-05	L	SL_MSE	\$\$		-		-	-	45%	-
1	02	06	08			<b>DL1 Vacuum Chamber</b>												
1	02	06	10			<b>DL1TL Vacuum Components</b>												
1	02	07				<b>Injector Diagnostics</b>						668	298,000	55,610	313,820	369,430		139,131
1	02	07	01			<b>Beam Position Monitors</b>						80	-	5,547	-	5,547		2,496

Detailed Cost Estimate  
INJECTOR SYSTEM

WBS Level						LCLA DCE Aug-2006 Description	Early Start	Early Finish	Fund Type	Res Code	Units	Work Rem. Bud. Qty		Work Rem. Full Burd and Escltd Cost			Contngcy %	Contingency \$
1	2	3	4	5	6							Hours	\$	Labor	M&S	Total		
1	02	07	01	01		<b>Large Aperture BPM</b>						80	-	5,547	-	5,547		2,496
1	02	07	01	01		Vendor Fab LA Linac BPM Core Module	1-May-06	30-Jun-06	C	SL_MSS	\$\$		-		-	-	45%	-
1	02	07	01	01		In House Assemble LA BPM Variations	1-Jun-06	31-Aug-06	C	SL_MFA	Hrs	-	-	-	-	45%	-	
1	02	07	01	01		Vacuum Process LA Linac BPM	1-Aug-06	31-Aug-06	C	SL_MVE	Hrs	-	-	-	-	45%	-	
1	02	07	01	01		Perform Lab Tests on LA Linac BPM Assembly	2-Aug-06	3-Oct-06	C	SL_MES	Hrs	40		3,133		3,133	45%	1,410
1	02	07	01	01		Perform Lab Tests on LA Linac BPM Assembly	2-Aug-06	3-Oct-06	C	SL_CT1	Hrs	40		2,415		2,415	45%	1,087
1	02	07	01	02		<b>Small Aperture BPM</b>												
1	02	07	01	06														
1	02	07	02			<b>Current Monitors</b>						120	20,000	9,648	20,960	30,608		15,304
1	02	07	02	01		<b>Current Monitors</b>						120	20,000	9,648	20,960	30,608		15,304
1	02	07	02	01		RCV: Fab Current Monitor	1-Jul-06	1-Aug-06	C	SL_MSS	\$\$		20,000		20,960	20,960	50%	10,480
1	02	07	02	01		Vacuum Process Current Monitor	23-Oct-06	27-Oct-06	C	SL_MVE	Hrs	40		4,248		4,248	50%	2,124
1	02	07	02	01		Perform Lab Tests on Current Monitor	30-Oct-06	10-Nov-06	C	SL_PHS	Hrs	40		2,926		2,926	50%	1,463
1	02	07	02	01		Perform Lab Tests on Current Monitor	30-Oct-06	10-Nov-06	C	SL_CT1	Hrs	40		2,475		2,475	50%	1,238
1	02	07	03			<b>Bunch Length Monitors</b>												
1	02	07	03	01		<b>Bunch Length Monitors</b>												
1	02	07	04			<b>Profile Monitors</b>						448	278,000	38,468	292,860	331,327		121,136
1	02	07	04	01		<b>Profile Monitors</b>						448	278,000	38,468	292,860	331,327		121,136
1	02	07	04	01		Design Check Profile Monitors	1-May-06	30-Jun-06	C	SL_MDD	Hrs	-		-		-	20%	-
1	02	07	04	01		Design GTL YAG External Optiics	1-Jun-06	26-Sep-06	C	SL_ME1	Hrs	16		1,557		1,557	40%	623
1	02	07	04	01		Design GTL YAG External Optiics	1-Jun-06	26-Sep-06	C	SL_MDD	Hrs	16		1,306		1,306	40%	522
1	02	07	04	01		Fabricate GTL YAG External Optics	27-Sep-06	21-Nov-06	C	SL_MSE	\$\$		30,000		32,198	32,198	40%	12,879
1	02	07	04	01		Assemble GTL YAG External Optics (3)	22-Nov-06	14-Dec-06	C	SL_MFA	Hrs	36		3,103		3,103	40%	1,241
1	02	07	04	01		Design GTL Cerenkov External Optics	1-Jul-06	26-Sep-06	C	SL_ME1	Hrs	24		2,336		2,336	40%	934
1	02	07	04	01		Design GTL Cerenkov External Optics	1-Jul-06	26-Sep-06	C	SL_MDD	Hrs	32		2,612		2,612	40%	1,045
1	02	07	04	01		Fabricate GTL Cerenkov External Optics	27-Sep-06	21-Nov-06	C	SL_MSE	\$\$		30,000		32,198	32,198	40%	12,879
1	02	07	04	01		Assemble GTL Cerenkov External Optics (2)	22-Nov-06	14-Dec-06	C	SL_MFA	Hrs	24		2,068		2,068	40%	827
1	02	07	04	01		Assemble GTL YAG/Cerenkov Beamline Assy (3)	1-May-06	28-Sep-06	C	SL_MFA	Hrs	8		672		672	35%	235
1	02	07	04	01		Vac Process GTL YAG/Cerenkov Beamline Assy (3)	29-Sep-06	26-Oct-06	C	SL_MFA	Hrs	40		3,441		3,441	35%	1,204
1	02	07	04	01		Design YAG External Optics	1-May-06	30-Jun-06	C	SL_ME1	Hrs	-		-		-	20%	-
1	02	07	04	01		Design YAG External Optics	1-May-06	30-Jun-06	C	SL_MDD	Hrs	-		-		-	20%	-
1	02	07	04	01		Fabricate YAG 03/04 External Optics	1-Jul-06	26-Sep-06	C	SL_MSE	\$\$		8,000		8,384	8,384	40%	3,354
1	02	07	04	01		Assemble YAG 03/04 External Optics (2)	27-Sep-06	24-Oct-06	C	SL_MFA	Hrs	24		2,061		2,061	40%	824
1	02	07	04	01		Fabricate YAG 03/YAG 04 Beamline Assemblies (2)	1-Jun-06	26-Sep-06	C	SL_MSE	\$\$		3,000		3,144	3,144	35%	1,100
1	02	07	04	01		Assemble YAG 03/04 Beamline Assy (2)	27-Sep-06	10-Oct-06	C	SL_MFA	Hrs	32		2,736		2,736	35%	958
1	02	07	04	01		Fab BL Assy (FC01,YAG01/02/GS,CR01/02)	1-Jul-06	26-Sep-06	C	SL_MSE	\$\$		20,000		20,960	20,960	35%	7,336
1	02	07	04	01		Vac Process YAG 03/04 Beamline Assy (2)	11-Oct-06	24-Oct-06	C	SL_MFA	Hrs	40		3,447		3,447	35%	1,207
1	02	07	04	01		Fabricate YAG 03/04 Mirror Assembly	1-Jun-06	31-Aug-06	C	SL_MSE	\$\$		-		-	-	35%	-
1	02	07	04	01		Design OTR External Optics	1-May-06	30-Jun-06	C	SL_ME1	Hrs	-		-		-	40%	-
1	02	07	04	01		Design OTR External Optics	1-May-06	30-Jun-06	C	SL_MDD	Hrs	-		-		-	40%	-
1	02	07	04	01		Fabricate OTR 01/02/03 External Optics	1-Jul-06	12-Sep-06	C	SL_MSE	\$\$		12,000		12,576	12,576	40%	5,030
1	02	07	04	01		Assemble OTR 01/02/03 External Optics (3)	13-Sep-06	26-Sep-06	C	SL_MFA	Hrs	36		3,024		3,024	40%	1,210
1	02	07	04	01		Fabricate OTR 01/02/03 Mirror Assembly	1-Jun-06	31-Aug-06	C	SL_MSE	\$\$		-		-	-	35%	-
1	02	07	04	01		Assemble OTR 01/02/03 Beamline Assemblies (3)	2-Aug-06	15-Aug-06	C	SL_MFA	Hrs	40		3,360		3,360	35%	1,176
1	02	07	04	01		Vac Process OTR 01/02/03 Beamline Assy (2)	16-Aug-06	29-Aug-06	C	SL_MFA	Hrs	40		3,360		3,360	35%	1,176
1	02	07	04	01		Test OTRS1	18-Sep-06	6-Oct-06	C	SL_MFA	Hrs	40		3,384		3,384	35%	1,184
1	02	07	04	01		RCV: ANL Deliver OTRS1 (IJ39)	15-Sep-06	15-Sep-06	C	SL_MSE	\$\$		175,000		183,400	183,400	35%	64,190
1	02	07	04	03		<b>GS Faraday Cup/YAG2</b>												
1	02	07	04	06		<b>DL1 OTR/YAG</b>												
1	02	07	04	07		<b>DL1TL OTR/YAG</b>												
1	02	07	04	08		<b>LTDL1 OTR/YAG (6)</b>												
1	02	07	05			<b>Injector Wire Scanners</b>						20	-	1,947	-	1,947		195



Detailed Cost Estimate  
INJECTOR SYSTEM

WBS Level						LCLA DCE Aug-2006 Description	Early Start	Early Finish	Fund Type	Res Code	Units	Work Rem. Bud. Qty		Work Rem. Full Burd and Escltd Cost			Contngcy %	Contingency \$
1	2	3	4	5	6							Hours	\$	Labor	M&S	Total		
1	02	07	05			Assemble Wire Scanners	1-May-06	30-Jun-06	C	SL_MFA	Hrs	-		-		-	10%	-
1	02	07	05			Vacuum Process Wire Scanners	1-Jul-06	30-Jul-06	C	SL_MFA	Hrs	-		-		-	10%	-
1	02	07	05			Calibrate Wire Scanners	1-Jul-06	29-Sep-06	C	SL_ME1	Hrs	20		1,947		1,947	10%	195
1	02	07	06			<b>LSR HTR - Electron Beam Diagnostics</b>												
1	02	07	07			<b>PPS Stopper</b>												
1	02	17				<b>Injector Installation &amp; Alignment</b>						4,161	73,660	368,775	73,660	442,435		132,731
1	02	17	01			<b>Injector Infrastructure Installation</b>						1,586	31,440	147,665	31,440	179,105		53,732
1	02	17	01			IJ System Integration Oversight 2006 Shut Down	1-May-06	30-Nov-06	C	SL_ME1	Hrs	408		40,005		40,005	30%	12,002
1	02	17	01			IJ System Integration Oversight 2007 Shut Down	1-Aug-07	30-Nov-07	C	SL_ME1	Hrs	510		51,590		51,590	30%	15,477
1	02	17	01			Install LCW systems	2-Aug-06	16-Aug-06	C	SL_MSP	\$\$		13,040		13,040		30%	3,912
1	02	17	01			Install laser tight wall	1-Sep-06	13-Sep-06	C	SL_MSP	\$\$		18,400		18,400		30%	5,520
1	02	17	01			Transport Waveguide to Installation Site	1-Aug-06	14-Aug-06	C	SL_MFA	Hrs	20		1,680		1,680	30%	504
1	02	17	01			Install Gallery Waveguide	1-Aug-06	12-Sep-06	C	SL_MFA	Hrs	248		20,790		20,790	30%	6,237
1	02	17	01			Install Vault Waveguide	15-Aug-06	26-Sep-06	C	SL_MFA	Hrs	400		33,600		33,600	30%	10,080
1	02	17	02			<b>Injector Controls Subsystem Install &amp; Align</b>						-	-	-	-	-		-
1	02	17	02			Vault Tray Installation	1-Apr-06	31-May-06	C	SL_MSP	\$\$		-		-	-	30%	-
1	02	17	02			PPS Boxes & Small Rack Install	1-May-06	31-May-06	C	SL_MSP	\$\$		-		-	-	30%	-
1	02	17	02			Gallery Tray Supports Installation	1-May-06	4-May-06	C	SL_MSP	\$\$		-		-	-	30%	-
1	02	17	02			Gallery Tray Installation	8-May-06	11-May-06	C	SL_MSP	\$\$		-		-	-	30%	-
1	02	17	02			DC Cable Installation	15-May-06	30-Jul-06	C	SL_MSP	\$\$		-		-	-	30%	-
1	02	17	02			PPS Cable Installation	1-May-06	3-May-06	C	SL_MSP	\$\$		-		-	-	30%	-
1	02	17	02			I&C Cable Installation	1-May-06	30-Jul-06	C	SL_MSP	\$\$		-		-	-	30%	-
1	02	17	02			Rack Installation in Gallery	1-Jun-06	30-Jul-06	C	SL_MSP	\$\$		-		-	-	30%	-
1	02	17	02			Cable Tagging and Testing	1-Jun-06	30-Jul-06	C	SL_MSP	\$\$		-		-	-	30%	-
1	02	17	03			<b>Injector Lasers Install &amp; Align</b>						208	-	20,959	-	20,959		6,288
1	02	17	03			Install Laser Bay Optical Tables/Alignment Laser	1-Jul-06	30-Jul-06	C	SL_OT1	Hrs	-		-		-	30%	-
1	02	17	03			Install laser heater optical path	2-Aug-06	22-Aug-06	C	SL_MFA	Hrs	80		6,720		6,720	30%	2,016
1	02	17	03			Install EO optical paths	1-May-06	19-May-06	C	SL_MFA	Hrs	-		-		-	30%	-
1	02	17	03			Install Synch Light Tube/Light Path for Strk Cam	1-May-06	19-May-06	C	SL_OT1	Hrs	-		-		-	30%	-
1	02	17	03			Install Synch Light Tube/Light Path for Strk Cam	1-May-06	19-May-06	C	SL_MFA	Hrs	-		-		-	30%	-
1	02	17	03			Install Cables above table	1-May-06	30-Jul-06	C	SL_MSP	\$\$		-		-	-	30%	-
1	02	17	03			Ceiling closed room cleaned	1-Jul-06	30-Jul-06	C	SL_MFA	Hrs	-		-		-	30%	-
1	02	17	03			Install Table legs room cleaned	1-Jul-06	30-Jul-06	C	SL_MSP	\$\$		-		-	-	30%	-
1	02	17	03			Install Tables	1-Jul-06	30-Jul-06	C	SL_MSP	\$\$		-		-	-	30%	-
1	02	17	03			Install Table enclosures	1-Jul-06	30-Jul-06	C	SL_MSP	\$\$		-		-	-	30%	-
1	02	17	03			Install Laser safety panels to wall	1-Jul-06	30-Jul-06	C	SL_CE1	Hrs	-		-		-	30%	-
1	02	17	03			Instal lLaser safety door switches	1-Jul-06	30-Jul-06	C	SL_CE1	Hrs	-		-		-	30%	-
1	02	17	03			Install Laser safety wiring	1-Jun-06	30-Jul-06	C	SL_CE1	Hrs	-		-		-	30%	-
1	02	17	03			Certify laser safety system	1-Jul-06	30-Jul-06	C	SL_CE1	Hrs	-		-		-	30%	-
1	02	17	03			Water system available in laser bay	1-Jul-06	30-Jul-06	C	SL_MSP	\$\$		-		-	-	30%	-
1	02	17	03			Install loaded racks	1-Jul-06	30-Jul-06	C	SL_MSP	\$\$		-		-	-	30%	-
1	02	17	03			Conduit to racks	1-Jul-06	30-Jul-06	C	SL_MSP	\$\$		-		-	-	30%	-
1	02	17	03			Power to racks	1-Jul-06	30-Jul-06	C	SL_MSP	\$\$		-		-	-	30%	-
1	02	17	03			Utilities Installed	1-Jul-06	30-Jul-06	C	SL_MSP	\$\$		-		-	-	30%	-
1	02	17	03			Install	1-Jul-06	30-Jul-06	C	SL_OT1	Hrs	-		-		-	30%	-
1	02	17	03			Characterization	1-Jul-06	30-Jul-06	C	SL_OT1	Hrs	-		-		-	30%	-
1	02	17	03			Training	1-Jul-06	30-Jul-06	C	SL_OT1	Hrs	-		-		-	30%	-
1	02	17	03			Install shutters\	1-Jul-06	30-Jul-06	C	SL_CE1	Hrs	-		-		-	30%	-
1	02	17	03			Install wiring to lasers	1-Jul-06	30-Jul-06	C	SL_CE1	Hrs	-		-		-	30%	-
1	02	17	03			Test	2-Aug-06	8-Aug-06	C	SL_CE1	Hrs	80		8,813		8,813	30%	2,644
1	02	17	03			Certification by LSO	31-Oct-06	1-Nov-06	C	SL_CE1	Hrs	48		5,426		5,426	30%	1,628
1	02	17	04			<b>Gun Area Integration</b>						349	7,680	29,600	7,680	37,280		11,184

Detailed Cost Estimate  
INJECTOR SYSTEM

WBS Level						LCLA DCE Aug-2006 Description	Early Start	Early Finish	Fund Type	Res Code	Units	Work Rem. Bud. Qty		Work Rem. Full Burd and Escltd Cost			Contngcy %	Contingency \$	
1	2	3	4	5	6							Hours	\$	Labor	M&S	Total			
1	02	17	04			Planning, preperation and staging prior to downt	1-Aug-06	31-Aug-06	C	SL_MFA	Hrs	-		-		-	30%	-	
1	02	17	04			Transport Equipment to S20	1-Aug-06	14-Nov-06	C	SL_MFA	Hrs	6		509		509	30%	153	
1	02	17	04			Lower Equipment into Vault	1-Aug-06	14-Nov-06	C	SL_MFA	Hrs	6		509		509	30%	153	
1	02	17	04			Install RF Gun/GTL Support Assy	15-Nov-06	15-Nov-06	C	SL_MSP	\$\$		3,840		3,840		3,840	30%	1,152
1	02	17	04			Align RF Gun/GTL Support Assy	16-Nov-06	17-Nov-06	C	SL_MES	Hrs	32		2,569		2,569	30%	771	
1	02	17	04			Install GTL Assy	20-Nov-06	21-Nov-06	C	SL_MFA	Hrs	32		2,758		2,758	30%	827	
1	02	17	04			Install GTL Spectrometer Assy	22-Nov-06	29-Nov-06	C	SL_MFA	Hrs	96		8,274		8,274	30%	2,482	
1	02	17	04			Make up vacuum interconnections	30-Nov-06	1-Dec-06	C	SL_MFA	Hrs	16		1,379		1,379	30%	414	
1	02	17	04			Install RF Gun Assembly	15-Dec-06	18-Dec-06	C	SL_MFA	Hrs	64		5,516		5,516	30%	1,655	
1	02	17	04			Pumpdown and leak check	19-Dec-06	20-Dec-06	C	SL_MFA	Hrs	32		2,758		2,758	30%	827	
1	02	17	04			Install Gun Solenoid	21-Dec-06	22-Dec-06	C	SL_MFA	Hrs	32		2,758		2,758	30%	827	
1	02	17	04			Install Plumbing	26-Dec-06	27-Dec-06	C	SL_MSP	\$\$		3,840		3,840		3,840	30%	1,152
1	02	17	04			Final Alignment	28-Dec-06	29-Dec-06	C	SL_MES	Hrs	32		2,569		2,569	30%	771	
<b>1</b>	<b>02</b>	<b>17</b>	<b>06</b>			<b>Accelerator Area Integration</b>						<b>573</b>	<b>13,540</b>	<b>48,526</b>	<b>13,540</b>	<b>62,066</b>		<b>18,620</b>	
1	02	17	06			Planning, preperation and staging prior to downt	1-Aug-06	31-Aug-06	C	SL_MFA	Hrs	-		-		-	30%	-	
1	02	17	06			Transport Equipment to S20	1-Aug-06	31-Oct-06	C	SL_MFA	Hrs	6		508		508	30%	152	
1	02	17	06			Lower Equipment to S20 Vault	1-Aug-06	31-Oct-06	C	SL_MFA	Hrs	6		508		508	30%	152	
1	02	17	06			Install supports	1-Nov-06	1-Nov-06	C	SL_MSP	\$\$		3,840		3,840		3,840	30%	1,152
1	02	17	06			Install LOA structure	2-Nov-06	3-Nov-06	C	SL_MFA	Hrs	32		2,758		2,758	30%	827	
1	02	17	06			Install LOB structure	6-Nov-06	7-Nov-06	C	SL_MFA	Hrs	32		2,758		2,758	30%	827	
1	02	17	06			Align LOA and LOB	8-Nov-06	9-Nov-06	C	SL_MES	Hrs	32		2,569		2,569	30%	771	
1	02	17	06			Install RF output W/G to LOA	10-Nov-06	16-Nov-06	C	SL_MFA	Hrs	120		10,342		10,342	30%	3,103	
1	02	17	06			Install YAG03	17-Nov-06	17-Nov-06	C	SL_MFA	Hrs	8		689		689	30%	207	
1	02	17	06			Align YAG03	20-Nov-06	20-Nov-06	C	SL_MES	Hrs	16		1,285		1,285	30%	385	
1	02	17	06			Tighten Flanges	21-Nov-06	21-Nov-06	C	SL_MFA	Hrs	2		172		172	30%	52	
1	02	17	06			Install Magnet QA01	22-Nov-06	22-Nov-06	C	SL_MFA	Hrs	16		1,379		1,379	30%	414	
1	02	17	06			Align Magnet QA01	27-Nov-06	27-Nov-06	C	SL_MES	Hrs	16		1,285		1,285	30%	385	
1	02	17	06			Tighten Flanges	28-Nov-06	28-Nov-06	C	SL_MFA	Hrs	2		172		172	30%	52	
1	02	17	06			Install PH01	29-Nov-06	29-Nov-06	C	SL_MFA	Hrs	16		1,379		1,379	30%	414	
1	02	17	06			Align PH02	30-Nov-06	30-Nov-06	C	SL_MES	Hrs	16		1,285		1,285	30%	385	
1	02	17	06			Tighten Flanges	1-Dec-06	1-Dec-06	C	SL_MFA	Hrs	2		172		172	30%	52	
1	02	17	06			Install QA02 w/BPM05	4-Dec-06	4-Dec-06	C	SL_MFA	Hrs	16		1,379		1,379	30%	414	
1	02	17	06			Align QA02 w/BPM05	5-Dec-06	5-Dec-06	C	SL_MES	Hrs	16		1,285		1,285	30%	385	
1	02	17	06			Tighten Flanges	6-Dec-06	6-Dec-06	C	SL_MFA	Hrs	2		172		172	30%	52	
1	02	17	06			Install XYCOR04	7-Dec-06	7-Dec-06	C	SL_MFA	Hrs	8		689		689	30%	207	
1	02	17	06			Install XYCOR05	8-Dec-06	8-Dec-06	C	SL_MFA	Hrs	8		689		689	30%	207	
1	02	17	06			Install RF output W/G to LOB	11-Dec-06	15-Dec-06	C	SL_MFA	Hrs	120		10,342		10,342	30%	3,103	
1	02	17	06			Install Linac Solenoid Support	18-Dec-06	19-Dec-06	C	SL_MFA	Hrs	32		2,758		2,758	30%	827	
1	02	17	06			Install Linac Solenoid	20-Dec-06	20-Dec-06	C	SL_MFA	Hrs	16		1,379		1,379	30%	414	
1	02	17	06			Install Plumbing	21-Dec-06	27-Dec-06	C	SL_MSP	\$\$		9,700		9,700		9,700	30%	2,910
1	02	17	06			Final Alignment	28-Dec-06	28-Dec-06	C	SL_MES	Hrs	32		2,569		2,569	30%	771	
<b>1</b>	<b>02</b>	<b>17</b>	<b>07</b>			<b>Heater Area Integration</b>						<b>333</b>	<b>3,440</b>	<b>27,929</b>	<b>3,440</b>	<b>31,369</b>		<b>9,411</b>	
1	02	17	07			Planning, preperation and staging prior to downt	1-Aug-06	31-Aug-06	C	SL_MFA	Hrs	-		-		-	30%	-	
1	02	17	07			Install supports to VACV N	9-Oct-06	9-Oct-06	C	SL_MFA	Hrs	8		689		689	30%	207	
1	02	17	07			Install Vat Valve VV03	10-Oct-06	10-Oct-06	C	SL_MFA	Hrs	8		689		689	30%	207	
1	02	17	07			Align Vat Valve	11-Oct-06	11-Oct-06	C	SL_MES	Hrs	8		642		642	30%	193	
1	02	17	07			Tighten Flanges	12-Oct-06	12-Oct-06	C	SL_MFA	Hrs	4		345		345	30%	103	
1	02	17	07			Install Current Monitor OTR1	13-Oct-06	13-Oct-06	C	SL_MFA	Hrs	8		689		689	30%	207	
1	02	17	07			Interconnect Vat Valve and Current Monitor	16-Oct-06	16-Oct-06	C	SL_MFA	Hrs	8		689		689	30%	207	
1	02	17	07			Align Current Monitor	17-Oct-06	17-Oct-06	C	SL_MES	Hrs	8		642		642	30%	193	
1	02	17	07			Tighten flanges	18-Oct-06	18-Oct-06	C	SL_MFA	Hrs	8		689		689	30%	207	
1	02	17	07			Install Wire Scanner WS01	19-Oct-06	19-Oct-06	C	SL_MFA	Hrs	8		689		689	30%	207	

Detailed Cost Estimate  
INJECTOR SYSTEM

WBS Level						LCLA DCE Aug-2006 Description	Early Start	Early Finish	Fund Type	Res Code	Units	Work Rem. Bud. Qty		Work Rem. Full Burd and Escltd Cost			Contngcy %	Contingency \$	
1	2	3	4	5	6							Hours	\$	Labor	M&S	Total			
1	02	17	07			Interconnect Current Monitor and Wire Scanner	20-Oct-06	20-Oct-06	C	SL_MFA	Hrs	8		689		689	30%	207	
1	02	17	07			Align Wire scanner	23-Oct-06	23-Oct-06	C	SL_MES	Hrs	8		642		642	30%	193	
1	02	17	07			Tighten Flanges	24-Oct-06	24-Oct-06	C	SL_MFA	Hrs	8		689		689	30%	207	
1	02	17	07			Transport Equipment to S20	1-Aug-06	6-Oct-06	C	SL_MFA	Hrs	6		505		505	30%	151	
1	02	17	07			Lower Equipmetn into Vault	1-Aug-06	6-Oct-06	C	SL_MFA	Hrs	6		505		505	30%	151	
1	02	17	07			Install Support Table	9-Oct-06	9-Oct-06	C	SL_MSP	\$\$		3,440		3,440		3,440	30%	1,032
1	02	17	07			Align Support Table	10-Oct-06	10-Oct-06	C	SL_MES	Hrs	16		1,285		1,285	30%	385	
1	02	17	07			Install Vat Valve VV02	11-Oct-06	11-Oct-06	C	SL_MFA	Hrs	8		689		689	30%	207	
1	02	17	07			Align Vat Valve	12-Oct-06	12-Oct-06	C	SL_MES	Hrs	8		642		642	30%	193	
1	02	17	07			Tighten Flanges	13-Oct-06	13-Oct-06	C	SL_MFA	Hrs	4		345		345	30%	103	
1	02	17	07			Install QE02	16-Oct-06	16-Oct-06	C	SL_MFA	Hrs	16		1,379		1,379	30%	414	
1	02	17	07			Align QE02	17-Oct-06	17-Oct-06	C	SL_MES	Hrs	8		642		642	30%	193	
1	02	17	07			Tighten Flanges	18-Oct-06	18-Oct-06	C	SL_MFA	Hrs	4		345		345	30%	103	
1	02	17	07			Install Beamline Spoolpiece Supports	19-Oct-06	19-Oct-06	C	SL_MFA	Hrs	8		689		689	30%	207	
1	02	17	07			Install Beamline Spoolpiece w/Bellows	20-Oct-06	20-Oct-06	C	SL_MFA	Hrs	8		689		689	30%	207	
1	02	17	07			Align Beamline Spoolpiece w/Bellows	23-Oct-06	23-Oct-06	C	SL_MES	Hrs	8		642		642	30%	193	
1	02	17	07			Tighten Flanges	24-Oct-06	24-Oct-06	C	SL_MFA	Hrs	8		689		689	30%	207	
1	02	17	07			Install T Cavity	25-Oct-06	25-Oct-06	C	SL_MFA	Hrs	32		2,758		2,758	30%	827	
1	02	17	07			Align T Cavity	26-Oct-06	26-Oct-06	C	SL_MES	Hrs	16		1,285		1,285	30%	385	
1	02	17	07			Tighten Flanges	27-Oct-06	27-Oct-06	C	SL_MFA	Hrs	4		345		345	30%	103	
1	02	17	07			Install QE03 w/BPM08	30-Oct-06	30-Oct-06	C	SL_MFA	Hrs	16		1,379		1,379	30%	414	
1	02	17	07			Align QE03 w/BPM	31-Oct-06	31-Oct-06	C	SL_MES	Hrs	16		1,285		1,285	30%	385	
1	02	17	07			Tighten Flanges	1-Nov-06	1-Nov-06	C	SL_MFA	Hrs	4		345		345	30%	103	
1	02	17	07			Install Xycor07	2-Nov-06	2-Nov-06	C	SL_MFA	Hrs	8		689		689	30%	207	
1	02	17	07			Install QE04 w/BPM 09	3-Nov-06	3-Nov-06	C	SL_MFA	Hrs	16		1,379		1,379	30%	414	
1	02	17	07			Align QE04 w/BPM09	6-Nov-06	6-Nov-06	C	SL_MES	Hrs	16		1,285		1,285	30%	385	
1	02	17	07			Tighten Flanges	7-Nov-06	7-Nov-06	C	SL_MFA	Hrs	4		345		345	30%	103	
<b>1</b>	<b>02</b>	<b>17</b>	<b>08</b>			<b>Wall Area Integration</b>													
<b>1</b>	<b>02</b>	<b>17</b>	<b>09</b>			<b>Insertion Area Integration</b>						<b>721</b>	<b>17,560</b>	<b>60,501</b>	<b>17,560</b>	<b>78,061</b>		<b>23,418</b>	
1	02	17	09			Transport Equipment to LI19 Equipment Hatch	1-Aug-06	1-Aug-06	C	SL_MFA	Hrs	14		1,210		1,210	30%	363	
1	02	17	09			Lower Equipmet into S19	1-Aug-06	1-Aug-06	C	SL_TMU	Hrs	23		1,740		1,740	30%	522	
1	02	17	09			Transport Equipmet to S20/S21	2-Aug-06	2-Aug-06	C	SL_MFA	Hrs	32		2,688		2,688	30%	806	
1	02	17	09			Install bellows upstream of RST1	22-Sep-06	22-Sep-06	C	SL_MFA	Hrs	4		336		336	30%	101	
1	02	17	09			Install Wire Scanner WS02	3-Oct-06	3-Oct-06	C	SL_MFA	Hrs	16		1,379		1,379	30%	414	
1	02	17	09			Align Wire Scanner	4-Oct-06	4-Oct-06	C	SL_MES	Hrs	8		642		642	30%	193	
1	02	17	09			Install bellows downstream of RST1	5-Oct-06	5-Oct-06	C	SL_MFA	Hrs	4		345		345	30%	103	
1	02	17	09			Install Current Monitor OTR02	6-Oct-06	6-Oct-06	C	SL_MFA	Hrs	8		689		689	30%	207	
1	02	17	09			Align Current Monitor	9-Oct-06	9-Oct-06	C	SL_MES	Hrs	16		1,285		1,285	30%	385	
1	02	17	09			Tighten flanges	10-Oct-06	10-Oct-06	C	SL_MFA	Hrs	4		345		345	30%	103	
1	02	17	09			Install BPM10 w/support	11-Oct-06	11-Oct-06	C	SL_MFA	Hrs	8		689		689	30%	207	
1	02	17	09			Align BPM	12-Oct-06	12-Oct-06	C	SL_MES	Hrs	8		642		642	30%	193	
1	02	17	09			Tighten flanges	13-Oct-06	13-Oct-06	C	SL_MFA	Hrs	4		345		345	30%	103	
1	02	17	09			Install Support Stand w/6 Way Cross, Parani and	16-Oct-06	16-Oct-06	C	SL_MFA	Hrs	8		689		689	30%	207	
1	02	17	09			Install Pump Support	17-Oct-06	17-Oct-06	C	SL_MFA	Hrs	8		689		689	30%	207	
1	02	17	09			Install 2ea Flex Coupling	18-Oct-06	18-Oct-06	C	SL_MFA	Hrs	16		1,379		1,379	30%	414	
1	02	17	09			Install Wire Scanner WS03	19-Oct-06	19-Oct-06	C	SL_MFA	Hrs	16		1,379		1,379	30%	414	
1	02	17	09			Install Current Monitor OTR03	20-Oct-06	20-Oct-06	C	SL_MFA	Hrs	16		1,379		1,379	30%	414	
1	02	17	09			Align Current Monitor	23-Oct-06	23-Oct-06	C	SL_MES	Hrs	16		1,285		1,285	30%	385	
1	02	17	09			Tighten flanges	24-Oct-06	24-Oct-06	C	SL_MFA	Hrs	8		689		689	30%	207	
1	02	17	09			Install Quad Magnet QM01/BPM11	25-Oct-06	26-Oct-06	C	SL_MFA	Hrs	16		1,379		1,379	30%	414	
1	02	17	09			Align Quad Magnet	27-Oct-06	30-Oct-06	C	SL_MES	Hrs	16		1,285		1,285	30%	385	
1	02	17	09			Tighten flanges	31-Oct-06	1-Nov-06	C	SL_MFA	Hrs	4		345		345	30%	103	

Detailed Cost Estimate  
INJECTOR SYSTEM

WBS Level						LCLA DCE Aug-2006 Description	Early Start	Early Finish	Fund Type	Res Code	Units	Work Rem. Bud. Qty		Work Rem. Full Burd and Escltd Cost			Contngcy %	Contingency \$
1	2	3	4	5	6							Hours	\$	Labor	M&S	Total		
1	02	17	09			Layout Support Stands	2-Nov-06	2-Nov-06	C	SL_MES	Hrs	16		1,285		1,285	30%	385
1	02	17	09			Install Support Stands	3-Nov-06	16-Nov-06	C	SL_MSP	\$\$		15,000		15,000	15,000	30%	4,500
1	02	17	09			Align Support Stands	17-Nov-06	17-Nov-06	C	SL_MES	Hrs	16		1,285		1,285	30%	385
1	02	17	09			Grout Support Stands in Place	20-Nov-06	21-Nov-06	C	SL_MSP	\$\$		2,560		2,560	2,560	30%	768
1	02	17	09			Install Vat Valve VV04	22-Nov-06	22-Nov-06	C	SL_MFA	Hrs	16		1,379		1,379	30%	414
1	02	17	09			Install Beamline Spoolpiece	27-Nov-06	27-Nov-06	C	SL_MFA	Hrs	16		1,379		1,379	30%	414
1	02	17	09			Install XY Corrector XCOR08/YCOR08	28-Nov-06	28-Nov-06	C	SL_MFA	Hrs	16		1,379		1,379	30%	414
1	02	17	09			Align XY Corrector	29-Nov-06	29-Nov-06	C	SL_MES	Hrs	16		1,285		1,285	30%	385
1	02	17	09			Install Quad Mangnet QM02/BPM12	30-Nov-06	30-Nov-06	C	SL_MFA	Hrs	16		1,379		1,379	30%	414
1	02	17	09			Align Quad Magnet	1-Dec-06	1-Dec-06	C	SL_MES	Hrs	16		1,285		1,285	30%	385
1	02	17	09			Tighten flanges	4-Dec-06	4-Dec-06	C	SL_MFA	Hrs	8		689		689	30%	207
1	02	17	09			Install Dipole Magnet BX01/DX01	5-Dec-06	6-Dec-06	C	SL_MFA	Hrs	48		4,137		4,137	30%	1,241
1	02	17	09			Align Dipole Magnet	7-Dec-06	7-Dec-06	C	SL_MES	Hrs	16		1,285		1,285	30%	385
1	02	17	09			Tighten flanges	8-Dec-06	8-Dec-06	C	SL_MFA	Hrs	8		689		689	30%	207
1	02	17	09			Install Current Monitor OTR04	11-Dec-06	11-Dec-06	C	SL_MFA	Hrs	16		1,379		1,379	30%	414
1	02	17	09			Align Current Monitor	12-Dec-06	12-Dec-06	C	SL_MES	Hrs	16		1,285		1,285	30%	385
1	02	17	09			Tighten flanges	13-Dec-06	13-Dec-06	C	SL_MFA	Hrs	8		689		689	30%	207
1	02	17	09			Install Beamline Spoolpiece Between XCOR09/YCOR0	14-Dec-06	14-Dec-06	C	SL_MFA	Hrs	8		689		689	30%	207
1	02	17	09			Align XCOR09	15-Dec-06	15-Dec-06	C	SL_MES	Hrs	16		1,285		1,285	30%	385
1	02	17	09			Tighten flanges	18-Dec-06	18-Dec-06	C	SL_MFA	Hrs	8		689		689	30%	207
1	02	17	09			Install Quad Magnet QB/BPM13	19-Dec-06	19-Dec-06	C	SL_MFA	Hrs	16		1,379		1,379	30%	414
1	02	17	09			Align Quad Magnet	20-Dec-06	20-Dec-06	C	SL_MES	Hrs	16		1,285		1,285	30%	385
1	02	17	09			Tighten flanges	21-Dec-06	21-Dec-06	C	SL_MFA	Hrs	8		689		689	30%	207
1	02	17	09			Install Wire Scanner WS04	22-Dec-06	22-Dec-06	C	SL_MFA	Hrs	16		1,379		1,379	30%	414
1	02	17	09			Align Wire Scanner	26-Dec-06	26-Dec-06	C	SL_MES	Hrs	16		1,285		1,285	30%	385
1	02	17	09			Tighten flanges	27-Dec-06	27-Dec-06	C	SL_MFA	Hrs	8		689		689	30%	207
1	02	17	09			Install Beamline Spoolpiece Upstream/Downstream	28-Dec-06	28-Dec-06	C	SL_MFA	Hrs	16		1,379		1,379	30%	414
1	02	17	09			Install Dipole Magnet BX02	29-Dec-06	2-Jan-07	C	SL_MFA	Hrs	48		4,137		4,137	30%	1,241
1	02	17	09			Align Dipole Magnet	3-Jan-07	3-Jan-07	C	SL_MES	Hrs	16		1,285		1,285	30%	385
1	02	17	09			Tighten flanges	4-Jan-07	4-Jan-07	C	SL_MFA	Hrs	8		689		689	30%	207
<b>1</b>	<b>02</b>	<b>17</b>	<b>11</b>			<b>Spectrometer Area Integration</b>						<b>392</b>	<b>-</b>	<b>33,596</b>	<b>-</b>	<b>33,596</b>		<b>10,079</b>
1	02	17	11			Planning, preperation and staging prior to downt	1-Aug-06	31-Aug-06	C	SL_MFA	Hrs	-		-		-	30%	-
1	02	17	11			Install Beamline Spoolpiece Downstream of BX01/D	15-Nov-06	15-Nov-06	C	SL_MFA	Hrs	16		1,379		1,379	30%	414
1	02	17	11			Install XCS1/YCS1	16-Nov-06	16-Nov-06	C	SL_MFA	Hrs	16		1,379		1,379	30%	414
1	02	17	11			Install SAB Chamber	17-Nov-06	17-Nov-06	C	SL_MFA	Hrs	16		1,379		1,379	30%	414
1	02	17	11			Install Vat Valve VVS1	20-Nov-06	20-Nov-06	C	SL_MFA	Hrs	8		689		689	30%	207
1	02	17	11			Install YAGS1	21-Nov-06	21-Nov-06	C	SL_MFA	Hrs	16		1,379		1,379	30%	414
1	02	17	11			Install BPMS1	22-Nov-06	22-Nov-06	C	SL_MFA	Hrs	8		689		689	30%	207
1	02	17	11			Install Bend Magnet BXS	27-Nov-06	27-Nov-06	C	SL_MFA	Hrs	48		4,137		4,137	30%	1,241
1	02	17	11			Install Beamline Spoolpiece Downstream of BXS	28-Nov-06	28-Nov-06	C	SL_MFA	Hrs	8		689		689	30%	207
1	02	17	11			Install Support w/6 Way Cross, Parani and Cold C	29-Nov-06	29-Nov-06	C	SL_MFA	Hrs	8		689		689	30%	207
1	02	17	11			Install Quad Magnet QS01/BPMS	30-Nov-06	30-Nov-06	C	SL_MFA	Hrs	24		2,068		2,068	30%	621
1	02	17	11			Install Beamline Spoolpiece w/XCS2/YCS2	1-Dec-06	1-Dec-06	C	SL_MFA	Hrs	16		1,379		1,379	30%	414
1	02	17	11			Install Quad Magnet QS02/BPMS	4-Dec-06	4-Dec-06	C	SL_MFA	Hrs	24		2,068		2,068	30%	621
1	02	17	11			Install Support w/6 Way Cross, Parani and Cold C	5-Dec-06	5-Dec-06	C	SL_MFA	Hrs	8		689		689	30%	207
1	02	17	11			Install IMS1	6-Dec-06	6-Dec-06	C	SL_MFA	Hrs	16		1,379		1,379	30%	414
1	02	17	11			Install OTR's	7-Dec-06	7-Dec-06	C	SL_MFA	Hrs	16		1,379		1,379	30%	414
1	02	17	11			Install YAGS	8-Dec-06	8-Dec-06	C	SL_MFA	Hrs	16		1,379		1,379	30%	414
1	02	17	11			Install FCS1	11-Dec-06	11-Dec-06	C	SL_MFA	Hrs	16		1,379		1,379	30%	414
1	02	17	11			Install Dump SDMP	12-Dec-06	13-Dec-06	C	SL_MFA	Hrs	48		4,137		4,137	30%	1,241
1	02	17	11			Align Magnets	14-Dec-06	15-Dec-06	C	SL_MES	Hrs	32		2,569		2,569	30%	771
1	02	17	11			Tighten Flanges	18-Dec-06	19-Dec-06	C	SL_MFA	Hrs	32		2,758		2,758	30%	827

Detailed Cost Estimate  
INJECTOR SYSTEM

WBS Level						LCLA DCE Aug-2006 Description	Early Start	Early Finish	Fund Type	Res Code	Units	Work Rem. Bud. Qty		Work Rem. Full Burd and Escltd Cost			Contngcy %	Contingency \$
1	2	3	4	5	6							Hours	\$	Labor	M&S	Total		
1	02	17	12			Injector RF High Power System Install & Align												
1	02	17	13			Injector RF Low Level Install & Align												
1	02	17	14			Cathode and Load Lock Install & Align												
1	02	17	15			Injector Laser Heater Subsystem Install & Align												
1	02	17	17			Power Conversion Subsystem Installation												
1	02	17	18			Cathode Processing Center Installation												
2	02					INJECTOR SYSTEM (OPC)						28,017	1,216,150	3,030,994	1,317,871	4,348,866	-	
2	02	01				Injector System Management & Integration												
2	02	01	01			Injector System Integration Effort / M&S												
2	02	01	02			High level Application Software												
2	02	01	03			Feedback Software												
2	02	02				Injector Controls Subsystem						8,972	44,200	912,817	47,116	959,933	-	
2	02	02	01			Personnel Protection System (PPS) R&D						1,072	30,000	97,869	31,743	129,612	-	
2	02	02	02			Beam Containment Subsystem (BCS)						220	-	27,188	-	27,188	-	
2	02	02	03			Machine Protection Subsystem (MPS)						1,280	-	143,846	-	143,846	-	
2	02	02	04			Power Conv (beamline pwr supp) Spares						-	14,200	-	15,373	15,373	-	
2	02	02	04	01		Power Supply Controls												
2	02	02	05			LLRF Controls						1,680	-	166,645	-	166,645	-	
2	02	02	05	01		LLRF Controls						1,680	-	166,645	-	166,645	-	
2	02	02	06			E-Beam Diagnostics Controls						2,280	-	228,383	-	228,383	-	
2	02	02	06	01		Controls - Wire Scanners						200	-	20,115	-	20,115	-	
2	02	02	06	02		Controls - BPM Processor Module						1,440	-	143,900	-	143,900	-	
2	02	02	06	03		Controls - Toroids						40	-	4,023	-	4,023	-	
2	02	02	06	05		Controls - Profile Monitors						80	-	8,046	-	8,046	-	
2	02	02	06	06		Control - EO Diagnostic												
2	02	02	06	12		Controls - Movable Collimator						400	-	40,230	-	40,230	-	
2	02	02	06	14		Controls - Faraday Cup						40	-	4,023	-	4,023	-	
2	02	02	06	15		Controls - Tune-Up Dump						40	-	4,023	-	4,023	-	
2	02	02	06	16		Cherenkov Commissioning Support						40	-	4,023	-	4,023	-	
2	02	02	08			Timing Controls						1,600	-	166,618	-	166,618	-	
2	02	02	09			Vacuum Controls						800	-	78,139	-	78,139	-	
2	02	02	10			Software & Controls Infrastructure												
2	02	02	11			EPICS VXI Control Modules												
2	02	02	12			Laser Controls												
2	02	02	13			Laser Heater Controls						40	-	4,128	-	4,128	-	
2	02	03				Injector Lasers						6,240	502,000	815,624	543,483	1,359,107	-	
2	02	03	01			Drive Laser Prototyping												
2	02	03	02			Drive Laser System						-	500,000	-	541,318	541,318	-	
2	02	03	02			Drive Laser Spares	3-Oct-06	30-Aug-07	S	SL_MSE	\$\$		500,000		541,318	541,318		
2	02	03	03			Drive Laser Diagnostics						6,240	-	815,624	-	815,624	-	
2	02	03	03			Drive Laser Pre-Operations	2-Jan-07	14-Dec-07	X	SL_OE1	Hrs	6,240		815,624		815,624		
2	02	03	04			Timing Stability Monitoring												
2	02	03	05			Steering Stability Feedback & Msmts												
2	02	03	06			Pre Amp Low Power Comp												
2	02	03	07			Transport to Tunnel & Relay Optics												
2	02	03	08			UV Launch, Conditioning & Diagnostics												
2	02	03	09			Load Lock Transport System												
2	02	03	10			Visible Optical Transport & Optics												
2	02	03	11			LB Infrastructure & LB System Wide Items												
2	02	03	12			Alignment Laser												
2	02	03	13			Light path to Streak Camera												
2	02	03	14			LSR HTR - Beam Conditioning Optics (Laser Bay)						-	2,000	-	2,165	2,165	-	

Detailed Cost Estimate  
INJECTOR SYSTEM

WBS Level						LCLA DCE Aug-2006 Description	Early Start	Early Finish	Fund Type	Res Code	Units	Work Rem. Bud. Qty		Work Rem. Full Burd and Escltd Cost			Contngcy %	Contingency \$
1	2	3	4	5	6							Hours	\$	Labor	M&S	Total		
2	02	03	14			Procure Laser Heater Optics Spares	1-Aug-07	29-Aug-07	S	SL_MSE	\$\$		2,000		2,165	2,165		
2	02	03	15			LSR HTR - Transport Optics (Bay to Tunnel)												
2	02	03	16			LSR HTR - Photon Beam Diagnostics												
2	02	04				Injector RF Subsystem						-	100,000	-	108,264	108,264		-
2	02	04	01			RF Gun & Load Lock						-	-	-	-	-		-
2	02	04	01	01		RF Gun						-	-	-	-	-		-
2	02	04	01	01		GTF - Test digital cameras for LCLS Injector	1-Jun-06	30-Jun-06	R	SL_PHS	Hrs	-	-	-	-	-		-
2	02	04	01	01		GTF - Install new cathode/test H+ beam cleaner	1-Jun-06	30-Jul-06	R	SL_PHS	Hrs	-	-	-	-	-		-
2	02	04	01	01		GTF - Test RF H+ plasma cleaning	1-Jun-06	30-Jul-06	R	SL_PHS	Hrs	-	-	-	-	-		-
2	02	04	01	01		GTF - Meas resolution of YAG screens	1-May-06	30-Jul-06	R	SL_PHS	Hrs	-	-	-	-	-		-
2	02	04	01	01		GTF - Procure materials, laser parts, lenses	1-Jun-06	30-Jun-06	R	SL_MSE	\$\$	-	-	-	-	-		-
2	02	04	01	01		Cathode - Meas QE v Wavelength of Sample/Cathode	1-May-06	30-Jul-06	R	SL_PHS	Hrs	-	-	-	-	-		-
2	02	04	01	01		Cathode - Meas QE v Wavelength of Sample/Cathode	1-May-06	30-Jul-06	R	SL_KCA	Hrs	-	-	-	-	-		-
2	02	04	01	01		Cathode - Test cleaned samples and cathodes	1-May-06	30-Jul-06	R	SL_KCA	Hrs	-	-	-	-	-		-
2	02	04	01	01		Cathode - Establish cathode txfer method	1-Jul-06	30-Jul-06	R	SL_PHS	Hrs	-	-	-	-	-		-
2	02	04	01	01		Cathode - Procure cathode materials	1-Jun-06	30-Jun-06	R	SL_MSE	\$\$	-	-	-	-	-		-
2	02	04	01	02		RF Gun Supports												
2	02	04	01	03		Gun Load Lock												
2	02	04	01	04		Gun Load Lock Supports												
2	02	04	01	05		Gun Solenoid												
2	02	04	01	06		Gun Solenoid Supports												
2	02	04	01	07		Gun RF Feed												
2	02	04	01	08		Gun RF Feed Supports												
2	02	04	02			Cathode Processing (CP) Station						-	100,000	-	108,264	108,264		-
2	02	04	02	01		CP Cathode Assembly & Supports						-	100,000	-	108,264	108,264		-
2	02	04	02	02		CP Load Lock						-	100,000	-	108,264	108,264		-
2	02	04	02	02		Cathode Cleaning	9-Jan-07	24-Aug-07	S	SL_MSE	\$\$		100,000		108,264	108,264		
2	02	04	02	03		CP Load Lock Supports												
2	02	04	02	04		CP Station												
2	02	04	02	05		Cathode Lab Infrastructure												
2	02	04	03			S-Band Low Level System												
2	02	04	03	01		S-Band LL Controls Timing System												
2	02	04	04			S-Band High Power System												
2	02	04	05			Injector RF Waveguide Subsystem						-	-	-	-	-		-
2	02	04	05	01		RF Waveguides						-	-	-	-	-		-
2	02	04	05	02		RF Waveguide Supports						-	-	-	-	-		-
2	02	04	05	02		RF Test Stand 1 Conversion	1-Jun-06	2-Jan-07	R	SL_MSE	\$\$		-		-	-		-
2	02	04	06			Injector Linac Structures												
2	02	04	06	01		L0-1 Structure Assembly												
2	02	04	06	02		L0-2 Structure Assembly												
2	02	04	06	03		Major Linac Support												
2	02	04	06	04		GTL RF Phase Cavity												
2	02	04	06	05		LTDL1 RF Kicker												
2	02	05				Injector Magnets & Supports												
2	02	05	01			Injector Dipoles												
2	02	05	01	01		DL1 B01 & B02 Dipoles												
2	02	05	01	02		SAB Spectrometer Dipole												
2	02	05	01	03		Chicane												
2	02	05	02			Injector Quadrupoles												
2	02	05	02	01		L0-1TL0-2 Quadrupoles ( )												
2	02	05	02	02		LTDL1 Quadrupoles ( )												
2	02	05	02	03		DL1 QB Quadrupole												

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WBS Level						LCLA DCE Aug-2006 Description	Early Start	Early Finish	Fund Type	Res Code	Units	Work Rem. Bud. Qty		Work Rem. Full Burd and Escltd Cost			Contngcy %	Contingency \$
1	2	3	4	5	6							Hours	\$	Labor	M&S	Total		
2	02	05	02	04		DL1TL Quadrupoles ( )												
2	02	05	02	05		SAB Quadrupoles ( )												
2	02	05	03			Injector Steering Coils												
2	02	05	03	01		GTL Steering Coils ( )X-Y (SC1)												
2	02	05	03	02		L0-1TL0-2 Linac Steering Coils ( )												
2	02	05	03	03		LTDL1 Steering Coils ( )X-Y												
2	02	05	03	04		DL1TL Steering Coils ( X-Y Assys)												
2	02	05	03	05		SAB Steering Coils ( )												
2	02	05	04			Linac Solenoid & Supports												
2	02	05	05			Injector Laser Heater Subsystem												
2	02	05	05	01		System Design & Optimization												
2	02	05	05	02		Undulator												
2	02	06				Injector Vacuum & Supports												
2	02	06	01			GTL Vacuum Components												
2	02	06	02			GTL Supports												
2	02	06	03			GTL Pumping & Optic Chamber												
2	02	06	04			L0-1TL0-2 Vacuum Components												
2	02	06	05			L0-1TL0-2 Major tube support structure												
2	02	06	06			LTDL1 Minor Tube Supports												
2	02	06	07			DL1 Supports												
2	02	06	08			DL1 Vacuum Chamber												
2	02	06	09			DL1TL Vacuum Components												
2	02	06	10			SAB Vacuum Chamber and Components												
2	02	06	11			SAB Supports												
2	02	07				Injector Diagnostics												
2	02	07	01			Injector Beam Position Monitors												
2	02	07	01	01		GTL BPMs ( )												
2	02	07	01	02		Gun Spectrometer (GS) Assembly												
2	02	07	01	03		L0-1TL0-2 BPMs ( )												
2	02	07	01	04		LTDL1 BPMs ( )												
2	02	07	01	05		DL1TL BPMs ( )												
2	02	07	01	06		SAB BPM ( )												
2	02	07	02			Injector Current Monitors												
2	02	07	02	01		GTL Current Monitors ( )												
2	02	07	02	02		L0-1TL0-2 Current Monitor ( )												
2	02	07	02	03		LTDL1 Current Monitors ( )												
2	02	07	02	04		DL1TL Current Monitor ( )												
2	02	07	02	05		SAB Current Monitor ( )												
2	02	07	03			Injector Bunch Length Monitors												
2	02	07	03	01		GTL E/O (EO1)												
2	02	07	03	02		LTDL1 E/O EO2												
2	02	07	03	03		DL1TL EO3												
2	02	07	04			Injector Profile Monitors												
2	02	07	04	01		GTL Faraday Cup/YAG1												
2	02	07	04	02		GTL YAG ( )												
2	02	07	04	03		L0-1TL0-2 OTR/YAG ( )												
2	02	07	04	04		LTDL1 OTR(5)/YAG ( )												
2	02	07	04	05		DL1 OTR												
2	02	07	04	06		DL1TL OTR												
2	02	07	04	07		SAB YAG												
2	02	07	04	08		SAB Beam Dump and Shielding												
2	02	07	05			Injector Wire Scanners												

Detailed Cost Estimate  
INJECTOR SYSTEM

WBS Level						LCLA DCE Aug-2006 Description	Early Start	Early Finish	Fund Type	Res Code	Units	Work Rem. Bud. Qty		Work Rem. Full Burd and Escltd Cost			Contngcy %	Contingency \$
1	2	3	4	5	6							Hours	\$	Labor	M&S	Total		
2	02	07	05	01		LTDL1 Wire Scanners ( )												
2	02	07	05	02		DL1 Wire Scanner												
2	02	07	06			LSR HTR - Electron Beam Diagnostics												
2	02	07	07			PPS Stopper												
2	02	08				Injector System Emittance Enhancement						3,782	328,168	399,310	355,286	754,596	-	
2	02	08	01			Heater Integration						1,020	-	107,235	-	107,235	-	
2	02	08	01			Heater Area Installation Oversight	2-Aug-06	18-Sep-06	X	SL_ME1	Hrs	40		4,478		4,478		
2	02	08	01			Heater Area Installation Oversight	2-Aug-06	18-Sep-06	X	SL_MDD	Hrs	20		1,877		1,877		
2	02	08	01			Heater & Optics Integration	1-Dec-06	28-Mar-07	X	SL_ME1	Hrs	200		22,970		22,970		
2	02	08	01			Heater & Optics Integration	1-Dec-06	28-Mar-07	X	SL_MDD	Hrs	400		38,517		38,517		
2	02	08	01			Heater Area Documentation	8-Nov-06	2-May-07	X	SL_ME1	Hrs	80		9,188		9,188		
2	02	08	01			Heater Area Documentation	8-Nov-06	2-May-07	X	SL_MDD	Hrs	80		7,703		7,703		
2	02	08	01			Heater & Optics Fabrication Oversight	29-Mar-07	30-May-07	X	SL_ME1	Hrs	80		9,188		9,188		
2	02	08	01			Heater & Optics Installation Oversight	20-Sep-07	16-Nov-07	X	SL_ME1	Hrs	80		9,381		9,381		
2	02	08	01			Heater & Optics Installation Oversight	20-Sep-07	16-Nov-07	X	SL_MDD	Hrs	40		3,933		3,933		
2	02	08	01			Heater Area Procurement Support	1-May-06	31-Aug-06	X	SL_ME1	Hrs	-		-		-		
2	02	08	01			Heater Area Fabrication Oversight	1-May-06	31-Aug-06	X	SL_ME1	Hrs	-		-		-		
2	02	08	01			Heater Area Installation Drawing	1-May-06	31-Aug-06	X	SL_MDD	Hrs	-		-		-		
2	02	08	02			Heater Laser & Optics						746	86,168	87,507	93,289	180,796	-	
2	02	08	02			Design Transport optics and diagnostics	2-Oct-06	31-Jul-07	X	SL_PHS	Hrs	30		2,523		2,523		
2	02	08	02			Design Transport optics and diagnostics	2-Oct-06	31-Jul-07	X	SL_OE1	Hrs	236		30,677		30,677		
2	02	08	02			Design Transport optics and diagnostics	2-Oct-06	31-Jul-07	X	SL_MDD	Hrs	240		23,110		23,110		
2	02	08	02			Procure transport components and diagnostics	2-Oct-06	31-Jul-07	X	SL_MSE	\$\$		81,168		87,875		87,875	
2	02	08	02			Fabricate Transport optics and diagnostics	1-Aug-07	7-Aug-07	X	SL_MSS	\$\$		5,000		5,413		5,413	
2	02	08	02			Install transport components and diagnostics	8-Aug-07	19-Sep-07	X	SL_OE1	Hrs	240		31,197		31,197		
2	02	08	03			Heater Magnets						1,136	177,000	113,818	191,626	305,444	-	
2	02	08	03	01		Heater Dipoles						224	52,000	23,778	56,297	80,075	-	
2	02	08	03	01		Design Support	2-Oct-06	12-Oct-06	X	SL_ME1	Hrs	80		9,188		9,188		
2	02	08	03	01		Vendor Fab Chicane Dipole Assembly	1-May-06	30-Jan-07	X	SL_ME1	Hrs	32		3,623		3,623		
2	02	08	03	01		Vendor Fab Chicane Dipole Assembly	1-May-06	30-Jan-07	X	SL_MDD	Hrs	32		3,038		3,038		
2	02	08	03	01		Fabricate Support	13-Oct-06	25-Oct-06	X	SL_MSE	\$\$		12,000		12,992		12,992	
2	02	08	03	01		RCV: Chicane Dipole Assembly	31-Jan-07	31-Jan-07	X	SL_MSS	\$\$		40,000		43,305		43,305	
2	02	08	03	01		Perform QC/MM on Chicane Dipole Assm	1-Feb-07	1-Mar-07	X	SL_MFA	Hrs	80		7,929		7,929		
2	02	08	03	02		Heater Undulator						912	125,000	90,040	135,329	225,369	-	
2	02	08	03	02		Define Undulator specifications	1-Jun-06	30-Aug-06	X	SL_PHS	Hrs	24		1,967		1,967		
2	02	08	03	02		Design Undulator	31-Aug-06	31-Oct-06	X	SL_PHS	Hrs	80		6,642		6,642		
2	02	08	03	02		Design Undulator	31-Aug-06	31-Oct-06	X	SL_ME1	Hrs	160		18,139		18,139		
2	02	08	03	02		Design Undulator	31-Aug-06	31-Oct-06	X	SL_MDD	Hrs	320		30,417		30,417		
2	02	08	03	02		Prep Bid Pak - Undulator	3-Nov-06	19-Jan-07	X	SL_ME1	Hrs	20		2,297		2,297		
2	02	08	03	02		Design Support	1-Nov-06	2-Mar-07	X	SL_ME1	Hrs	40		4,594		4,594		
2	02	08	03	02		Design Support	1-Nov-06	2-Mar-07	X	SL_MDD	Hrs	120		11,555		11,555		
2	02	08	03	02		Evaluate Vendor Proposals - Undulator	22-Jan-07	21-Mar-07	X	SL_PHS	Hrs	8		673		673		
2	02	08	03	02		Fabricate Support	5-Mar-07	30-May-07	X	SA_MSE	\$\$		25,000		27,066		27,066	
2	02	08	03	02		Vendor Fab - Undulator	23-Mar-07	5-Jul-07	X	SL_ME1	Hrs	20		2,297		2,297		
2	02	08	03	02		RCV: Undulator	6-Jul-07	6-Jul-07	X	SA_MSE	\$\$		100,000		108,264		108,264	
2	02	08	03	02		Perform Magnetic Measurements and QA	9-Jul-07	6-Sep-07	X	SL_PHS	Hrs	20		1,682		1,682		
2	02	08	03	02		Perform Magnetic Measurements and QA	9-Jul-07	6-Sep-07	X	SL_MFA	Hrs	80		7,929		7,929		
2	02	08	03	02		Perform Magnetic Measurements and QA	9-Jul-07	6-Sep-07	X	SL_MES	Hrs	20		1,847		1,847		
2	02	08	04			Heater Vacuum						412	45,000	43,337	48,719	92,056	-	
2	02	08	04			Heater Region Vacuum Engineering	1-May-06	30-Jun-06	X	SL_ME1	Hrs	-		-		-		
2	02	08	04			Heater Region Design	1-May-06	30-Jun-06	X	SL_MDD	Hrs	-		-		-		
2	02	08	04			Vacuum Integration Support	1-Jun-06	14-Jun-07	X	SL_ME1	Hrs	72		8,202		8,202		



Detailed Cost Estimate  
INJECTOR SYSTEM

WBS Level						LCLA DCE Aug-2006 Description	Early Start	Early Finish	Fund Type	Res Code	Units	Work Rem. Bud. Qty		Work Rem. Full Burd and Escltd Cost			Contngcy %	Contingency \$
1	2	3	4	5	6							Hours	\$	Labor	M&S	Total		
2	02	08	04			Laser Heater Chamber Engineering	3-Oct-06	2-Jan-07	X	SL_ME1	Hrs	120		13,782		13,782		
2	02	08	04			Laser Heater Chamber Design	3-Oct-06	2-Jan-07	X	SL_MDD	Hrs	160		15,407		15,407		
2	02	08	04			Fabricate Heater Special Chambers	3-Jan-07	2-Apr-07	X	SL_MSE	\$\$		35,000		37,892	37,892		
2	02	08	04			Vacuum Process Heater Special Chambers	3-Apr-07	1-May-07	X	SL_MFA	Hrs	60		5,947		5,947		
2	02	08	04			Fabricate Heater Vacuum Supports	3-Jan-07	2-Apr-07	X	SL_MSE	\$\$		10,000		10,826	10,826		
2	02	08	05			<b>Heater Diagnostics</b>						<b>296</b>	<b>20,000</b>	<b>30,258</b>	<b>21,653</b>	<b>51,911</b>		-
2	02	08	05			Design OTRH1/OTRH2 External Optics	2-Oct-06	3-Jan-07	X	SL_ME1	Hrs	80		9,188		9,188		
2	02	08	05			Design OTRH1/OTRH2 External Optics	2-Oct-06	3-Jan-07	X	SL_MDD	Hrs	120		11,555		11,555		
2	02	08	05			Fabricate OTRH1/OTRH2 External Optics	4-Jan-07	30-Mar-07	X	SL_MSE	\$\$		20,000		21,653	21,653		
2	02	08	05			Assemble OTRH1/OTRH2 External Optics (2)	2-Apr-07	26-Apr-07	X	SL_MFA	Hrs	24		2,379		2,379		
2	02	08	05			Assemble OTRH1/OTRH2 Beamline Assy (2)	27-Apr-07	1-Jun-07	X	SL_MFA	Hrs	32		3,172		3,172		
2	02	08	05			Vac Processs OTRH1/OTRH2 Beamline Assy (2)	4-Jun-07	30-Jul-07	X	SL_MFA	Hrs	40		3,964		3,964		
2	02	08	06			<b>Heater Install &amp; Align</b>						<b>172</b>	<b>-</b>	<b>17,155</b>	<b>-</b>	<b>17,155</b>		-
2	02	08	06			Install Enclosures,Tubes&Supports	20-Sep-07	3-Oct-07	X	SL_MFA	Hrs	20		1,990		1,990		
2	02	08	06			Install Magnet Supports	4-Oct-07	17-Oct-07	X	SL_TMU	Hrs	24		2,148		2,148		
2	02	08	06			Install Photon Diagnostics Supports	18-Oct-07	24-Oct-07	X	SL_MFA	Hrs	8		814		814		
2	02	08	06			Install Beampipe	25-Oct-07	7-Nov-07	X	SL_MFA	Hrs	40		4,068		4,068		
2	02	08	06			Install Undulator	8-Nov-07	30-Nov-07	X	SL_MFA	Hrs	80		8,135		8,135		
2	02	17				<b>Injector System Commissioning</b>						<b>9,023</b>	<b>241,782</b>	<b>903,243</b>	<b>263,723</b>	<b>1,166,965</b>		-
2	02	17	01			<b>Controls Commissioning</b>												
2	02	17	02			<b>Drive Laser Commissioning</b>												
2	02	17	03			<b>RF Conditioning</b>												
2	02	17	04			<b>RF Gun Operation with Beam</b>												
2	02	17	05			<b>L0-1&amp;L0-2 Commissioning</b>												
2	02	17	06			<b>L0&amp;SAB Commissioning</b>												
2	02	17	07			<b>DL1 Commissioning</b>												
2	02	17	08			<b>Injector Optimization</b>												
2	02	17	10			<b>Injector System Commissioning</b>						<b>9,023</b>	<b>241,782</b>	<b>903,243</b>	<b>263,723</b>	<b>1,166,965</b>		-
2	02	17	10			Injector Commissioning 2007	2-Jan-07	30-Aug-07	X	SL_PHS	Hrs	933		99,875		99,875		
2	02	17	10			Injector Commissioning 2007	2-Jan-07	30-Aug-07	X	SL_PHS	Hrs	1,476		124,144		124,144		
2	02	17	10			Injector Commissioning 2007	2-Jan-07	30-Aug-07	X	SL_OT1	Hrs	1,476		105,038		105,038		
2	02	17	10			Injector Commissioning 2007	2-Jan-07	30-Aug-07	X	SL_OE1	Hrs	1,195		155,334		155,334		
2	02	17	10			Injector Commissioning 2007	2-Jan-07	30-Aug-07	X	SL_MSE	\$\$		172,119		186,342	186,342		
2	02	17	10			Injector Commissioning 2007	2-Jan-07	30-Aug-07	X	SL_ME1	Hrs	134		15,390		15,390		
2	02	17	10			Injector Commissioning 2007	2-Jan-07	30-Aug-07	X	SL_MDD	Hrs	209		20,125		20,125		
2	02	17	10			Injector Commissioning 2007	2-Jan-07	30-Aug-07	X	SL_KT1	Hrs	189		13,450		13,450		
2	02	17	10			Injector Commissioning 2007	2-Jan-07	30-Aug-07	X	SL_KE1	Hrs	806		104,769		104,769		
2	02	17	10			Injector Commissioning 2008	3-Dec-07	30-Sep-08	X	SL_PHS	Hrs	400		43,932		43,932		
2	02	17	10			Injector Commissioning 2008	3-Dec-07	30-Sep-08	X	SL_PHS	Hrs	633		54,625		54,625		
2	02	17	10			Injector Commissioning 2008	3-Dec-07	30-Sep-08	X	SL_OT1	Hrs	633		46,218		46,218		
2	02	17	10			Injector Commissioning 2008	3-Dec-07	30-Sep-08	X	SL_OE1	Hrs	512		68,283		68,283		
2	02	17	10			Injector Commissioning 2008	3-Dec-07	30-Sep-08	X	SL_MSE	\$\$		69,663		77,381	77,381		
2	02	17	10			Injector Commissioning 2008	3-Dec-07	30-Sep-08	X	SL_KT1	Hrs	81		5,914		5,914		
2	02	17	10			Injector Commissioning 2008	3-Dec-07	30-Sep-08	X	SL_KE1	Hrs	346		46,145		46,145		