

VTX Budget/Schedule Overview

- Plan
 - Overview of budget/schedule
 - Followed by detailed break-down by subsystem managers
 - WBS Schedule/budget available as handout and projected throughout day

DOE/RIKEN Responsibilities (I)

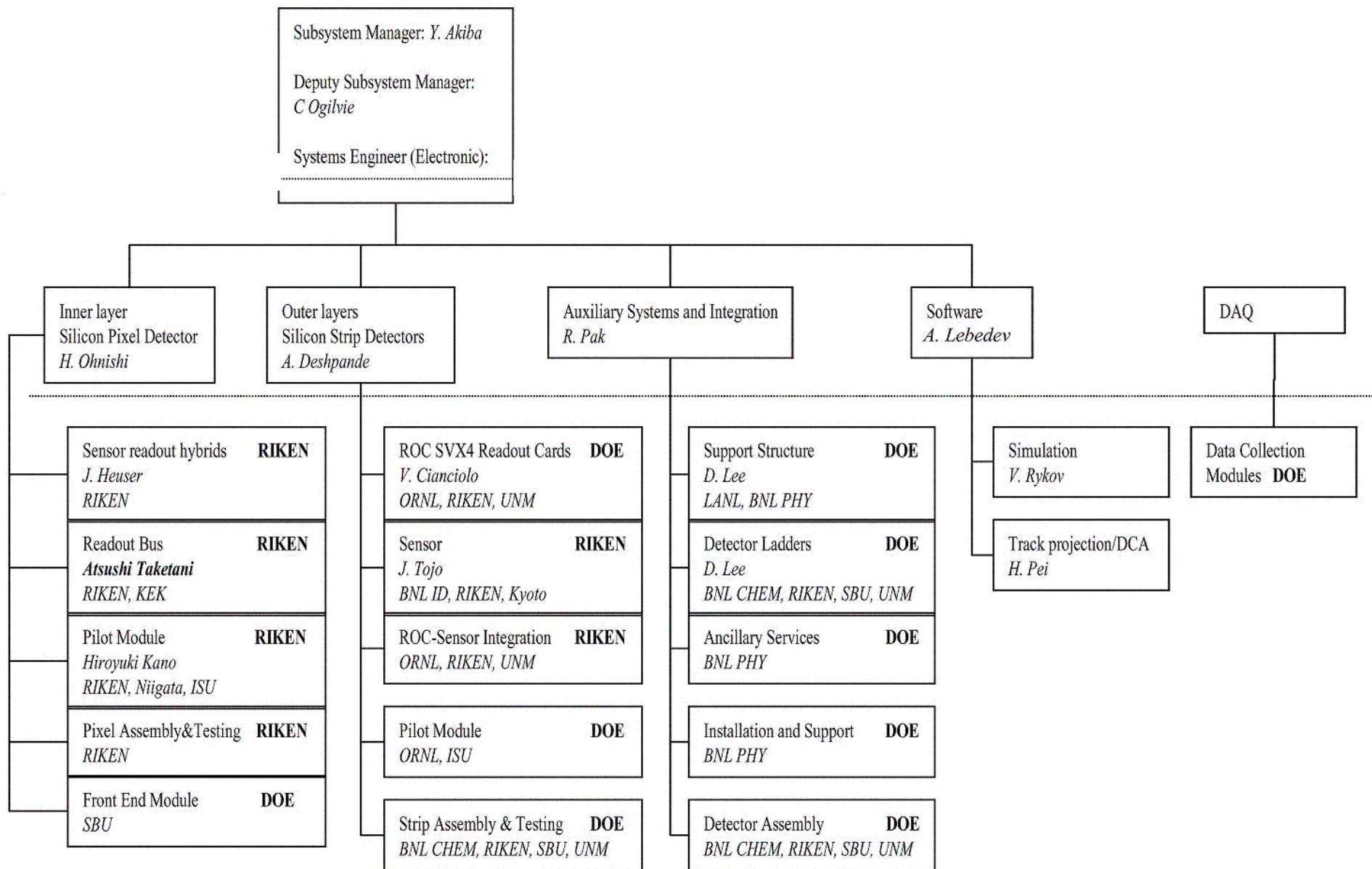
	Construction Task	DOE	RIKEN
1.1.1	Strip Layers		
1.1.1.1	Strip FEE	X	
1.1.1.2	Strip Sensor		X
1.1.1.3	Strip Systems Tests	X	
1.1.1.4	Strip Assembly and test	X	
1.1.1.5	Services, LV, Racks	X	
1.1.2	Pixel Layers		
1.1.2.1	Pixel sensor		X
1.1.2.2	Pixel Readout-chip		X
1.1.2.3	Pixel Sensor Assembly/Hybrid		X
1.1.2.4	Pixel Bus		X
1.1.2.5	Pixel Pilot Module		X
1.1.2.6	Pixel FEM		X
1.1.2.7	Pixel Prototype Ladder		X
1.1.2.8	Pixel Assembly and test		X
1.1.2.9	Services LV, Racks		X



DOE/RIKEN Responsibilities (II)

	Construction Task	DOE	RIKEN
<i>1.2</i>	<i>DAQ</i>		
1.2.1	Strip DCM	X	
1.2.2	Pixel DCM		X
<i>1.3</i>	<i>Electronics Systems + Integration</i>	X	
<i>1.4</i>	<i>Auxiliary Systems + Integration</i>		
1.4.1	Specifications		X
1.4.2	Mechanical Structure	X	
1.4.3	Assembly of ladders onto VTX	X	
1.4.4	Infrastructure	X	
1.4.5	Installation of VTX	X	
1.4.6	Mechanical Integration	X	





Methods: Contingency

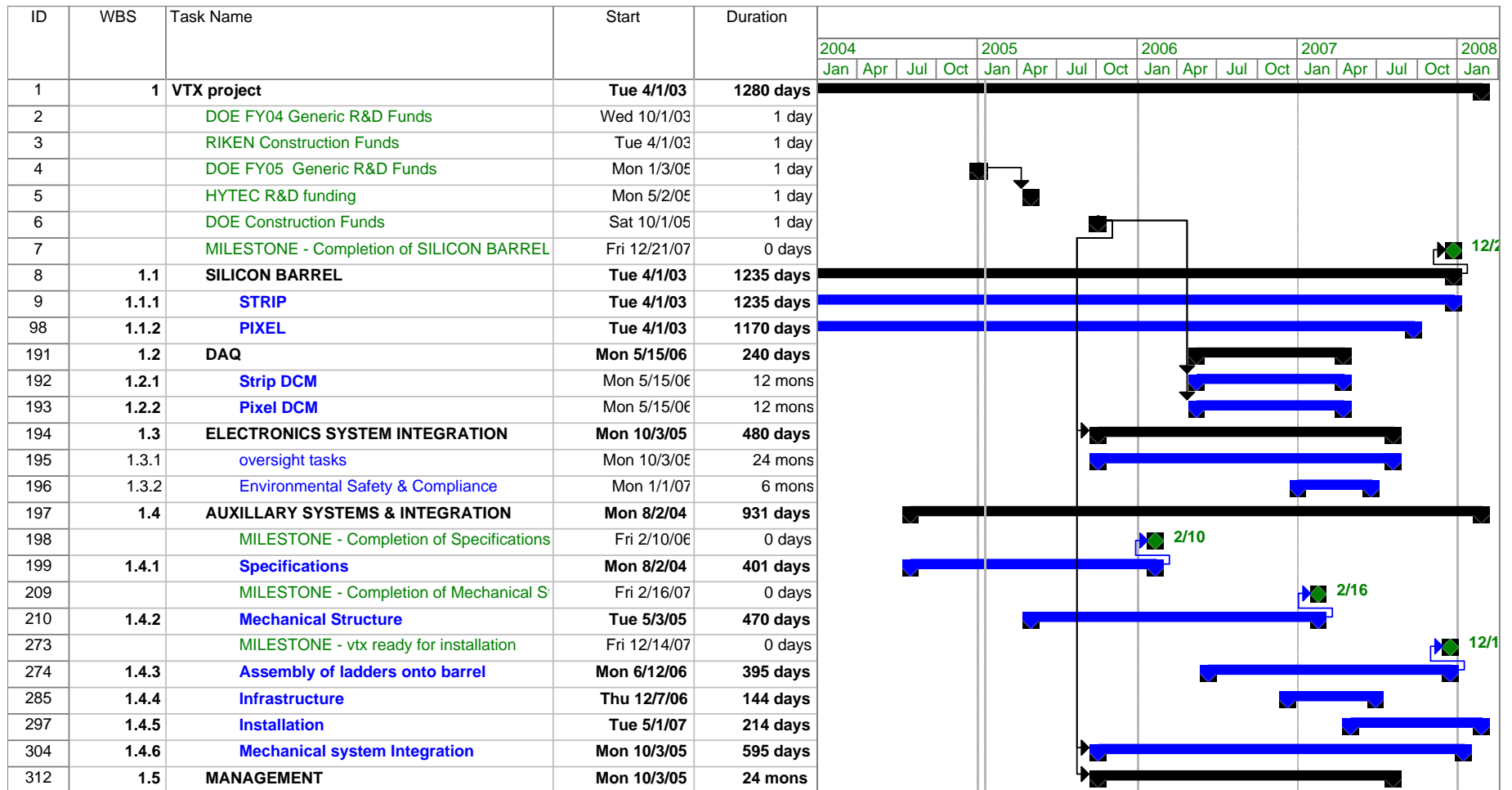
- Design/prototype/testing : 25% contingency each cycle
- To cover cost risk that an extra pre-production cycle is needed
 - Last design/prototype/testing cycle : 50% contingency
- Testing, assembly, and installation tasks: 50% contingency
- Purchases based on vendor quotes: 25% contingency
- Other purchases, 50% contingency
- Strip FEE
 - risk-based contingency
 - prototype for other areas

Methods: Overhead

- All numbers quoted for manpower are fully loaded \$
- Material costs include local overhead + sales-tax
- Funds moved from BNL to other institutions charged 9% BNL admin. overhead



VTX Schedule

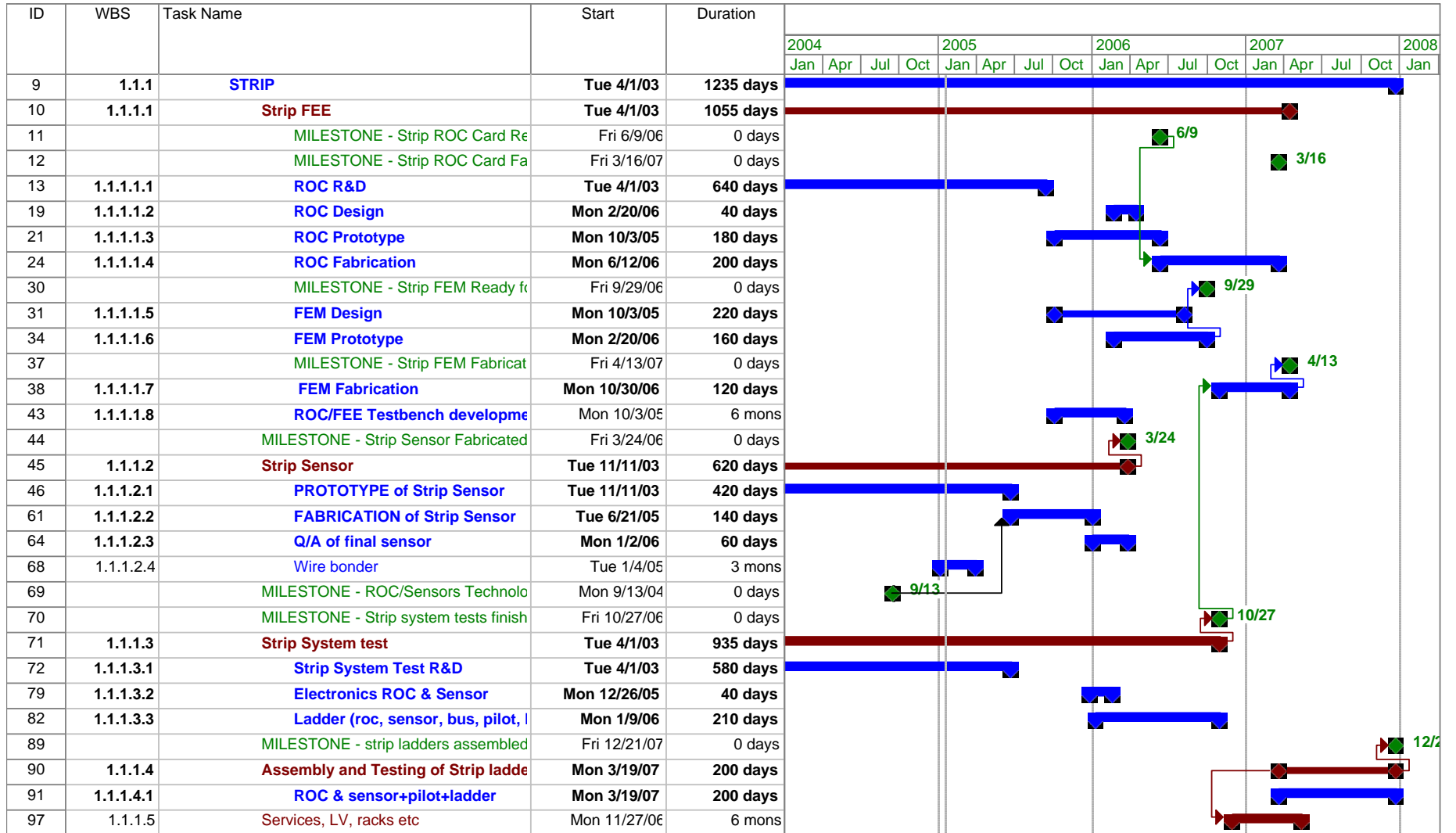


Pixel

ID	WBS	Task Name	Start	Duration	Timeline																	
					2004				2005				2006				2007				2008	
					Jan	Apr	Jul	Oct	Jan	Apr	Jul	Oct	Jan	Apr	Jul	Oct	Jan	Apr	Jul	Oct	Jan	Apr
98	1.1.2	PIXEL	Tue 4/1/03	1170 days																		
99		RIKEN/CERN MOU	Tue 4/1/03	12 mons																		
100		RIKEN/CERN contract(2)	Fri 10/1/04	18 mons																		
101	1.1.2.1	Pixel Sensors	Mon 3/1/04	380 days																		
109	1.1.2.2	Pixel ROC	Tue 4/1/03	509 days																		
120		MILESTONE - Pixels bump-bonded	Wed 2/22/06	0 days																		
121	1.1.2.3	Pixel Sensor assembly	Thu 1/6/05	296 days																		
125	1.1.2.4	Pixel Bus	Fri 1/2/04	677 days																		
135	1.1.2.5	Pixel Pilot Module	Mon 2/2/04	521 days																		
153	1.1.2.6	Pixel FEM	Fri 10/1/04	502 days																		
172		MILESTONE - Pixel ladders ready for p	Fri 5/26/06	0 days																		
173	1.1.2.7	Prototype Pixel ladder (sensor+ROC	Mon 1/9/06	100 days																		
180		MILESTONE - Pixel Ladders assemble	Fri 8/10/07	0 days																		
181	1.1.2.8	final ladder production	Mon 9/18/06	265 days																		
190	1.1.2.9	Pixel Services, LV, racks etc	Mon 3/20/06	6 mons																		



Strip



DAQ + Electronics Integration Schedule

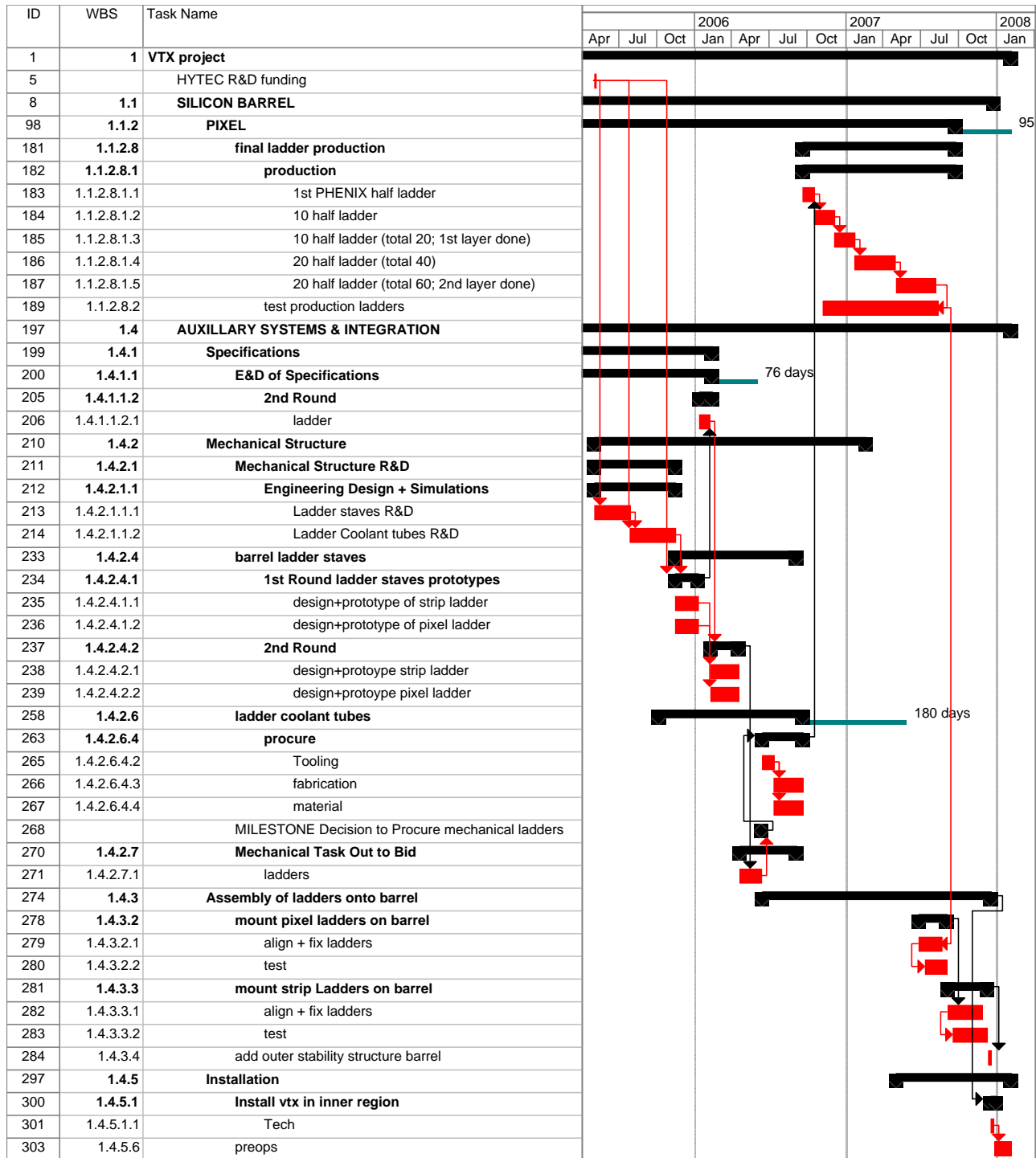
ID	WBS	Task Name	Start	Duration																		
					2005				2006				2007									
					Jan	Apr	Jul	Oct	Jan	Apr	Jul	Oct	Jan	Apr	Jul	Oct						
191	1.2	DAQ	Mon 5/15/06	240 days																		
192	1.2.1	Strip DCM	Mon 5/15/06	12 mons																		
193	1.2.2	Pixel DCM	Mon 5/15/06	12 mons																		
194	1.3	ELECTRONICS SYSTEM INTEGRATION	Mon 10/3/05	480 days																		
195	1.3.1	oversight tasks	Mon 10/3/05	24 mons																		
196	1.3.2	Environmental Safety & Compliance	Mon 1/1/07	6 mons																		



Integration Schedule

ID	WBS	Task Name	Start	Duration	Schedule																											
					2004				2005				2006				2007				2008											
					Jan	Apr	Jul	Oct	Jan	Apr	Jul	Oct	Jan	Apr	Jul	Oct	Jan	Apr	Jul	Oct	Jan	Apr										
197	1.4	AUXILLARY SYSTEMS & INTEGRATION	Mon 8/2/04	931 days	[Gantt bar spanning from 8/2/04 to 2/10/06]																											
198		MILESTONE - Completion of Specifications	Fri 2/10/06	0 days	[Green diamond at 2/10/06]																											
199	1.4.1	Specifications	Mon 8/2/04	401 days	[Blue bar from 8/2/04 to 2/10/06]																											
200	1.4.1.1	E&D of Specifications	Mon 8/2/04	401 days	[Red bar from 8/2/04 to 2/10/06]																											
209		MILESTONE - Completion of Mechanical S	Fri 2/16/07	0 days	[Green diamond at 2/16/07]																											
210	1.4.2	Mechanical Structure	Tue 5/3/05	470 days	[Blue bar from 5/3/05 to 2/16/07]																											
211	1.4.2.1	Mechanical Structure R&D	Tue 5/3/05	140 days	[Red bar from 5/3/05 to 9/1/05]																											
217	1.4.2.2	Cooling System	Mon 2/13/06	90 days	[Red bar from 2/13/06 to 4/13/06]																											
222	1.4.2.3	Outer Stability Structure	Mon 10/3/05	340 days	[Red bar from 10/3/05 to 9/1/06]																											
232		MILESTONE - Completion of Mechanic	Fri 9/1/06	0 days	[Green diamond at 9/1/06]																											
233	1.4.2.4	barrel ladder staves	Mon 11/14/05	210 days	[Red bar from 11/14/05 to 6/9/06]																											
250	1.4.2.5	Barrel	Mon 10/3/05	360 days	[Red bar from 10/3/05 to 6/9/06]																											
258	1.4.2.6	ladder coolant tubes	Mon 10/3/05	250 days	[Red bar from 10/3/05 to 6/9/06]																											
268		MILESTONE Decision to Procure mecl	Fri 6/9/06	0 days	[Green diamond at 6/9/06]																											
269		MILESTONE Decision to Procure mecl	Fri 9/1/06	0 days	[Green diamond at 9/1/06]																											
270	1.4.2.7	Mechanical Task Out to Bid	Mon 4/17/06	100 days	[Black bar from 4/17/06 to 6/12/06]																											
273		MILESTONE - vtx ready for installation	Fri 12/14/07	0 days	[Green diamond at 12/14/07]																											
274	1.4.3	Assembly of ladders onto barrel	Mon 6/12/06	395 days	[Blue bar from 6/12/06 to 12/14/07]																											
275	1.4.3.1	assembly jig for ladders onto barrel	Mon 6/12/06	60 days	[Red bar from 6/12/06 to 8/1/06]																											
278	1.4.3.2	mount pixel ladders on barrel	Mon 6/25/07	50 days	[Red bar from 6/25/07 to 8/14/07]																											
281	1.4.3.3	mount strip Ladders on barrel	Mon 9/3/07	70 days	[Red bar from 9/3/07 to 11/13/07]																											
284	1.4.3.4	add outer stability structure barrel	Mon 12/10/07	1 wk	[Red bar from 12/10/07 to 12/17/07]																											
285	1.4.4	Infrastructure	Thu 12/7/06	144 days	[Blue bar from 12/7/06 to 3/10/07]																											
286	1.4.4.1	Installation+support	Thu 12/7/06	80 days	[Red bar from 12/7/06 to 2/16/07]																											
293	1.4.4.2	Services	Thu 12/7/06	144 days	[Red bar from 12/7/06 to 3/10/07]																											
297	1.4.5	Installation	Tue 5/1/07	214 days	[Blue bar from 5/1/07 to 12/14/07]																											
298		IR Open Summer 07	Tue 5/1/07	1 day	[Green bar at 5/1/07]																											
299		IR close winter 07	Mon 12/31/07	1 day	[Green bar at 12/31/07]																											
300	1.4.5.1	Install vtx in inner region	Mon 12/17/07	10 days	[Red bar from 12/17/07 to 1/6/08]																											
303	1.4.5.6	preops	Mon 1/14/08	6 wks	[Red bar from 1/14/08 to 2/11/08]																											
304	1.4.6	Mechanical system Integration	Mon 10/3/05	595 days	[Blue bar from 10/3/05 to 12/14/07]																											
305	1.4.6.1	Mechanical System Engineer	Mon 10/3/05	595 days	[Red bar from 10/3/05 to 12/14/07]																											
311	1.4.6.2	Detailing/drawings	Thu 1/5/06	22 mons	[Red bar from 1/5/06 to 12/14/07]																											





Milestones

ID	WBS	Task Name	Start	Timeline																	
				2006				2007				2008									
				Oct	Jan	Apr	Jul	Oct	Jan	Apr	Jul	Oct	Jan								
8	1.1	SILICON BARREL	Tue 4/1/03	[Gantt bar from 4/1/03 to 12/21/07]																	
9	1.1.1	STRIP	Tue 4/1/03	[Gantt bar from 4/1/03 to 12/21/07]																	
10	1.1.1.1	Strip FEE	Tue 4/1/03	[Gantt bar from 4/1/03 to 12/21/07]																	
44		MILESTONE - Strip Sensor Fabricated	Fri 3/24/06			3/24															
69		MILESTONE - ROC/Sensors Technolo	Mon 9/13/04																		
70		MILESTONE - Strip system tests finish	Fri 10/27/06							10/27											
89		MILESTONE - strip ladders assembled	Fri 12/21/07																	12/21	
98	1.1.2	PIXEL	Tue 4/1/03	[Gantt bar from 4/1/03 to 12/21/07]																	
120		MILESTONE - Pixels bump-bonded	Wed 2/22/06			2/22															
172		MILESTONE - Pixel ladders ready for p	Fri 5/26/06					5/26													
180		MILESTONE - Pixel Ladders assemble	Fri 8/10/07																	8/10	
197	1.4	AUXILLARY SYSTEMS & INTEGRATION	Mon 8/2/04	[Gantt bar from 8/2/04 to 12/21/07]																	
198		MILESTONE - Completion of Specifications	Fri 2/10/06			2/10															
209		MILESTONE - Completion of Mechanical S	Fri 2/16/07																		
210	1.4.2	Mechanical Structure	Tue 5/3/05	[Gantt bar from 5/3/05 to 12/21/07]																	
232		MILESTONE - Completion of Mechanic	Fri 9/1/06							9/1											
268		MILESTONE Decision to Procure mecl	Fri 6/9/06					6/9													
269		MILESTONE Decision to Procure mecl	Fri 9/1/06							9/1											
273		MILESTONE - vtx ready for installation	Fri 12/14/07																		12/14



VTX Budget

ID	WBS	Task Name	Generic R&D Fy05	Manpower	Material (loc. overhead (tax))	Additional Overhead	DOE Contingency	TPC DOE (with contingency)	RIKEN	RIKEN Contingency	RIKEN Total
1	1	VTX project	315338	1,678,103	1233383	129,083	1,221,115	4,261,684	2,702,500	380,175	3082675
2		DOE FY04 Generic R&D Funds	0	0	0	0	0	0	0	0	0
3		RIKEN Construction Funds	0	0	0	0	0	0	0	0	0
4		DOE FY05 Generic R&D Funds	0	0	0	0	0	0	0	0	0
5		HYTEC R&D funding	0	0	0	0	0	0	0	0	0
6		DOE Construction Funds	0	0	0	0	0	0	0	0	0
7		MILESTONE - Completion of SILICON BARREL	0	0	0	0	0	0	0	0	0
8	1.1	SILICON BARREL	145338	442,603	626807	62,213	398,259	1,529,882	2,572,500	353,750	2926250
9	1.1.1	STRIP	145338	442,603	626807	62,213	398,259	1,529,882	1,035,000	112,500	1147500
98	1.1.2	PIXEL	0	0	0	0	0	0	1,537,500	241,250	1778750
191	1.2	DAQ	0	30,000	55000	7,650	23,163	115,813	68,500	17,125	85625
192	1.2.1	Strip DCM	0	30,000	55000	7,650	23,163	115,813	0	0	0
193	1.2.2	Pixel DCM	0	0	0	0	0	0	68,500	17,125	85625
194	1.3	ELECTRONICS SYSTEM INTEGRATION	0	375,000	0	0	187,500	562,500	0	0	0
195	1.3.1	oversight tasks	0	325,000	0	0	162,500	487,500	0	0	0
196	1.3.2	Environmental Safety & Compliance	0	50,000	0	0	25,000	75,000	0	0	0
197	1.4	AUXILLARY SYSTEMS & INTEGRATION	170000	790,500	551576	55,620	590,393	1,988,089	61,500	9,300	70800
198		MILESTONE - Completion of Specifications	0	0	0	0	0	0	0	0	0
199	1.4.1	Specifications	0	0	0	0	0	0	61,500	9,300	70800
209		MILESTONE - Completion of Mechanical Str	0	0	0	0	0	0	0	0	0
210	1.4.2	Mechanical Structure	170000	230,500	372500	54,270	220,180	877,450	0	0	0
273		MILESTONE - vtx ready for installation	0	0	0	0	0	0	0	0	0
274	1.4.3	Assembly of ladders onto barrel	0	45,000	43076	1,350	44,713	134,139	0	0	0
285	1.4.4	Infrastructure	0	110,000	118375	0	114,188	342,563	0	0	0
297	1.4.5	Installation	0	55,000	17625	0	36,313	108,938	0	0	0
304	1.4.6	Mechanical system Integration	0	350,000	0	0	175,000	525,000	0	0	0
312	1.5	MANAGEMENT	0	40,000	0	3,600	21,800	65,400	0	0	0



VTX Budget: Contingency

WBS	Task Name	Manpower+Material+Overhead	% contingency	DOE TPC with contingency	RIKEN	% contingency	RIKEN TPC with contingency
1	VTX project	3,040,569	40.2	4,261,684	2,702,500	14.1	3082675
1.1.1	STRIP	1,131,623	35.2	1,529,882	1,035,000	10.9	1147500
1.1.2	PIXEL	0		0	1,537,500	15.7	1778750
1.2	DAQ	92,650	25.0	115,813	68,500	25.0	85625
1.2.1	Strip DCM	92,650	25.0	115,813	0		0
1.2.2	Pixel DCM	0		0	68,500	25.0	85625
1.3	ELECTRONICS SYSTEM INTEGRATION	375,000	50.0	562,500	0		0
1.3.1	oversight tasks	325,000	50.0	487,500	0		0
1.3.2	Environmental Safety & Compliance	50,000	50.0	75,000	0		0
1.4	AUXILLARY SYSTEMS & INTEGRATION	1,397,696	42.2	1,988,089	61,500		70800
1.4.1	Specifications	0		0	61,500	15.1	70800
1.4.2	Mechanical Structure	657,270	33.5	877,450	0		0
1.4.3	Assembly of ladders onto barrel	89,426	50.0	134,139	0		0
1.4.4	Infrastructure	228,375	50.0	342,563	0		0
1.4.5	Installation	72,625	50.0	108,938	0		0
1.4.6	Mechanical system Integration	350,000	50.0	525,000	0		0
1.5	MANAGEMENT	43,600	50.0	65,400	0		0



VTX Budget/Schedule: Next

- Detailed break-down by subsystem managers
- WBS Schedule/budget available as handout and projected throughout day