

Administrative Summary for CesrTA WBS (Replicon and Account Structure)

CesrTA Work Breakdown Structure					Version Date:	10/2/2008		
WBS	Acct Type	Acct Number	Proj/ Duo	Description	Replicon Category	Coordinator * = CAM	Work Description	
1				PROJECT ADMINISTRATION & EXTERNAL ACTIVITIES	CTA 1 Project Administration & External Activities	M. Palmer*	All activities related to management and planning for the CesrTA Research Program as well as interface activities extending outside the laboratory (including ILC GDE interactions, laboratory outreach, etc.)	
1	1	NonCap	101-000	Research Program Management	Research Program Management	M. Palmer	Coordination of R&D plans, safety plan development, coordination of activities with other CLASSE projects and with collaborators, and project oversight	
1	2	NonCap	102-000	External Activities	External Activities	M. Palmer	ILC GDE and ILC ART participation, CLASSE outreach, KEK-ATF collaboration, etc.	
1	2		102-100	ILC GDE Damping Rings		M. Palmer	Participation in the ILC Global Design Effort Damping Rings Group	
1	2		102-200	ILC ART		M. Palmer	Participation in the ILC Americas Regional Team	
1	2		102-300	LEPP Outreach		L. Hine	Outreach efforts at CLASSE	
1	2		102-400	KEK-ATF (and other) Collaboration		M. Palmer	Participation in other experimental collaborations	
1	2		102-500	Project Travel		M. Palmer	Travel associated with CesrTA	
1	2		102-600	Workshop and Conference Hosting		M. Palmer	Workshop and conference organization costs associated with the ILC and CesrTA programs	
1	2		102-700	Accelerator Seminars		M. Palmer	Costs associated with hosting accelerator seminar/journal club speakers	
1	2		102-800	Collaborator Travel Support		M. Palmer	Costs associated with collaborator travel	
2				ACCELERATOR DESIGN	CTA 2 Accelerator Design	D. Rubin*	All activities related to accelerator design and beam dynamics modeling	
2	1	Cap	201-000	Optics Design	Optics Design	D. Rubin	Optics design for the CesrTA configuration (1.5-5.3 GeV)	
2	2	Cap	202-000	Beam Dynamics	Beam Dynamics	D. Rubin	Studies of single- and multi-particle dynamics, low emittance tuning requirements, and low emittance machine specifications	
3				ENGINEERING DESIGN, FABRICATION, INSTALLATION AND COMMISSIONING		M. Palmer	All activities related to design, fabrication, installation and commissioning of accelerator hardware for the CesrTA research program	
3	1	Cap	301-000	Alignment and Survey	CTA 3_1 EFI&C/Align & Survey	S. Chapman*	Alignment and survey upgrades for low emittance operation of CESR	
3	2	Cap	302-000	Beam Instrumentation	CTA 3_2 EFI&C/Beam Instr	M. Billing*	Beam instrumentation upgrades for low emittance operation and beam dynamics measurements	
3	2		302-100	Beam Position Monitor System (BPM)	BPM	C. Strohman	CESR BPM upgrade for turn-by-turn 4ns bunch train operation	
3	2		302-110	Front-end Upgrade for 4 ns Bunch Spacing		N. Rider	Development of upgraded beam position monitor front ends for 4ns bunch train operation	
3	2		302-120	Timing Board Upgrade for 4 ns Bunch Spacing		R. Meller	Development of upgraded beam position monitor timing hardware for 4ns bunch train operation	
3	2		302-130	Readout Module Fabrication and Testing		C. Strohman	Manufacture and bench testing of upgraded BPM system	
3	2		302-140	Ring Deployment		C. Strohman	Installation and hardware commissioning of BPM hardware in CESR including all cabling and infrastructure upgrades	
3	2		302-200	Transverse Beam Size Monitor System (BSM)	BSM	G. Codner	Transverse visible light profile monitor upgrade for CesrTA parameters	
3	2		302-300	Streak Camera System (Longitudinal)	Streak Camera	G. Codner	Longitudinal visible light profile monitor upgrade for CesrTA parameters	
3	2		302-400	X-ray Beam Size Monitor System (XBPM)	XBPM	J. Alexander	High resolution, fast (single-pass) x-ray beam profile monitor upgrade	
3	2		302-410	X-ray Detector		J. Alexander	Develop diode arrays for fast x-ray imaging	
3	2		302-420	Readout Electronics Development		N. Rider	Develop readout electronics for CesrTA parameters	
3	2		302-430	Imaging Optics Development		J. Alexander	Develop x-ray imaging optics for use in CHESS and with CesrTA parameters	
3	2		302-500	Data Acquisition System Development	DAQ	T. Wilksen	Data acquisition system upgrades for use with new beam instrumentation (BPM, BSM, xBPM)	
3	2		302-600	General Diagnostics	Gen Diag	J. Sikora	Miscellaneous beam instrumentation modifications	
3	3	Cap	303-000	Controls and Electronics	CTA 3_3 EFI&C/Controls & Elec	J. Barley*	Control hardware (including control system computers and networking) and electronics modifications to support CESR ring and instrumentation modifications	
3	4	Cap	304-000	Cryogenics	CTA 3_4 EFI&C/Cryogenics	D. Sabol*	Cryogenics system modifications	
3	5	Cap	305-000	Feedback System	CTA 3_5 EFI&C/Feedback Sys	M. Billing*	Transverse and longitudinal feedback system upgrades for 4 ns bunch train operation	
3	5		305-100	Transverse Feedback		M. Billing	Upgrade of transverse feedback system for 4 ns bunch train operation	
3	5		305-200	Longitudinal Feedback		M. Billing	Upgrade of longitudinal feedback system for 4 ns bunch train operation	
3	6	Cap	306-000	Magnets and Power Supplies	CTA 3_6 EFI&C/Magnets & PS	J. Barley*	Magnet modifications and power supply upgrades for low emittance configuration/operations	
3	7	Cap	307-000	Software	CTA 3_7 EFI&C/Software	D. Sagan*	Control system software development, analysis software development and code support system development	
3	8	Cap	308-000	Superconducting RF	CTA 3_8 EFI&C/SCRF	J. Sikora*	RF modifications and improvements for CesrTA operations	

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3	9	Cap		309-000	Vacuum System	CTA 3_9 EFI&C/Vacuum	Y. Li*	Vacuum system modifications for the CesrTA low emittance configuration and electron cloud studies. Vacuum diagnostics development and implementation.	
3	9			309-100	Electron Cloud Diagnostics Development	EC Diagnostics	S. Greenwald	Development of retarding field analyzers and other diagnostics for characterizing electron cloud development in standard CESR vacuum chambers and various test chambers	
3	9			309-110	RFA Structure Development		S. Greenwald	Design, fabrication and prototyping of retarding field analyzer structures for use in drift, dipole, quadrupole and wiggler chambers. Characterization of efficiency and response in regions with and without magnetic fields. Installation and testing of RFAs in all EC vacuum chambers. Also includes evaluation of structures for use in ion detection.	
3	9			309-120	RFA Electronics Development		C. Strohman	Design and prototyping of DC HV/readout electronics and AC readout electronics for retarding field analyzers in all magnetic environments. Design, fabrication and installation of HV/DC readout electronics from start of CesrTA program with deployment complete by early 2009. Design, fabricate and install AC readout electronics with deployment complete by mid-2009. Design and implement suitable control system interface electronics and software for all readout electronics.	
3	9			309-130	Other Diagnostics		J. Sikora	Investigation and implementation of alternative electron cloud diagnostic techniques (eg, EM wave attenuation in vacuum chamber) in collaboration with ILC DR group.	
3	9			309-200	Electron Cloud Vacuum Chambers	EC Vac Chambers	Y. Li	Design, fabrication and installation of upgraded CESR vacuum chambers incorporating EC diagnostics and mitigation techniques.	
3	9			309-210	L0 Vacuum Chambers		Y. Li	Design, fabrication and installation of L0 vacuum chambers with EC diagnostics and mitigation techniques (coatings, grooves, electrodes) which are capable of handling all anticipated wiggler radiation loads for CesrTA 2-5 GeV parameters. Designs to allow for: vacuum pressure diagnostics, residual gas analysis capability, suitable pumping speed, necessary alignment and assembly flexibility, and isolation from remainder of the ring. Support of wiggler vacuum chamber design, construction of diagnostics, installation into existing CESR-c wigglers, and all necessary wiggler and chamber testing prior to installation in ring. The present expectation is that up to 6 vacuum chambers based on the CESR-c chamber design and up to 2 vacuum chambers intended as ILC DR prototype designs will be tested in the CESR L0 straight over the course of the CesrTA program.	
3	9			309-220	Arc Vacuum Chambers		Y. Li	Design, fabrication and installation of CESR arc vacuum chambers to characterize electron cloud growth (necessary for beam dynamics studies) and to investigate EC mitigation techniques.	
3	9			309-230	L3 Vacuum Chambers		Y. Li	Design, fabrication and installation of vacuum chambers with EC diagnostics and employing EC mitigation techniques in the L3 straight. Work to include replacement of the 48W/E vertical separators with chambers equipped with EC diagnostics and mitigation techniques, installation of diagnostic chicane chambers and diagnostic quadrupole chambers.	
3	9			309-300	CESR Vacuum System	CESR Vac System	Y. Li	General vacuum system modifications in support of the CesrTA research program	
3	9			309-400	L0 Wiggler Photon Beam Stop	L0 Photon Stop	X. Liu	Development of a photon beam stop for 5 GeV wiggler operation	
3	9			309-500	X-ray Beamline Modifications and Interface	X-ray Beamlines	X. Liu	CHESS beamline modifications associated with installation of X-ray beam profile monitors for use with positron and electron beams	
3	10	Cap		310-000	CesrTA General	CTA 3_10 EFI&C/CesrTA General	R. Gallagher*	General CESR and injector modifications for the CesrTA research program	
3	11	NonCap		311-000	CLEO/IR Removal	CTA 3_11 EFI&C/CLEO-IR Removal	J. Kandaswamy*	Partial CLEO removal in support of the CesrTA low emittance program	
4					BEAM COMMISSIONING	CTA 4 Beam Commissioning	M. Billing*	All activities related to beam commissioning of upgraded hardware for the CesrTA research program	
4	1	Cap		401-000	Beam Instrumentation	Beam Instr	M. Billing	Beam characterization of upgraded instrumentation and validation of the performance specifications	
4	2	Cap		402-000	Feedback System	Feedback	M. Billing	Beam characterization of upgraded feedback systems and validation of the performance specifications	
4	3	Cap		403-000	Magnets and Power Supplies	Magnets & PS	J. Barley	Beam characterization of impact of magnet and power system modifications and validation of the performance specifications	
4	4	Cap		404-000	Superconducting RF	SCRF	J. Sikora	Beam characterization of SRF system operation and validation of performance specifications	
4	5	Cap		405-000	Vacuum Diagnostics	Vacuum Diagnostics	S. Greenwald	Beam characterization of the upgraded vacuum diagnostics and validation of the performance specifications	
4	6	Cap		406-000	Ring Commissioning	Ring Commissioning	D. Rubin	General commissioning of the upgraded CESR ring and injector systems	
5					ACCELERATOR RESEARCH	CTA 5 Accel Research	M. Palmer*	All activities directly related to the CesrTA beam physics research program	
5	1	NonCap		501-000	Optics Correction and Low Emittance Tuning	Optics & LET	D. Rubin	Program to achieve and characterize ultra low emittance CesrTA operation	
5	2	NonCap		502-000	Electron Cloud R&D	EC R&D	M. Palmer	Electron cloud growth, suppression, and beam dynamics program	
5	3	NonCap		503-000	IBS Studies	IBS	D. Rubin	Studies of intrabeam scattering effects in support of beam dynamics program	
5	4	NonCap		504-000	Other R&D	General R&D	M. Palmer	Miscellaneous accelerator R&D	
6					CesrTA MAINTENANCE	CTA 6 CesrTA Maintenance	D. Rice*	All activities directly related to hardware maintenance specific to CesrTA. Other maintenance activities should be charged to the CESR General Operations and Maintenance WBS.	
6	1	NonCap		601-000	Beam Instrumentation	Beam Instr	M. Billing	Maintenance activities for CesrTA-only beam instrumentation	
6	2	NonCap		602-000	Feedback System	Feedback	M. Billing	Maintenance activities for CesrTA-only feedback hardware	
6	3	NonCap		603-000	Magnets and Power Supplies	Magnets & PS	J. Barley	Maintenance activities for CesrTA-only magnets and power supplies	
6	4	NonCap		604-000	Vacuum Diagnostics	EC Diagnostics	Y. Li	Maintenance activities for CesrTA-only electron cloud diagnostics	