

LCLS WBS DICTIONARY

WBS NUMBER					TITLE
L1	L2	L3	L4	L5	
1					LCLS PROJECT - PED & CONSTRUCTION
1	01				LCLS PROJECT MGMT, PLANNING & ADMN (TEC)
1	01	01			Environment, Safety & Health
1	01	01	01		Radiation Physics
1	01	01	02		ESH Management & Coordination
1	01	01	03		Professional Services-Project Office Support
1	01	02			Project Management
1	01	02	01		Project Management Office
1	01	02	01	01	Project Office - General
1	01	02	01	02	Project Support
1	01	02	01	02	Project Support (continued)
1	01	02	01	03	Project Office M&S
1	01	02	01	04	SSRL Physics Support
1	01	03			Technical Integration
1	01	03	01		Global Laser Coordination
1	01	03	02		Global Alignment Coordination
1	01	03	03		System Integration
1	01	03	05		Global Control
1	01	03	05		Global Controls (continued)
1	01	03	05	01	EPICS Controls Modules
1	01	03	05	02	LLRF Controls
1	01	03	05	03	E-Beam Diagnostics & Controls
1	01	03	05	04	Laser Controls Design
1	01	03	05	05	Laser Heater Controls
1	01	03	05	06	Timing Controls
1	01	03	05	07	Vacuum Controls Infrastructure
1	01	03	05	09	Power Supply Controls
1	01	03	05	10	PPS/BCS Controls
1	01	03	05	11	MPS Controls
1	01	03	05	12	Global Controls Management
1	01	03	05	13	SLC Aware IOC
1	01	03	06		Technical Requirements/Parameters
1	01	04			Education Support
1	01	04	01		Education/Outreach Travel
1	01	04	02		Education/Outreach M&S
1	02				INJECTOR SYSTEM
1	02	01			Injector System Management & Integration
1	02	01	01		Injector System Integration
1	02	01	01	01	Injector Region Integration
1	02	01	01	02	Gun Area Integration
1	02	01	01	03	Accelerator Area Integration
1	02	01	01	04	Heater Area Integration
1	02	01	01	05	Wall Area Integration
1	02	01	01	06	Insertion Area Integration
1	02	01	01	07	Spectrometer Area Integration
1	02	01	01	08	Drive Laser Integration

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WBS NUMBER					TITLE
L1	L2	L3	L4	L5	
1	02	01	04		Injector System Integration Effort / M&S
1	02	02			Injector Controls Subsystem
1	02	02	01		Personnel Protection Subsystem (PPS)
1	02	02	02		Beam Containment Subsystem (BCS)
1	02	02	03		Machine Protection Subsystem (MPS)
1	02	02	04		Injector Power Conversion
1	02	02	04	01	Beamline Pwr Supplies - (Dipole Type)
1	02	02	04	02	Power Supply Controls
1	02	02	04	03	Beamline Pwr Supplies - (Trim Type)
1	02	02	04	04	Beamline Pwr Supply - Misc Hdwr
1	02	02	05		LLRF Controls
1	02	02	05	01	Readback & Controls - RF Gun LLRF & Temperature
1	02	02	06		E-Beam Diagnostics Controls
1	02	02	06	01	Controls - Wire Scanners
1	02	02	06	02	Controls - BPM
1	02	02	06	03	Controls - Toroids
1	02	02	06	05	Controls - Profile Monitors
1	02	02	06	14	Controls - Faraday Cups
1	02	02	06	15	Controls - Tune-Up Dump
1	02	02	08		Timing Controls
1	02	02	09		Vacuum Controls
1	02	02	10		Software & Controls Infrastructure
1	02	02	10	03	Data Communications
1	02	02	10	04	Computers & Crates
1	02	02	11		EPICS VXI Control Modules
1	02	02	12		Laser Controls
1	02	02	12	02	Controls - Gun Laser
1	02	03			Injector Lasers
1	02	03	01		Drive Laser Support
1	02	03	01	01	Drive Laser Support (ANL)
1	02	03	01	02	Drive Laser Support (LLNL)
1	02	03	02		Drive Laser System
1	02	03	02		Drive Laser System (Continued)
1	02	03	03		Drive Laser Diagnostics
1	02	03	03		Drive Laser Diagnostics (Continued)
1	02	03	03		Drive Laser Diagnostics (Continued)
1	02	03	03		Drive Laser Diagnostics (Continued)
1	02	03	04		Timing Stability Monitoring
1	02	03	05		Steering Stability Feedback & Msmts
1	02	03	07		Transport to Tunnel & Relay Optics
1	02	03	08		UV Launch, Conditioning & Diagnostics
1	02	03	08		UV Launch, Conditioning & Diagnostics (Continued)
1	02	03	08		UV Launch, Conditioning & Diagnostics (Continued)
1	02	03	11		LB Infrastructure & LB System Wide Items
1	02	03	12		Alignment Laser
1	02	03	13		Light path to Streak Camera

LCLS WBS DICTIONARY

WBS NUMBER					TITLE
L1	L2	L3	L4	L5	
1	02	03	21		UV Conv Harmonic Generation Unit (Closed Account)
1	02	04			Injector RF Subsystem
1	02	04	01		RF Gun & Load Lock
1	02	04	01	01	RF Gun
1	02	04	01	02	RF Gun Supports
1	02	04	01	03	Gun Load Lock
1	02	04	01	04	Gun Load Lock Supports
1	02	04	01	05	Gun Solenoid
1	02	04	01	06	Gun Solenoid Supports
1	02	04	01	07	Gun RF Feed
1	02	04	01	08	Gun RF Feed Supports
1	02	04	01	09	RF Gun Spares Credit
1	02	04	02		Cathode Processing (CP) Station
1	02	04	02	03	CP Load Lock Supports
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	05		Injector RF Waveguide Subsystem
1	02	04	05	01	RF Waveguides
1	02	04	05	02	RF Waveguide Supports
1	02	04	06		Injector Linac Structures
1	02	04	06	01	L0A-0B Structure Assembly
1	02	04	06	03	Major Linac Support
1	02	04	06	05	LTDL1 RF Kicker
1	02	05			Injector Magnets & Supports
1	02	05	01		Injector Dipoles
1	02	05	01	01	Gun Spectrometer Dipole
1	02	05	01	02	DL1 B01 & B02 Dipoles
1	02	05	01	03	SAB Spectrometer Dipole
1	02	05	01	04	Chicane DIPOLES (4)
1	02	05	02		Injector Quads
1	02	05	02	01	Gun Spectrometer Quadrupoles
1	02	05	02	02	Injector Quadrupoles
1	02	05	02	03	LTDL1 Quadrupoles (4)
1	02	05	03		Injector Steering Coils
1	02	05	03	01	Gun Solenoid Correctors
1	02	05	03	03	Injector Correctors - A
1	02	05	03	05	Gun Solenoid Quadrupole Correctors
1	02	05	04		Linac Solenoid
1	02	05	05		Injector Laser Heater Subsystem
1	02	05	05	02	Injector Undulator
1	02	05	05	02	Injector Undulator (Continued)
1	02	06			Injector Vacuum & Supports
1	02	06	01		Injector Vacuum Engineering

LCLS WBS DICTIONARY

WBS NUMBER					TITLE
L1	L2	L3	L4	L5	
1	02	06	02		Injector Vacuum Components
1	02	06	03		Injector Vacuum Special Chambers
1	02	06	04		Injector Vacuum Supports Engineering
1	02	06	05		Injector Vacuum Support Components
1	02	06	08		DL1 Vacuum Chamber
1	02	06	10		DL1TL Vacuum Components
1	02	07			Injector Diagnostics
1	02	07	01		Beam Position Monitors
1	02	07	01	01	Large Aperture BPM
1	02	07	01	02	Small Aperture BPM
1	02	07	01	06	SAB BPM (1)
1	02	07	02		Current Monitors
1	02	07	02	01	Current Monitors
1	02	07	04		Profile Monitors
1	02	07	04	01	Profile Monitors
1	02	07	04	02	GTL Alignment Laser Mirror
1	02	07	04	03	GS Faraday Cup/YAG2
1	02	07	04	08	LTDL1 OTR/YAG (6)
1	02	07	05		Injector Wire Scanners
1	02	07	07		PPS Stopper
1	02	17			Injector Installation & Alignment
1	02	17	01		Injector Infrastructure Installation
1	02	17	02		Injector Controls Subsystem Install & Align
1	02	17	03		Injector Lasers Install & Align
1	02	17	04		Gun Area Integration
1	02	17	06		Accelerator Area Integration
1	02	17	07		Heater Area Integration
1	02	17	08		Wall Area Integration
1	02	17	09		Insertion Area Integration
1	02	17	12		Injector RF High Power System Install & Align
1	03				LINAC SYSTEM
1	03	01			System Management & Integration
1	03	01	01		Linac Mechanical Integration
1	03	01	01	01	L01 System Integration
1	03	01	01	02	BC1 System Integration
1	03	01	01	03	L02 System Integration
1	03	01	01	04	BC2 System Integration
1	03	01	01	05	L03 System Integration
1	03	01	01	06	LTU System Integration
1	03	01	01	07	E-Dump System Integration
1	03	01	03		Travel
1	03	01	04		Linac Management
1	03	02			Linac Controls & Power Conversion Subsystem
1	03	02	01		Personnel Protection System (PPS)
1	03	02	02		Beam Containment System (BCS)
1	03	02	03		Machine Protection System (MPS)

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WBS NUMBER					TITLE
L1	L2	L3	L4	L5	
1	03	02	04		Linac Power Conversion Subsystem
1	03	02	04	01	Beamline Power Supplies - (Dipole Type)
1	03	02	04	02	Beamline Power Supplies - (Quad Type)
1	03	02	04	03	Beamline Power Supplies - (Trim Type)
1	03	02	04	04	Controls & Power Supply
1	03	02	05		Controls - LLRF
1	03	02	06		Controls - E-Beam Diagnostic
1	03	02	06	01	Controls - Wire Scanners
1	03	02	06	02	Controls - BPMs
1	03	02	06	03	Controls - Toroids
1	03	02	06	04	Controls - Stoppers
1	03	02	06	05	Controls - Profile Monitors
1	03	02	06	07	Controls - Bunch Length Monitors
1	03	02	06	09	Controls - Single Beam Dump
1	03	02	06	10	Controls - E Beam Dump
1	03	02	06	11	Controls - Protection Collimator
1	03	02	06	12	Controls - Movable Collimator
1	03	02	06	13	Controls - X-Band Accel Structure
1	03	02	08		Controls - Timing
1	03	02	09		Controls - Vacuum
1	03	02	09	01	Controls - Vacuum Instrumentation & Interlocks
1	03	02	09	02	Vacuum Instrumentation & Controls
1	03	02	10		Software & Controls Infrastructure
1	03	02	10	04	Data Communications
1	03	02	10	05	Computers
1	03	03			Linac Magnets & Supports
1	03	03	01		Bend Magnet (BX1_BC1)
1	03	03	02		Bend Magnet (BX3_LTU)
1	03	03	03		Bend Magnet (BX2_BC2)
1	03	03	04		Bend Magnet (BY_LTU)
1	03	03	05		Quad Magnet (Quad_LTU)
1	03	03	07		Quad Magnet (QE)
1	03	03	08		Corrector Magnet (Type 4)
1	03	03	09		Bend Magnet (BYD_DUMP)
1	03	03	10		Quad Magnet (QA)
1	03	03	11		Bend Magnet (BYPM_LTU)
1	03	03	12		Bend Magnet (BYKIK_LTU)
1	03	03	13		Bend Magnet (BYW_LTU)
1	03	03	14		BXKIK LINAC TCAV Screen Kicker
1	03	04			Linac Vacuum Subsystem
1	03	04	02		Linac Beamline Vacuum System
1	03	04	03		BC1 Vacuum System
1	03	04	04		BC2 Vacuum System
1	03	04	05		Linac to Undulator (LTU) Vacuum System
1	03	04	06		Dumpline Vacuum System
1	03	04	07		Vacuum System Undulator Interface

LCLS WBS DICTIONARY

WBS NUMBER					TITLE
L1	L2	L3	L4	L5	
1	03	04	07	01	Entrance Section Assembly
1	03	04	07	02	Exit Section Assembly
1	03	04	08		LTU/BSY& Cold Trap Vacuum System
1	03	05			Linac Electron Diagnostics Summary
1	03	05	01		Wire Scanners (7) Summary
1	03	05	02		Beam Position Monitors
1	03	05	02	01	BPM - Standard Linac (4) Summary
1	03	05	02	02	BPM - RF (10) Summary
1	03	05	02	03	BPM - FFTB (12) Summary
1	03	05	02	04	BPM - Large Aperture (2) Summary
1	03	05	03		Toroid Beam Current Monitor (10) Summary
1	03	05	04		Beam Stoppers (4) Summary
1	03	05	05		Profile Monitors (7 OTR-3 PHOSPHOR SCREEN-1 YAG)
1	03	05	06		E/O Bunch Length Monitors (1) Summary
1	03	05	07		CSR/OTR/CTR Bunch Length Monitors (5) Summary
1	03	05	08		Beam Loss Monitors
1	03	05	08	01	PIC Beam Loss Monitors (10) Summary
1	03	05	09		Single Beam Dump (1) Summary
1	03	05	10		Electron Beam Dump (1) Summary
1	03	05	11		Protection Collimators (5) Summary
1	03	05	12		Movable Collimators (7x,3y) Summary
1	03	05	13		Safety Electron Dump (1) Summary
1	03	06			Linac RF Subsystem
1	03	06	02		S-Band High Power System
1	03	06	03		S-Band Structures
1	03	06	04		X-Band Low Level System
1	03	06	05		X-Band High Power System
1	03	06	05	01	X-Band HP Klystron
1	03	06	05	02	X-Band HP Modulator
1	03	06	05	03	X-Band HP Waveguide System
1	03	06	06		X-Band Structures
1	03	06	07		RF Distribution System
1	03	06	07	01	Modulator Refurbishment
1	03	06	07	02	Solid State Sub Booster
1	03	06	07	06	RF Phase Measurements
1	03	06	07	07	RF Distribution L2 & L3
1	03	07			Linac Installation & Alignment
1	03	07	01		Linac L01 System Installation & Alignment
1	03	07	02		Linac BC1 System Installation & Alignment
1	03	07	05		Linac L03 System Installation & Alignment
1	03	07	06		Linac LTU System Installation & Alignment
1	03	07	07		Linac E-Dump System Installation & Alignment
1	03	07	10		LINAC Installation 2006 Shut Down
1	03	07	10	01	Beamline Equip Removal L01 thru BC1 Out
1	03	07	10	02	Gallery Waveguide Installation
1	03	07	10	03	Beamline Equip Installation L01 thru BC1 Out

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WBS NUMBER					TITLE
L1	L2	L3	L4	L5	
1	03	07	10	04	2006 Linac Controls Install and Checkout Gallery
1	03	07	20		LINAC Installation 2007 Shut Down
1	03	07	20	01	Beamline Equip Removal L02, L03 and BC2
1	03	07	20	02	Beamline Equip Installation L02, L03 and BC2
1	03	07	20	03	2007 Linac Controls Install and Checkout
1	03	07	20	04	Linac Undulator Interface
1	04				UNDULATOR SYSTEM
1	04	01			Undulator System Management & Integration
1	04	01	01		Undulator System Management
1	04	01	01	01	Undulator System Management - Technical
1	04	01	01	02	ANL Project Support
1	04	01	02		Undulator System Materials & Supplies
1	04	01	02	01	Undulator System M&S - General
1	04	01	02	02	Undulator System Travel
1	04	01	03		Undulator System Reviews and Workshops
1	04	02			Controls
1	04	02	01		Controls Management and Integration
1	04	02	01	03	Software Interface with SLAC
1	04	02	01	04	Undulator Cable, Tray, and Rack Layout
1	04	02	01	05	Miscellaneous Controls
1	04	02	02		Motion
1	04	02	02	01	Undulator Cam Movers
1	04	02	02	02	Motion Test Stand
1	04	02	02	06	Scanning Wire Motion
1	04	02	02	07	Translation Stage Motion
1	04	02	03		Signal Analysis
1	04	02	03	01	RFBPM
1	04	02	03	03	Beam Finder Wire
1	04	02	04		Video
1	04	02	04	01	OTR Monitor
1	04	02	04	03	Observation Station Video
1	04	02	05		Data Acquisition and Control
1	04	02	05	01	Strongback Temperature Monitoring
1	04	02	06		Vacuum
1	04	02	06	01	Ion Pump Controller
1	04	02	07		Machine Protection
1	04	02	07	01	Undulator Beam Loss Monitor Controls
1	04	02	08		Undulator Magnet Power Supplies
1	04	02	10		Undulator Control Module
1	04	02	12		Rack and Cable
1	04	02	13		BPM
1	04	02	14		Long Term Test Prep
1	04	02	17		Undulator Controls - Management
1	04	02	20		Undulator MPS
1	04	02	21		Undulator Controls - Timing
1	04	02	22		Undulator Controls - BPM

LCLS WBS DICTIONARY

WBS NUMBER					TITLE
L1	L2	L3	L4	L5	
1	04	02	23		Undulator Controls - Vacuum
1	04	02	24		Undulator Controls - ADS System
1	04	03			Undulator Magnet & Support
1	04	03	01		UND Magnet & Support - Mgmt and Integration
1	04	03	02		First Prototype Undulator & Mfg Plan
1	04	03	03		1st Article Undulators & Long Lead Procurements
1	04	03	03	01	Ti Strongback (LLP)
1	04	03	03	02	Magnet Blocks (LLP)
1	04	03	03	03	Magnet Poles (LLP)
1	04	03	03	04	Magnet Assembly & Supports - 1st Articles
1	04	03	03	05	Magnetic Measurement (ANL)
1	04	03	03	06	Integrated Single-Undulator Module Test
1	04	03	04		Production Undulator Magnet Assembly & Supports
1	04	03	04	01	Production Undulator Assembly - Vendor A
1	04	03	04	02	Production Undulator Assembly - Vendor B
1	04	03	04	03	Production Support/Mover Fabrication/Assembly
1	04	03	04	04	Mu Metal Shield
1	04	03	05		Quadrupole Focusing Magnets
1	04	03	05	01	Quadrupole Magnets
1	04	03	05	03	Quadrupole Stages & Stands
1	04	03	06		Undulator Magnetic Measurement Facility (SLAC)
1	04	03	06	01	Undulator MMF Setup
1	04	03	06	02	Fiducialization and Magnetic Measurements (F/MM)
1	04	03	06	03	Undulator Monitoring
1	04	03	08		Fixed Supports
1	04	03	08	01	Fixed Sppt Mgmt & Integration
1	04	03	08	02	Fixed Support Design
1	04	03	08	05	Thermometry
1	04	03	08	07	Earthquake Bracing
1	04	04			Vacuum System
1	04	04	02		Undulator Vacuum Chamber Assembly
1	04	04	02	01	Prototype Chamber Weldment
1	04	04	02	02	Production Chamber Weldment
1	04	04	02	03	Prototype Aluminum Chamber
1	04	04	03		Beam-line Bellows Module Assembly
1	04	04	03	01	Prototype Bellows Module
1	04	04	03	02	Production Bellows Module
1	04	04	04		Single Undulator Test (SUT) Vacuum
1	04	04	05		Short Diagnostic Break (SDB) Assembly
1	04	04	06		Long Diagnostic Break (LDB) Assembly
1	04	04	07		Entrance Section Assembly
1	04	04	08		Exit Section Assembly
1	04	04	09		Baking System
1	04	05			Diagnostics
1	04	05	02		Undulator Line Diagnostics (ULD)
1	04	05	02	01	ULD Test Station

LCLS WBS DICTIONARY

WBS NUMBER					TITLE
L1	L2	L3	L4	L5	
1	04	05	02	02	ULD Vacuum Chamber
1	04	05	02	03	Positioning Mechanism
1	04	05	02	04	Scanning wire assembly (ULD-SWA)
1	04	05	02	05	Optical transition radiation imaging assembly
1	04	05	04		End-of-Undulator(EOU) X-ray and Profile diagnost
1	04	05	04	01	Prototype Construction and Testing
1	04	05	05		RFBPM
1	04	05	05	01	X-Band Cavity BPM Development
1	04	05	05	02	X-Band Receiver Development
1	04	05	05	03	X-Band BPM Production
1	04	05	06		Beam Finder Wire
1	04	05	07		Charge Monitor (CM)
1	04	05	08		Beam Loss Monitoring
1	04	05	08		Beam Loss Monitoring (cont)
1	04	05	10		Single Undulator Test (SUT) Diagnostics
1	04	06			Undulator System Installation and Alignment
1	04	06	02		Control System Installation and Alignment
1	04	06	04		Vacuum System Installation and Alignment
1	04	06	06		2008 Undulator System Installation
1	05				X-RAY TRANSPORT & DIAGNOSTICS SYSTEMS
1	05	01			System Management & Integration
1	05	01	01		Management
1	05	01	01	01	XTOD Management - Technical
1	05	01	01	02	LLNL Project Support
1	05	01	01	03	Commissioning Coordinator
1	05	02			Controls
1	05	02	01		Controls
1	05	02	02		Controls - Motors
1	05	02	03		Controls - Vacuum
1	05	03			Mechanical & Vacuum Subsystem
1	05	03	01		Vacuum Systems Engineering
1	05	03	02		Mech/Vac Front End
1	05	03	03		Mech/Vac Near Hall
1	05	03	03	01	Mech/Vac Near Hall
1	05	03	04		Mech/Vac Tunnel
1	05	03	05		Mech/Vac Far Hall
1	05	04			Optical Subsystem
1	05	04	02		Facility Optics
1	05	04	02	02	Fixed Mask
1	05	04	02	03	Slit
1	05	04	02	05	Gas/Solid Attenuator
1	05	04	02	05	Gas/Solid Attenuator (Cont.)
1	05	04	02	06	TTF Damage Experiment
1	05	04	02	07	FEL Offset Mirrors
1	05	04	02	08	Solid Attenuator
1	05	05			Diagnostics Subsystem

LCLS WBS DICTIONARY

WBS NUMBER					TITLE
L1	L2	L3	L4	L5	
1	05	05	02		Modeling & Simulation
1	05	05	02	01	Wave Model
1	05	05	02	02	Monte Carlo Model
1	05	05	02	03	Beam Simulation
1	05	05	03		Facility Diagnostics
1	05	05	03	01	Direct Imager
1	05	05	03	02	Indirect Imager
1	05	05	03	06	Gas Detector
1	05	05	04		Commissioning Diagnostics
1	05	05	04	02	Total Energy Measurement
1	05	05	04	04	Soft X-Ray Imager
1	05	05	04	05	Popup Cameras
1	05	05	04	06	K Measurement System
1	05	06			X-Ray Transport System Installation & Alignment
1	05	06	01		FEE Install
1	05	06	01	01	FEE Cable Installation
1	05	06	01	02	FEE Install - All excluding cable install
1	05	06	02		Near Hall Install
1	05	06	03		Tunnel Install
1	05	06	04		Far Hall Install
1	05	06	05		Electron Dump Enclosure Install
1	05	06	06		XTOD Installation Management & Coordination
1	06				X-RAY END STATION SYSTEMS
1	06	01			System Management & Integration
1	06	01	01		Management
1	06	01	02		SSRL Physics
1	06	02			XES Controls
1	06	02	01		Controls Management
1	06	02	02		Network - Closed (Moved to new WBS Element)
1	06	02	03		PC Support
1	06	02	04		Beamline Controls - AP - Closed (Moved to new WBS Element)
1	06	02	05		X-Ray PPS - Closed (Moved to new WBS Element)
1	06	02	05	01	FEE X-Ray PPS - Closed (Moved to new WBS Element)
1	06	02	06		X-Ray MPS - Closed (Moved to new WBS Element)
1	06	02	06	01	FEE X-Ray MPS
1	06	02	07		AMOS Experiment Controls X1
1	06	02	07	01	AMOS Requirements, Design, Setup
1	06	02	07	07	Development Hardware & Software
1	06	02	07	08	Beam Viewing System for Phase 1
1	06	02	07	09	Beam Viewing System for Phase 2
1	06	02	07	12	Differential Pumping
1	06	02	07	14	Temperature Monitoring
1	06	02	07	15	Gas Storage & Delivery System
1	06	02	07	16	High Field Physics Chamber
1	06	02	07	17	Diagnostics Chamber
1	06	02	07	18	Total Power Measurement

LCLS WBS DICTIONARY

WBS NUMBER					TITLE
L1	L2	L3	L4	L5	
1	06	02	08		AMOS Particle Imaging Controls
1	06	02	08	01	AMOS Particle Imaging Controls
1	06	02	08	02	AMOS Particle Imaging Software
1	06	02	09		Controls Management
1	06	02	10		Global Controls System
1	06	02	10	01	Network
1	06	02	10	02	Machine Protection System
1	06	02	10	03	Personnel Protection System
1	06	02	10	04	Laser Safety System (LSS)
1	06	02	10	05	User Safeguards
1	06	02	10	06	Timing System
1	06	02	10	07	Data Management
1	06	02	10	08	Global Cabling & Racks
1	06	02	10	09	Laser Timing
1	06	02	10	11	Common Hutch Controls
1	06	02	10	12	Data Acquisition (DAQ)
1	06	02	10	13	Archives
1	06	02	10	14	Data Retrieval & Analysis
1	06	02	11		Laser Controls
1	06	02	12	01	SXR Requirements, Design & Set-up
1	06	02	12	02	SXR Hardware Procurement
1	06	02	12	03	SXR EDI Software & Hardware
1	06	04			XES Laser System
1	06	04	01		XES Laser
1	06	04	02		Laser Diagnostics
1	06	04	03		Laser Optical Transport
1	06	04	04		Laser Safety
1	06	05			X-Ray Detectors
1	06	05	01		Beam Imaging
1	06	05	04		Detector & Streak Camera
1	06	05	04	01	X-Ray Detector Management
1	06	06			System Installation & Alignment
1	06	06	01		Front End Install
1	06	06	02		Near Hall Install
1	06	06	02	01	Near Hall Install Controls
1	06	06	02	02	Near Hall Install Network Fiber
1	06	06	02	04	NEH Install AMO Experiment
1	06	06	02	05	NEH Install Laser
1	06	06	02	06	NEH Install PPS
1	06	06	02	09	NEH Install Timing
1	06	06	02	10	SXR Instrument Installation
1	06	06	02	99	NEH Install - Other
1	06	06	03		Tunnel Install
1	06	06	04		Far Hall Install
1	06	06	05		Electron Dump Enclosure Install
1	06	06	06		XES Installation Management & Coordination

LCLS WBS DICTIONARY

WBS NUMBER					TITLE
L1	L2	L3	L4	L5	
1	06	07			AMOS Experiment
1	06	07	01		AMO Exp - Management & Design
1	06	07	02		AMO Exp - High Field Physics
1	06	07	03		AMO Exp - Refocus Optics
1	06	07	04		AMO Exp - Diagnostics
1	06	08			K Measurement Crystals
1	06	08	01		K Measurement Crystals
1	06	09			Mechanical Systems
1	06	09	01		PPS Stoppers
1	06	09	02		PPS Shielding
1	06	09	03		NEH Hutch Doors
1	06	10			SXR Instrument
1	06	10	01		SXR Instrument Management and Design
1	09				CONVENTIONAL FACILITIES
1	09				CONVENTIONAL FACILITIES (Continued)
1	09	01			System Management & Integration
1	09	01	01		Management
1	09	01	02		CAM/CF Engineering
1	09	01	03		Construction Management & AE Support
1	09	01	04		Mechanical Design (MD)
1	09	01	04	01	Mechanical Design Title 1 (Linac not included)
1	09	01	04	02	Mechanical Design T1 Linac Facilities
1	09	01	04	03	Mechanical Design Title 2 (Linac not included)
1	09	01	04	04	Mechanical Design T2 Linac Facilities
1	09	01	04	05	Mechanical Design Title 3 Linac Facility
1	09	01	04	06	Mechanical Design Title 3 (Linac not Included)
1	09	01	05		Conventional Experiment Facility (CEF)
1	09	01	05	01	CEF Engineering Title 1(Linac Not Included)
1	09	01	05	02	CEF Engineering Title 1 Linac Facility
1	09	01	05	03	CEF Engineering Title 2 (Linac Not Included)
1	09	01	05	04	CEF Design Linac Facility Title 2
1	09	02			Title 1 & Title 2 Conventional Facilities
1	09	02	02		A & E Services (S20, MMF, MMC not Incl)
1	09	02	02	01	Title 1 Design
1	09	02	02	02	Title 2 Design
1	09	02	03		A & E Services - (S20, MMF,MCC)

LCLS WBS DICTIONARY

WBS NUMBER					TITLE
L1	L2	L3	L4	L5	
1	09	02	03	01	Title 1 Design (Sector 20)
1	09	02	03	02	Title 2 Design (Sector 20)
1	09	02	03	03	Title 1 Design (MMF)
1	09	02	03	04	Title 2 Design (MMF)
1	09	03			Construction -T3 Conventional Facilities
1	09	03	01		Sector 20 Injector Facilities
1	09	03	01	01	S20 - Site Preparation/General Requirements
1	09	03	01	02	S20 - Site Construction
1	09	03	01	03	S20 - Concrete
1	09	03	01	04	S20 - Masonry
1	09	03	01	05	S20 - Metals
1	09	03	01	06	S20 - Woods & Plastics
1	09	03	01	07	S20 - Thermal & Moisture Protection
1	09	03	01	08	S20 - Doors & Windows
1	09	03	01	09	S20 - Finishes
1	09	03	01	10	S20 - Specialties
1	09	03	01	14	S20 - Conveying Systems
1	09	03	01	15	S20 - Mechanical
1	09	03	01	15	S20 - Mechanical (continued)
1	09	03	01	16	S20 - Electrical
1	09	03	01	20	S20 - Project Close Out
1	09	03	02		Magnetic Measurement Facility
1	09	03	02		Magnetic Measurement Facility (continued)
1	09	03	02	01	MMF - Site Preparation/General Requirements
1	09	03	02	02	MMF - Site Construction
1	09	03	02	03	MMF - Concrete
1	09	03	02	05	MMF - Metals
1	09	03	02	06	MMF - Woods & Plastics
1	09	03	02	07	MMF - Thermal & Moisture Protection
1	09	03	02	08	MMF - Doors & Windows
1	09	03	02	09	MMF - Finishes
1	09	03	02	10	MMF - Specialities
1	09	03	02	13	MMF - Special Construction
1	09	03	02	14	MMF - Conveying Systems
1	09	03	02	15	MMF - Mechanical
1	09	03	02	15	MMF - Mechanical (continued)
1	09	03	02	16	MMF - Electrical
1	09	03	02	20	MMF - Project Close Out
1	09	03	03		BTH West
1	09	03	03	01	BTH West - Site Preparation
1	09	03	03	15	BTH West Mechanical
1	09	03	03	16	BTH West - Electrical
1	09	03	03	20	BTH West Project Close Out
1	09	03	04		Linac Facility Upgrade (LN)
1	09	03	04	05	LN - Metals
1	09	03	04	15	LN - Mechanical

LCLS WBS DICTIONARY

WBS NUMBER					TITLE
L1	L2	L3	L4	L5	
1	09	03	04	16	LN - Electrical
1	09	03	04	20	LN - Project Close Out
1	09	03	05		Research Yard / B102, B113 & Storage Trailers
1	09	03	05	01	RY - Site Preparation
1	09	03	05	02	RY - FFTB/BSY & Site Construction
1	09	03	05	20	RY - Project Close Out
1	09	03	06		Pre-Purchase Equipment for Beam Path
1	09	03	06	01	PPE - General Requirements
1	09	03	06	11	PPE - Pre-Purchase Equipment
1	09	03	07		SITWORK, Earthwork, Site Utilities, & Survey
1	09	03	07	01	SW - General Requirements
1	09	03	07	02	SW - Earthwork, Site Utilities & Survey
1	09	03	07	16	SW - Electrical
1	09	03	08		Beam Transport Hall (BTH)
1	09	03	08	01	BTH - Site Preparation/General Requirements
1	09	03	08	03	BTH - Concrete
1	09	03	08	05	BTH - Metals
1	09	03	08	15	BTH - Mechanical
1	09	03	08	16	BTH - Electrical
1	09	03	08	17	BTH - Others (include Div 4, and 6 through 14)
1	09	03	08	17	BTH - Others (include Div 4, and 6 through 14) (continued)
1	09	03	09		Front End Enclosure (FEE)
1	09	03	09	03	FEE - Concrete
1	09	03	09	05	FEE - Metals
1	09	03	09	15	FEE - Mechanical
1	09	03	09	15	FEE - Mechanical (continued)
1	09	03	09	16	FEE - Electrical
1	09	03	09	17	FEE - Others (include Div 4, and 6 through 14)
1	09	03	09	17	FEE - Others (include Div 4, and 6 through 14) (continued)
1	09	03	10		Electron Beam Dump (EBD)
1	09	03	10	01	EBD - Site Preparation/General Requirements
1	09	03	10	02	EBD - Site Construction
1	09	03	10	03	EBD - Concrete
1	09	03	10	05	EBD - Metals
1	09	03	10	15	EBD - Mechanical
1	09	03	10	15	EBD - Mechanical (continued)
1	09	03	10	16	EBD - Electrical
1	09	03	10	17	EBD - Others (include Div 4, and 6 through 14)
1	09	03	10	17	EBD - Others (include Div 4, and 6 through 14) (continued)
1	09	03	11		Near Experimental Hall (NEH)
1	09	03	11	01	NEH - Site Preparation/General Requirements
1	09	03	11	02	NEH - Site Construction
1	09	03	11	03	NEH - Concrete
1	09	03	11	05	NEH - Metals

LCLS WBS DICTIONARY

WBS NUMBER					TITLE
L1	L2	L3	L4	L5	
1	09	03	11	15	NEH - Mechanical
1	09	03	11	15	NEH - Mechanical (continued)
1	09	03	11	16	NEH - Electrical
1	09	03	11	17	NEH - Others (include Div 4, and 6 through 14)
1	09	03	11	17	NEH - Others (include Div 4, and 6 through 14) (continued)
1	09	03	11	20	NEH - Project Close Out
1	09	03	12		Undulator Hall (UH)
1	09	03	12	01	UH - Site Preparation/General Requirements
1	09	03	12	15	UH Mechanical
1	09	03	12	15	UH - Mechanical (continued)
1	09	03	12	16	UH - Electrical
1	09	03	12	17	UH - Others (include Div 4, and 6 through 14)
1	09	03	12	17	UH - Others (include Div 4, and 6 through 14) (continued)
1	09	03	12	19	UH Tunnel Construction
1	09	03	13		X-Ray Transport & Diagnostic (XRTD)
1	09	03	13	05	XRTD - Metals
1	09	03	13	15	XRTD - Mechanical
1	09	03	13	15	XRTD - Mechanical (continued)
1	09	03	13	16	XRTD - Electrical
1	09	03	13	17	XRTD - Others (include Div 4, and 6 through 14)
1	09	03	13	17	XRTD - Others (include Div 4, and 6 through 14) (continued)
1	09	03	13	19	XRTD - Tunnel Construction
1	09	03	14		Far Experimental Hall (FEH)
1	09	03	14	02	FEH - Site Construction
1	09	03	14	15	FEH - Mechanical
1	09	03	14	15	FEH - Mechanical (continued)
1	09	03	14	16	FEH - Electrical
1	09	03	14	17	FEH - Others (include Div 4, and 6 through 14)
1	09	03	14	17	FEH - Others (include Div 4, and 6 through 14) (continued)
1	09	03	14	18	FEH - Access Tunnel
1	09	03	14	19	FEH - Tunnel Construction
1	09	03	15		BTH Service Buildings 2.1, 2.2, and 2.3 (SB BTH)
1	09	03	15	05	SB BTH - Metals
1	09	03	15	15	SB BTH - Mechanical
1	09	03	15	16	SB BTH - Electrical
1	09	03	16		UH Service Building 3.1 (SB UH)
1	09	03	16	03	SB UH - Concrete
1	09	03	16	05	SB UH - Metals
1	09	03	16	15	SB UH - Mechanical
1	09	03	16	15	SB UH - Mechanical (continued)
1	09	03	16	16	SB UH - Electrical
1	09	03	16	17	SB UH - Others (include Div 4, and 6 through 14)
1	09	03	16	17	SB UH - Others (include Div 4, and 6 through 14) (continued)

LCLS WBS DICTIONARY

WBS NUMBER					TITLE
L1	L2	L3	L4	L5	
1	09	03	17		FEH Access Tunnel Service Yard (SY FEH)
1	09	03	17	03	SY FEH - Concrete
1	09	03	17	16	SY FEH - Electrical
1	09	03	17	17	SY FEH - Others (include Div 4, and 6 through 14
1	09	03	18		Central Utility Plant (CUP)
1	09	03	18	01	CUP - Site Preparation/General Requirements
1	09	03	18	02	CUP - Site Construction
1	09	03	18	03	CUP - Concrete
1	09	03	18	05	CUP - Metals
1	09	03	18	15	CUP - Mechanical
1	09	03	18	15	CUP - Mechanical (continued)
1	09	03	18	16	CUP - Electrical
1	09	03	18	17	CUP - Others (include Div 4, and 6 through 14)
1	09	03	18	17	CUP - Others (include Div 4, and 6 through 14) (continued)
1	09	03	19		SLAC Space Renovation for LCLS Ops
1	09	03	19	01	ED&I of SLAC Space Renovations for LCLS Ops
1	09	03	19	02	Construction of SLAC Space Renovation for LCLS
1	09	03	20		Project Close Out - Conventional Facilities System
1	09	03	20	01	Non-Turner Trade Project Close Out
1	09	03	20	02	Turner Trade Project Close Out
2					LCLS PROJECT - R&D, SPARES, COMMISSIONING
2	01				LCLS PROJECT MGMT, PLANNING & ADMN (OPC)
2	01	01			LCLS Commissioning Mgmt & Physics Support
2	01	01	01		LCLS Commissioning Management
2	01	01	02		Injector Physics
2	01	01	03		Linac Physics
2	01	01	04		Undulator Physics
2	01	01	05		X-Ray Transport Physics
2	01	01	06		X-Ray Physics Commissioning
2	01	01	07		Conventional Facilities Physics
2	01	01	08		Consulting Physics (Collaboration)
2	01	01	09		Consulting Physics (SLAC)
2	01	01	10		Global Controls Physics Liaison
2	01	01	11		Global Controls OPC
2	01	01	11	02	LLRF Controls
2	01	01	11	11	Global Controls Commissioning
2	01	01	11	12	Global Controls Management - OPC
2	01	01	11	13	SLC Aware IOC
2	01	01	11	15	Controls S/W Applications LOE
2	01	01	12		E-Beam Systems Commissioning Management
2	01	01	13		E-Beam Systems Physics Support
2	01	01	14		Laser Commissioning Management
2	01	02			R&D Studies & Prototyping
2	01	02	01		R&D Studies & Prototyping
2	01	03			Project Mgmt, Planning and Admn - M&S (OPC)
2	01	03	01		SLAC Project Office - General

LCLS WBS DICTIONARY

WBS NUMBER					TITLE
L1	L2	L3	L4	L5	
2	01	03	02		SLAC Project Support
2	01	03	03		Project Mgmt, Planning and Admn - M&S (OPC)
2	02				Injector System (OPC)
2	02	02			Injector Controls Subsystem
2	02	02	01		Personnel Protection System (PPS) R&D
2	02	02	02		Beam Containment Subsystem (BCS)
2	02	02	03		Machine Protection Subsystem (MPS)
2	02	02	04		Power Conv (beamline pwr supp) Spares
2	02	02	05		LLRF Controls
2	02	02	05	01	LLRF Controls
2	02	02	06		Wire Scanners
2	02	02	06	01	Wire Scanners
2	02	02	06	02	Controls - BPM Processor Module
2	02	02	06	03	Controls - Toroids
2	02	02	06	05	Controls - Profile Monitors
2	02	02	06	12	Controls - Movable Collimator
2	02	02	06	14	Controls - Faraday Cup
2	02	02	08		Timing Controls
2	02	02	09		Vacuum Controls
2	02	03			Injector Lasers
2	02	03	01		Drive Laser Prototyping
2	02	03	02		Drive Laser System
2	02	03	03		Drive Laser Diagnostics
2	02	03	14		LSR HTR - Beam Conditioning Optics (Laser Bay)
2	02	03	17		Reliability Improvement Laser
2	02	04			Injector RF Subsystem
2	02	04	01		RF Gun & Load Lock
2	02	04	01	01	RF Gun
2	02	04	01	02	RF Gun Supports
2	02	04	02		Cathode Processing (CP) Station
2	02	04	02	02	CP Load Lock
2	02	04	05		Injector RF Waveguide Subsystem
2	02	04	05	02	RF Waveguide Supports
2	02	04	06		Injector Linac Structures
2	02	08			Injector System Emittance Enhancement
2	02	08	01		Heater Integration
2	02	08	02		Heater Laser & Optics
2	02	08	03		Heater Magnets
2	02	08	03	01	Heater Dipoles
2	02	08	03	02	Heater Undulator
2	02	08	04		Heater Vacuum
2	02	08	05		Heater Diagnostics
2	02	08	05		Heater Diagnostics (continued)
2	02	08	06		Heater Install & Align
2	02	08	07		Laser Heater Controls
2	02	17			Injector System Commissioning

LCLS WBS DICTIONARY

WBS NUMBER					TITLE
L1	L2	L3	L4	L5	
2	02	17	02		Drive Laser Commissioning
2	02	17	10		Injector Commissioning
2	02	17	11		Injector Engr, Design, Maintenance Support
2	03				LINAC SYSTEM (OPC)
2	03	01			Linac System Mgmt & Integration
2	03	01	01		Linac System Mgmt & Integration
2	03	02			Linac Controls & Power Conversion Subsystem
2	03	02	04		Power Conversion
2	03	02	04	01	Spare Power Supply (Dipole Type)
2	03	02	04	02	Spare Power Supply (Quad Type)
2	03	02	04	03	Spare Power Supply (Trim Type)
2	03	05			Linac Electron Diagnostics
2	03	05	05		Profile Monitors
2	03	05	07		Bunch Length Monitors
2	03	07			Linac System Commissioning
2	03	07	10		L2/BC2/L3 Commissioning
2	03	07	11		Linac System Management Effort
2	04				UNDULATOR SYSTEM (OPC)
2	04	01			Undulator System Management & Integration
2	04	01	01		Undulator System Mgmt & Integration
2	04	02			Controls
2	04	02	01		Controls Management and Integration
2	04	02	10		Undulator Controls Modules Spares
2	04	02	12		Undulator Controls Racks & Cables Spares
2	04	02	15		BLM Interface Module Development
2	04	03			Undulator Magnet & Support
2	04	03	02		First Prototype Undulator & Mfg Plan
2	04	03	03		1st Article Undulators & Long Lead Procurements
2	04	03	04		Production Undulator
2	04	03	05		Focusing Magnets
2	04	03	06		Undulator Magnetic Measurement Facility (SLAC)
2	04	03	08		Fixed Supports
2	04	04			Vacuum System
2	04	04	02		Undulator Vacuum Chamber Assembly
2	04	04	03		Beam-line Bellows Module Assembly
2	04	04	05		Short Diagnostic Break (SDB) Assembly
2	04	04	06		Long Diagnostic Break (LDB) Assembly
2	04	05			Undulator System Diagnostics [OPC]
2	04	05	02		Undulator Line Diagnostics
2	04	05	04		End-of-Undulator(EOU) X-ray and Profile diagnost
2	04	05	05		RF BPM
2	04	05	06		Beam Finder Wire
2	04	05	08		Beam Loss Monitoring
2	04	05	10		Single Undulator Test (SUT)-Diagnostics
2	04	06			LTU/Undulator/Dump Commissioning
2	04	06	01		LTU/Undulator/Dump Commissioning

LCLS WBS DICTIONARY

WBS NUMBER					TITLE
L1	L2	L3	L4	L5	
2	05				X-RAY TRANSPORT & DIAGNOSTICS SYSTEMS (OPC)
2	05	01			System Management & Integration
2	05	01	01		Management
2	05	04			Optical Subsystem
2	05	04	01		Optical Subsystem R&D
2	05	04	02		Spares for Optical Subsystem
2	05	05			Diagnostics Subsystem
2	05	05	01		Diagnostics Subsystem R&D
2	05	05	02		Modeling & Simulation
2	05	05	03		Spares for Diagnostics Subsystem
2	06				X-RAY END STATION SYSTEMS (OPC)
2	06	01			XE System Mgmt & Integration
2	06	02			Controls Subsystem
2	06	02	04		LBNL Laser Timing
2	06	02	08		2-D X-Ray Detector Controls
2	06	03			Commissioning
2	06	04			Spares
2	06	04	01		Spares - PPS Stoppers
2	06	05			X-Ray Detectors
2	06	05	02		2-D X-Ray Detector
2	06	07			AMO - HFP Instrument
2	06	07	01		AMO - HFP Instrument- TOF Storage chamber
2	06	10			SXR Instrument
2	06	10	01		SXR Management & Design
2	06	10	02		SXR Pre-Operations
2	09	03			Beam Path Project Commissioning
2	09	03	05		Beam Path Project Commissioning