

WBS_Dictionary_Examples

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HIGH LEVEL RF WBS ITEM						Dictionary
1.5.1.1	RF System - Main Linacs					All components from the high voltage transformer panel output to the RF power output fed to cryogenic accelerating cavities.
	1.5.1.1.1 Klystron					10 MW peak 1.3GHz tube and all supports from modulator input to provide RF output.
		1.5.1.1.1.1	Klystron Body			Unit as delivered from Manufacturer
		1.5.1.1.1.2	Solenoid			Focussing magnet, mounting hardware
		1.5.1.1.1.3	Socket & Tank			Tube socket, mounting, oil tank,
		1.5.1.1.1.4	Vacuum pumps, instrumentaion			Vacuum pumps, instrumentation, cabling
		1.5.1.1.1.5	Power supplies Solenoid, Filament			Solenoid, filament power supplies, wiring, monitoring, rack space.
		1.5.1.1.1.6	RF Pre-driver			RF Solid state Driver, cabling. Monitoring.
		1.5.1.1.1.7	Water Cooling			Hose connections to/from body, solenoid; flow meters
		1.5.1.1.1.7	Local Diagnostics-Controls-Protection			Protection devices, wiring to/from all protection system inputs, PLC system cards, PLC interface to control system
	1.5.1.1.2	Modulator				
		1.5.1.1.2.1	Modulator Assembly			Modualtor as delivered from Manufacturer
		1.5.1.1.2.2	Pulser Forming Unit			
		1.5.1.1.2.3	Charging Supply			
		1.5.1.1.2.4	HV Cable Plant			
		1.5.1.1.2.5	Pulse Transformer			
		1.5.1.1.2.6	Water Cooling			
		1.5.1.1.2.7	Local Diagnostics-Controls-Protection			

CONVENTIONAL FACILITIES

WORK BREAK DOWN STRUCTURE

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1.7		Conventional Facilities
1.7.1		Civil Engineering
1.7.1.1	1.7.1.1.1	Engineering, study work and documentation
	1.7.1.1.1	In-house Engineering
	1.7.1.1.2	Outsourced Consultancy Services
1.7.1.2		Underground Facilities
	1.7.1.2.1	Shafts
	1.7.1.2.2	Tunnels
	1.7.1.2.3	Halls
	1.7.1.2.4	Caverns
	1.7.1.4.5	Miscellaneous works
1.7.1.3		Surface Structures
	1.7.1.3.1	Central Lab Buildings
	1.7.1.3.2	Detector Assembly Buildings
	1.7.1.3.3	Office Buildings
	1.7.1.3.4	Service Buildings
	1.7.1.3.5	Cryo- Equipment Buildings
	1.7.1.3.6	Control Buildings
	1.7.1.3.7	Workshops
	1.7.1.3.8	Site Access Control Buildings
	1.7.1.3.9	Shaft Access Buildings
	1.7.1.3.10	Miscellaneous Buildings
	1.7.1.3.11	User Facilities
1.7.1.4		Site Development
	1.7.1.4.1	Off-site Site work
	1.7.1.4.2	Network of Monuments
	1.7.1.4.3	Construction Support
	1.7.1.4.4	Site Preparation
	1.7.1.4.5	Utility Distribution
	1.7.1.4.6	Road, Sidewalks & Parking Areas
	1.7.1.4.7	Landscaping
	1.7.1.4.8	Environmental
	1.7.1.4.9	Miscellaneous Site Works
1.7.2		ELECTRICAL (rolled-up)

1.7 CONVENTIONAL FACILITIES – Example of WBS Dictionary

The Conventional Facilities for the International Linear Collider will include the R&D and Project Development to design and construct the Conventional Facilities required for the ILC.

1.7.1 CIVIL ENGINEERING

1.7.1.1 Engineering, study work and documentation

includes all aspects of Project Management, Architectural, and Engineering services associated with civil engineering as defines in WBS 1.7.1. The project phases starts with the Conceptual Design, design development and contract document preparation through execution and project close-out. Included are required studies to survey the geological and geotechnical conditions of the site, to assess the environmental impacts, permit applications and technical boards. Also included is the support of the project during review and required reporting functions.

1.7.1.1.1 In-House Engineering provides the project and contract management for the overall study work, engineering, and documentation.

1.7.1.1.2 Outsource Consultancy Services

Professional service contracts providing all efforts towards reaching reliable design, costing and planning of the civil engineering part of the Project.

1.7.1.2 Underground Facilities

Underground Structure will include construction of all spaces required for the electron and positron beam lines the Injectors, Main Linacs, Beam Delivery Systems, Interaction Regions, damping rings, and Rings to Main Linac. Also included are all support tunnels for the operation of the above items.

1.7.1.2.1 Shafts (equipment and personal)

will include Ramps and Vertical Shafts constructed for the purpose of equipment and personnel access to the Accelerator and/or Accelerator Support Tunnels and the shafts to provide equipment, utility and personnel access from the Detector Support Buildings to the Detector Assembly Pits below as well as between the Accelerator and Support Tunnels. All Access Tunnels will include adequate radiation protection in the form of shielded labyrinths and/or removable "shield doors" with secondary electronic monitoring. Access Tunnels for deep tunnel solutions will be ramps and/or vertical shafts constructed using either NATM, Drop Shaft or Raised Bore excavation techniques with reinforced concrete linings through the Glacial Tills and fractured rock zones. Access Tunnels for the near grade solutions will be either ramps and/or shafts constructed using cut and cover excavations techniques and a combination of pre-cast and/or cast in-place concrete enclosures or rock tunneling methods. Access Housing for at grade solutions will include adequate shielding with doors and secondary electronic monitoring.