

DATA ITEM DESCRIPTION

Title: Contract Work Breakdown Structure

Number: DI-MGMT-81334C

Approval Date: 20070420

AMSC Number: D7722

Limitation:

DTIC Applicable:

GIDEP Applicable:

Preparing Activity: (D)OSD/PA&E/CAIG

Applicable Forms: Not Applicable

Use/relationship: This documents the Contract Work Breakdown Structure (CWBS) and its extension by the contractor using terminology and definitions, as applicable, in MIL-HDBK-881, current edition.

This DID summarizes the format for the CWBS and provides preparation instructions to support the data and frequency requirements specified in the contract. This DID applies to all contracts that require a Work Breakdown Structure (WBS). It is related to the three Contractor Cost Data Reporting (CCDR) formats: DD Form 1921, "Cost Data Summary Report" (DI-FNCL-81565, current edition); DD Form 1921-1, "Functional Cost-Hour Report" (DI-FNCL-81566, current edition); and DD Form 1921-2, "Progress Curve Report" (DI-FNCL-81567, current version). This DID is also related to the "Contract Performance Report" (DI-MGMT-81466, current edition) and DD Form 1586, "Contract Funds Status Report" (DI-MGMT-81468, current edition).

MIL-HDBK-881, current edition, serves as the basis for developing the prime contract CWBS. Routine reporting shall be at CWBS level 3 for prime contractors. Extensions of the CWBS can be tailored to the specific program but will be consistent with MIL-HDBK-881, current edition. More detailed reporting of the CWBS shall be required only for those lower-level elements that address high-risk, high-value, or high-technical-interest areas of a program. Identifying these additional elements is a critical early assignment for the Cost Working Integrated Product Team (CWIPT) for inclusion in the CWBS.

For those contracts with Cost and Software Data Reporting (CSDR) requirements, the CWBS must agree with the contract CSDR Plan approved by the OSD Cost Analysis Improvement Group (CAIG) Chair.

The reporting contractor shall prepare and submit the contract CWBS within 60 days of the contractually required post award CSDR conference or, in the absence of a conference, within 60 days of contract award or contract modification. The reporting contractor shall maintain and update the Dictionary throughout the life of the contract. For contracts with CSDR requirements, the CWBS Dictionary shall not be submitted more frequently than CSDR submissions.

Requirements:

1. *Reference documents.* Guidance for preparing the CWBS can be found in MIL-HDBK-881, current edition.
2. *Formats.* The CWBS shall be reflected in an electronic report that consists of two parts. The first part, the CWBS Index, lists the individual elements. The second part, the CWBS Dictionary, describes the effort and tasks associated with every CWBS element shown in the CWBS Index. Examples of the CWBS Index and CWBS Dictionary are shown in Figures 1 and 2, respectively.

Preparation Instructions:

1. *Contract Work Breakdown Structure Index:*
 - a. CWBS Code. Enter the code, if applicable. The CWBS codes used in the CWBS Dictionary and the OSD CAIG Chair-approved contract CSDR Plan must be identical. The preferred convention is to use a numeric structure starting with 1.0 for the level 1 CWBS element (as displayed in the example in the table on page 3).
 - b. CWBS Element Level. Enter the level of the CWBS element. Level 1 is the total contract. Levels 2, 3, and so on, are successively lower levels of the contract.
 - c. CWBS Element Name. Enter the title of the CWBS element using the specific name or nomenclature. The CWBS element names used in the CWBS Dictionary and the OSD CAIG Chair-approved contract CSDR Plan must be identical.
2. *Contract Work Breakdown Structure Dictionary:*
 - a. CWBS Code. Enter the code, if applicable. The CWBS codes used in the CWBS Dictionary and the OSD CAIG Chair-approved contract CSDR Plan must be identical.
 - b. CWBS Element Name. Enter the title of each CWBS element in the same order as given in Part I. The CWBS element names used in the CWBS Dictionary and the OSD CAIG Chair-approved contract CSDR Plan must be identical.
 - c. CWBS Definition. Enter a complete description of the technical and cost content of each CWBS element. The definition must include a physical characterization for product-oriented elements, and shall be as descriptive as possible about the components, efforts, and tasks that are to be included in the CWBS element by the contractor. Provide a short description of the work content and work process to produce the end item or service. The CWBS Dictionary must be updated and maintained throughout the life of the contract. However, for contracts with CSDR requirements, the updated CWBS Dictionary shall be submitted no more frequently than the CCDR report submissions.

Figure 1. CWBS Index Example (based on MIL-HDBK-881A Missile Systems)

CWBS CODE	Contract Work Breakdown Structure Index		Program: Vector Surface to Air Interceptor			RFP NO: XXXXX	Contract Plan No: A-07-X-C1
						Contract No: DAAE07-XX-E-0001	
						DATE: 3/23/2007	
	CWBS ELEMENT LEVEL					CWBS ELEMENT NAME	
	1	2	3	4	5		
1.0	X					Vector Surface to Air Interceptor Missile System	
1.1		X				Air Vehicle	
1.1.1			X			Propulsion	
1.1.2			X			Payload	
1.1.3			X			Airframe	
1.1.4			X			Reentry System	
1.1.5			X			Post Boost System	
1.1.6			X			Guidance and Control	
1.1.6.1				X		Guidance Section	
1.1.6.1.1					X	RF Active Seeker	
1.1.6.1.2					X	IF Receiver	
1.1.6.1.3					X	Digital Signal Processor	
1.1.6.1.4					X	Integration, Assembly, Test and Checkout	
1.1.6.2				X		Control Section	
1.1.6.2.1					X	Tail Fin Control Section	
1.1.6.2.2					X	Canards	
1.1.6.2.3					X	Integration, Assembly, Test and Checkout	
1.1.7			X			Ordnance Initiation Set	
1.1.8			X			Airborne Test Equipment	
1.1.9			X			Airborne Training Equipment	
1.1.10			X			Auxiliary Equipment	
1.1.11			X			Integration, Assembly, Test and Checkout	
1.2		X				Command and Launch	
1.2.1			X			Surveillance, Identification and Tracking Sensors	
1.2.2			X			Launch and Guidance Control	
1.2.3			X			Communications	
1.2.4			X			Command and Launch Applications Software	
1.2.5			X			Command and Launch System Software	
1.2.6			X			Launcher Equipment	
1.2.7			X			Auxiliary Equipment	
1.2.8			X			Booster Adapter	
1.3		X				System Engineering/Program Management	
1.4		X				System Test and Evaluation	
1.4.1			X			Development Test and Evaluation	
1.4.2			X			Operational Test and Evaluation	
1.4.3			X			Mock-ups / System Integration Labs (SILs)	
1.4.4			X			Test and Evaluation Support	
1.4.5			X			Test Facilities	
1.5		X				Training	
1.5.1			X			Equipment	
1.5.2			X			Services	
1.5.3			X			Facilities	
1.6		X				Data	
1.6.1			X			Technical Publications	
1.6.2			X			Engineering Data	
1.6.3			X			Management Data	
1.6.4			X			Support Data	
1.6.5			X			Data Depository	
1.7		X				Peculiar Support Equipment	
1.7.1			X			Test and Measurement Equipment	
1.7.2			X			Support and Handling Equipment	
1.8		X				Common Support Equipment	
1.8.1			X			Test and Measurement Equipment	
1.8.2			X			Support and Handling Equipment	
1.9		X				Operational/Site Activation	
1.9.1			X			System Assembly, Installation and Checkout on Site	
1.9.2			X			Contractor Technical Support	
1.9.3			X			Site Construction	
1.9.4			X			Site/Ship/Vehicle Conversion	
1.10		X				Industrial Facilities	
1.10.1			X			Construction/Conversion/Expansion	
1.10.2			X			Equipment Acquisition or Modernization	
1.10.3			X			Maintenance (Industrial Facilities)	
1.11		X				Initial Spares and Repair Parts	

Figure 2. CWBS Dictionary Example

CWBS CODE	Contract Work Breakdown Structure Index		RFP NO: XXXXX	Contract Plan No: A-07-X-C1
	Program: Vector Surface to Air Interceptor		Contract No: DAAE07-XX-E-0001	DATE: 3/23/2007
	CWBS ELEMENT NAME	CWBS DEFINITION		
1.0	Vector Surface to Air Interceptor Missile System	This WBS element includes the cost of the Vector missile All Up Round (AUR) in addition to the cost of the common WBS elements. The Vector missile is an Army Surface-to-Air interceptor missile providing 360 degree coverage for the air defense mission of forward deployed forces. It is a single-stage, short-range, low-to high-altitude theater missile defense system that utilizes advanced guidance and control technologies, including an advanced active RF seeker to extend the range of engagement beyond current and projected threats. This WBS element reports the total development cost of the AUR including the cost for the common WBS elements. WBS elements 1.1 Air Vehicle and 1.2 Command and Launch are the two child WBS elements that capture the cost of the product, while WBS elements 1.3 through 1.11 capture the cost of the "common elements".		
1.1	Air Vehicle	This element refers to the means for delivering the destructive effect to the target, including the capability to generate or receive intelligence to navigate and penetrate to the target area and to detonate the warhead. This element includes the design, development, and production of complete units (prototype and operationally configured units that satisfy the requirement of their applicable specifications) regardless of their use. This WBS element has eleven children WBS elements. The government CWIPT has required, through the use of a CAIG-approved Plan for the Vector Missile, that WBS element 1.1.6 Guidance and Control will contain two child WBS elements, each one containing lower levels of WBS indenture in order to capture the costs of the specific cost driving elements within the G&C element.		
1.1.1	Propulsion	This WBS element includes the cost of the Vector missile's rocket motor and labor required to integrate and assemble the propulsion system into the AUR. The propulsion system consists of the booster and the interstage. A single-stage, solid propellant rocket motor provides all of the boost impulse for the missile. The deployable flares and aft rate gyro package are positioned at the aft end of the booster in the BUG configuration. The single Thiokol TX-486-1 solid-fueled rocket motor is a subcontracted item, but the cost falls under the threshold for "direct reporting" by the supplier. This WBS element captures the cost of the purchased solid rocket motor and IAT&C costs necessary to install, test and check out the rocket motor inside the airframe. There is one TX-486-1 rocket motor per AUR.		
1.1.2	Payload	This WBS element includes the cost of the Mk125 warhead and labor required to integrate and assemble the warhead into the AUR. The Vector payload consists of the Mk 125 warhead and its support assemblies. The Mk125 warhead consists of the following items; cylindrical graphite composite casting which houses the high explosive charge, an initiator system (Mk21 Initiators), and a cue-cast charge. This element is a subcontracted item by the prime contractor. The dollar amount for this item exceeds the dollar threshold for CSDR reporting and consequently the prime contractor has flowed down CSDR reporting requirements to the supplier and provided the subcontractor with its CAIG-approved CSDR Subcontract plan. Prime contractor recurring and non-recurring costs will capture the price paid for the Mk125 warhead in addition to the prime's direct and indirect costs for integration, assembly, test and checkout of the Mk125 warhead into the payload section of the missile. There is one Mk125 warhead per AUR.		
1.1.3	Airframe	This element refers to the structural framework that provides the aerodynamic shape, mounting surfaces and environmental protection for the missile components. It includes the wings, fins, and structural body assemblies.		
1.1.4	Reentry System	This WBS element is not applicable to the Vector missile contract.		
1.1.5	Post Boost System	This WBS element is not applicable to the Vector missile contract.		
1.1.6	Guidance and Control	This WBS element includes the cost for the collection of parts that provides the missile an ability to acquire, track multiple targets, receive guidance signals from ground control radars and execute the necessary flight path to intercept the target. The Guidance Section provides the equipment necessary to acquire, track and discriminate targets, while the control section provides equipment to physically alter the missile's flight path to hit the target.		
1.1.6.1	Guidance Section	This element includes the cost of the Vector missile Guidance Section. The Vector missile Guidance Section consists of an RF active seeker containing an antenna, gimbal, T/R switch, receiver and transmitter and an IF receiver and digital signal processor. Costs for this element represent touch labor costs for the inspection, quality assurance, testing, recurring engineering design, and final assembly of all subassemblies into the completed guidance set. Costs for purchased parts of children WBS elements are rolled up into and reported for this WBS element. There are no direct reporting CSDR requirements from any supplier or vendor for any component within this WBS element.		

Figure 2. CWBS Dictionary Example (Continued)

CWBS CODE	Contract Work Breakdown Structure Index		Program: Vector Surface to Air Interceptor	RFP NO: XXXXX	Contract Plan No: A-07-X-C1
	CWBS ELEMENT NAME		CWBS DEFINITION		DATE: 3/23/2007
1.1.6.1.1	RF Active Seeker	This WBS element includes the cost of the Radio Frequency (RF) missile seeker that provides an all weather capability. The Vector missile RF seeker contains a new a solid state, electronically-controlled millimeter wave (MMW) radar scanning antenna and platform with servo, receiver, signal and data processor. The RF active seeker is designed and manufactured at the prime contractor's integration facility in Dallas, TX. The cost for this element includes the material cost for the subassemblies and direct and indirect labor associated with the IAT&C for the subassemblies into the RF Active Seeker end-item.			
1.1.6.1.2	IF Receiver	This WBS element includes the cost of all the electronic circuitry and RF waveguide and stripling needed to amplify, perform automatic gain control, and down-convert the RF signal to a video signal for processing in the signal processor.			
1.1.6.1.3	Digital Signal Processor	This WBS element includes the cost of the two Texas Instruments TMS320C6414T/15T/16T DSPs that provide the signal processing capabilities for discrimination of the target from clutter and jammer returns in the received signal. It provides the means to convert analog signals into digital data and provides information that supports range and angle computations to the data processor.			
1.1.6.1.4	Integration, Assembly, Test and Checkout	This WBS element includes the cost of all direct and indirect labor costs associated with integrating, assembling, testing and performing checkout procedures on the Guidance section subassemblies in order to build up the complete Vector missile Guidance section.			
1.1.6.2	Control Section	This WBS element includes the cost of the Vector missile control section. The control section provides directional control inputs to the missile control surfaces to affect changes in flight path. The Vector missile utilizes tail fin controls along with forward canards for its control surfaces during flight. The tail fin controls are equipment designed and manufactured in-house by the prime. Costs for the tail fin controls include engineering, tooling, quality control and manufacturing direct and indirect costs. The canard is a purchased item and its cost reflects the prime's costs for direct and indirect labor for IAT&C of the canards into the control section of the missile.			
1.1.6.2.1	Tail Fin Control Section	This WBS element includes the cost of the Mk51 control surface tail fin control set. The Vector missile is provided directional control via the Mk51 control surface tail fin control set. Tail fin control surfaces are self-erecting, folded wings whose positions are varied by the steering section actuators to effect missile course corrections during flight.			
1.1.6.2.2	Canards	This WBS element includes the cost of procurement, fabrication, assembly and test of the canard devices utilized to provide directional control to the missile in flight.			
1.1.6.2.3	Integration, Assembly, Test and Checkout	This WBS element includes the cost of all direct and indirect labor costs associated with integrating, assembling, testing and performing checkout procedures on the control section subassemblies in order to build up the complete Vector missile control section.			
1.1.7	Ordnance Initiation Set	This element includes the cost of the ordnance initiation set. The ordnance initiation set initiates all ordnance events throughout the missile and ground system (except reentry system components). Upon receipt of an electrical signal from the missile guidance and control system, the ordnance initiation set firing units convert the signal into ordnance outputs to the detonating cords. Among these ordnance events are stage separation, motor ignition, gas generator ignition, shroud separation, etc. Includes through bulkhead initiators, ordnance test harnesses, and firing units/exploding bridge wires.			
1.1.8	Airborne Test Equipment	This WBS element includes the cost of the Vector missile AUR airborne test equipment. The airborne test equipment element refers to an exercise warhead that is interchangeable with the live warhead and suitable for developmental firing. This element includes destruct systems, recovery systems, special instrumentation, and telemetry equipment.			
1.1.9	Airborne Training Equipment	This element includes the cost of an exercise warhead that is interchangeable with the live warhead and suitable for training firing. This element also includes destruct systems, recovery systems, special instrumentation, and telemetry equipment associated with the training mission.			
1.1.10	Auxiliary Equipment	This WBS element includes the cost of the additional equipment generally excluded from other specific elements. This element includes the environmental control, safety and protective subsystems, and destruct system. It also includes equipment of a single purpose and function that is necessary for accomplishing the assigned mission.			
1.1.11	Integration, Assembly, Test and Checkout	This element includes the cost of IAT&C of the hardware conducted at the contractor's assembly facility. Subsystem components will be assembled and tested and then shipped to the prime contractor's facility for final assembly and testing.			
1.2	Command and Launch	This WBS element is not applicable to the Vector missile contract.			
1.2.1	Surveillance, Identification and Tracking Sensors	This WBS element is not applicable to the Vector missile contract.			
1.2.2	Launch and Guidance Control	This WBS element is not applicable to the Vector missile contract.			
1.2.3	Communications	This WBS element is not applicable to the Vector missile contract.			
1.2.4	Command and Launch Applications Software	This WBS element is not applicable to the Vector missile contract.			
1.2.5	Command and Launch System Software	This WBS element is not applicable to the Vector missile contract.			
1.2.6	Launcher Equipment	This WBS element is not applicable to the Vector missile contract.			
1.2.7	Auxiliary Equipment	This WBS element is not applicable to the Vector missile contract.			
1.2.8	Booster Adapter	This WBS element is not applicable to the Vector missile contract.			

Figure 2. CWBS Dictionary Example (Continued)

CWBS CODE	Contract Work Breakdown Structure Index	Program: Vector Surface to Air Interceptor	RFP NO: XXXXX Contract No: DAAE07-XX-E-0001	Contract Plan No: A-07-X-C1
	CWBS ELEMENT NAME		CWBS DEFINITION	
1.3	System Engineering/Program Management	This WBS element includes the cost of the effort associated with the systems engineering and program management activities for the Vector missile contract. The systems engineering and program management effort are combined and reported in total for the Vector missile contract. Specific system engineering activities included in this element for this contract are: CAIV analysis, Design-to-Unit-Production-Cost analysis, system cost effectiveness studies, reliability, availability and maintainability studies. Specific program management activities included in this element for this contract are: configuration management, ILS management, program management, supply support management, program control, and EVMS and CSDR reporting activities.		
1.4	System Test and Evaluation	This WBS element includes the cost of all System Test & Evaluation (ST&E) activities performed by the contractor necessary for the system to achieve its Key Performance Parameters (KPPs) required by the current Acquisition Decision Memorandum. ST&E costs are broken down into five unique child WBS elements; each addressing a unique activity or function to be performed by the contractor during the ST&E portion of the program. The Vector missile program is producing eleven prototype flight units to support the DT&E phase. There is one specially fabricated hardware/ software test stand that will be used to instrument, test and validate the rocket motor engineering data.		
1.4.1	Development Test and Evaluation	This WBS element includes the cost of all Development Test and Evaluation (DT&E) activities performed by the prime contractor necessary for the Vector missile system to achieve its T&E acquisition milestone exit criteria. The prime contractor will conduct DT&E testing activities at the prime's integration facility in Dallas, TX to ensure that all engineering designs satisfy Preliminary Design Review (PDR) and Critical Design Review (CDR) requirements, prior to actual operational flight testing.		
1.4.2	Operational Test and Evaluation	This WBS element includes the cost of all Operational Test and Evaluation (OT&E) activities performed by the prime contractor necessary for the Vector missile system to achieve its T&E acquisition milestone exit criteria. The prime contractor will conduct OT&E testing activities at the Army's White Sands Missile Range in conjunction with Army Air Defense personnel. Included in this cost element are costs associated with test equipment, shelters, vans, testing communication equipment, contractor technical support, logistic testing efforts and development of RAM requirements.		
1.4.3	Mock-ups / System Integration Labs (SILs)	This WBS element is not applicable to the Vector missile contract.		
1.4.4	Test and Evaluation Support	This WBS element includes the cost of Vector missile spares, repair of reparable, repair parts, warehousing and distribution of spares and repair parts, test and support equipment, test bed vehicles and contractor technical support.		
1.4.5	Test Facilities	This WBS element is not applicable to the Vector missile contract.		
1.5	Training	This WBS element includes the cost of training equipment, services and facilities for the Vector missile contract.		
1.5.1	Equipment	This WBS element includes the cost of Vector missile operational trainers, maintenance trainers, and other items such as cutaways, mock-ups, and models used to support development and operational testing.		
1.5.2	Services	This WBS element includes the cost of training services, training course materials; contractor-conducted training (in-plant and service training); and the materials and curriculum required to design, execute, and produce a contractor developed training program. Also included in the cost of this element are costs for training materials, training courses, and associated documentation (primarily the computer software, courses and training).		
1.5.3	Facilities	This WBS element is not applicable to the Vector missile contract.		
1.6	Data	This WBS element includes the cost of deliverable data to the government associated with the development of the Vector missile system. This element rolls up the cost of technical publications, engineering data, management data, support data and any data depository developed to store and disseminate information to the government.		
1.6.1	Technical Publications	This WBS element includes the cost of all technical publications in paper, Adobe PDF, and CD ROM formats submitted to the government.		
1.6.2	Engineering Data	This WBS element includes the cost of all engineering data in paper, Adobe PDF, and CD ROM formats submitted to the government.		
1.6.3	Management Data	This WBS element includes the cost of all management data in paper, Adobe PDF, and CD ROM formats submitted to the government. Included are the costs for EVMS and CSDR reports.		
1.6.4	Support Data	This WBS element includes the cost of all support data in paper, Adobe PDF, and CD ROM formats submitted to the government. Included is the Vector missile program logistic support database containing all Army logistic reporting requirements and performance parameters.		
1.6.5	Data Depository	This WBS element includes the cost of all engineering data in paper, Adobe PDF, and CD ROM formats submitted to the government.		

Figure 2. CWBS Dictionary Example (Continued)

CWBS CODE	Contract Work Breakdown Structure Index	Program: Vector Surface to Air Interceptor	RFP NO: XXXXX Contract No: DAAE07-XX-E-0001	Contract Plan No: A-07-X-C1
	CWBS ELEMENT NAME		CWBS DEFINITION	
1.7	Peculiar Support Equipment	This WBS element includes the costs of test and measurement equipment and support and handling equipment that are peculiar to the Vector missile contract. Included in this element are the costs of missile equipment and tools used to service the missile during OT&E activities. Also included is the cost to modify factory test equipment for the RF missile seeker that is used by the prime contractor during testing and subsequently delivered to the government.		
1.7.1	Test and Measurement Equipment	This WBS element includes test and measurement equipment, such as the ME-403 seeker test stand used to calibrate the Vector missile RF seeker unit during routine organizational unit maintenance activities.		
1.7.2	Support and Handling Equipment	This WBS element is not applicable to the Vector missile contract.		
1.8	Common Support Equipment	This WBS element includes the costs of test and measurement equipment and support and handling equipment that are considered common under the Vector missile contract. Included in this element are the costs of test measurement and diagnostic equipment and signal processor automatic test equipment that are common inventory support equipment items.		
1.8.1	Test and Measurement Equipment	This WBS element includes the cost of HHK-248A test and diagnostic equipment used by maintenance personnel to perform routine propulsion system test and checkout procedures during scheduled maintenance events.		
1.8.2	Support and Handling Equipment	This WBS element includes the cost of common support and handling equipment that is used to store, move and transport Vector AURs in their containers.		
1.9	Operational/Site Activation	This WBS element is not applicable to the Vector missile contract.		
1.9.1	System Assembly, Installation and Checkout on Site	This WBS element is not applicable to the Vector missile contract.		
1.9.2	Contractor Technical Support	This WBS element is not applicable to the Vector missile contract.		
1.9.3	Site Construction	This WBS element is not applicable to the Vector missile contract.		
1.9.4	Site/Ship/Vehicle Conversion	This WBS element is not applicable to the Vector missile contract.		
1.10	Industrial Facilities	This WBS element is not applicable to the Vector missile contract.		
1.10.1	Construction/Conversion/Expansion	This WBS element is not applicable to the Vector missile contract.		
1.10.2	Equipment Acquisition or Modernization	This WBS element is not applicable to the Vector missile contract.		
1.10.3	Maintenance (Industrial Facilities)	This WBS element is not applicable to the Vector missile contract.		
1.11	Initial Spares and Repair Parts	This WBS element includes the cost of Vector missile system repairable spares (reparables) and repair parts required as initial stockage to support and maintain newly fielded systems or subsystems during the initial phase of service, including pipeline and war reserve quantities.		

END OF DI-MGMT-81334C