



**Australian Government**  
**Department of Defence**  
Capability Acquisition and  
Sustainment Group

**CASG MANUAL**

**(PM) 006 – DEFENCE SUPPLEMENT TO THE AUSTRALIAN  
STANDARD FOR EARNED VALUE MANGEMENT, AS 4817**

**VERSION: 2.1**

<b>Approving Authority</b>	<b>Digital Signature</b>
Director, Project Controls Services	

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1.0	27 May 2006	First release
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2.1	19 Apr 2023	References to payment by earned value removed as this is no longer a payment option in CASG contracts. Formatting changes. Link to Australian Standards database on Defence Library Service website.

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<sup>1</sup> Major changes to content will also be identified by Change Bars in the left hand margin of the document

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## REFERENCES

- A. **AS4817-2019 earned value management in project and programme management (ISO21508:2018, MOD).** This standard can be accessed via the Defence Library Service's licence with SAI Global using the following link on the DRN, then navigating to Australian Standards and searching on AS 4817:  
<http://drnet/eig/Services/Library/resources/Pages/Standards-and-Newspapers.aspx>.

## ABBREVIATIONS AND DEFINITIONS

- A. **Business Unit;** Refers to the CASG organisation, including Domains, Divisions, Branches, Systems Program Offices (SPOs), Project Offices (POs), Directorates and other Business Units.
- B. **CASG:** Department of Defence, Capability Acquisition and Sustainment Group.
- C. **Table of Definitions:** The table below provides definitions for terms not found in AS 4817 OR provides additional information to the definition. Beyond this glossary, this supplement uses all definitions as contained in AS 4817.

Term	Definition
ACTIVITY	<p>As per AS 4817</p> <p>“Identified piece of work that is required to be undertaken to complete a project or programme.”</p> <p>For clarification purposes, the following is additional to the above definition:</p> <p>ACTIVITIES are natural subdivisions of WORK PACKAGES and constitute the basic building blocks used in planning, controlling and measuring performance at the level where the work is to be performed. . An ACTIVITY normally has an expected duration, an expected cost, and expected resource requirements.</p>
CONTROL ACCOUNT	<p>A Control Account is a natural management control point where the integration of Scope, Budget and schedule occurs. It represents the work assigned to one responsible organisational individual for the purpose of planning, monitoring and taking Corrective Action for the performance of one element of the Contract Work Breakdown Structure (CWBS).</p> <p>Guidance:</p> <p>The assignment of lower level CWBS elements to responsible lower level organisational managers provides a key point for management control purposes. The level of the Control Account in relation to the CWBS SHOULD be primarily determined by the Scope of the management tasks. The proper levels SHOULD not be arbitrarily predetermined or the result of allocating one “across the board” level. As an aid in determining a proper level, the size (dollar value, risk, length etc) of the resulting Control Accounts SHOULD be used to help indicate proper subdivision of work.</p>

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CONTROL ACCOUNT MANAGER	The assigned organisational individual responsible for the management of a Control Account.
CONTRACT MASTER SCHEDULE	As defined in the contract.
COST	The sum of all direct and INDIRECT COSTS applicable to a contract, or specified element thereof. This refers to the COST to the contractor and does not include profit/ margin.
COST PERFORMANCE INDEX (CPI)	The cost efficiency ratio of EARNED VALUE to ACTUAL COSTS. CPI = EV/AC COST PERFORMANCE INDEX is often used to predict the magnitude of a possible cost overrun using the following formula: BAC/CPI
ELEMENT OF COST	Labour, material, Other Direct Costs, and Indirect Costs
EVT	Earned Value Technique or objective measure of performance
SCHEDULE PERFORMANCE INDEX (SPI)	The schedule efficiency ratio of EARNED VALUE accomplished against the PLANNED VALUE. SPI = EV/PV The Schedule performance index describes what portion of the planned schedule was actually achieved.
WORK PACKAGE	WORK PACKAGES are natural sub-divisions of CONTROL ACCOUNTS and constitute the basic building blocks used in detail planning, controlling and measuring contract performance. It describes work to be accomplished by a specific performing organisation and serves as a vehicle for monitoring and reporting progress of work. WORK PACKAGES SHALL have SCOPE, BUDGET and SHALL have scheduled start and finish dates. Work that is within SCOPE of the CONTROL ACCOUNT, but has not been detail planned SHALL have BUDGET set aside in PLANNING PACKAGES. WORK PACKAGES SHOULD have short durations to limit the potential for difficulties in assessing progress.

## CHAPTER 1

# DEFENCE SUPPLEMENT TO THE AUSTRALIAN STANDARD FOR EARNED VALUE MANAGEMENT, AS 4817

## INTRODUCTION

1.1 CASG applies The Australian Standard for Earned Value Management (EVM), AS 4817, to applicable contracts to promote better project management practice in industry and ensure contract performance data is shared between contractor and Commonwealth staff so that emerging problems can be identified and acted upon as early as possible.

1.2 AS 4817 outlines the principles and requirements for implementing EVM. A major feature of using EVM for measurement purposes is the unique way it integrates the cost, schedule, and technical aspects of a program. An EVM system will result from the application of the specified requirements integrating planning, scheduling, budgeting, work authorisation, accounting and managerial control.

1.3 EVM systems should be designed to facilitate the effective execution of any contract. The requirements of AS 4817 and this supplement are not intended to limit the potential for undertaking continuous improvement of systems either in existence or following implementation.

## SCOPE

1.4 The scope of this supplement to AS 4817 is to provide Industry with an additional set of requirements and/or clarifications, specific to the Department of Defence, to enable effective management of Defence Projects/Contracts. This supplement is to be read in conjunction with AS 4817 and the requirements contained within are additional to, or clarify, that standard.

## GUIDANCE FOR MANUAL USERS

### Precedence

1.5 In the event of a conflict between AS 4817 and this supplement, this supplement will take precedence.

1.6 In the event of a conflict between this supplement and the contract, the contract will take precedence.

### Consistency

1.7 The combined requirements of AS 4817 and this supplement are principally consistent with existing standards, including ANSI EIA-748, and DEF(AUST) 5655 & 5657. The existence of an EVM system that meets alternative standards does not abrogate the need to meet the requirements contained in AS 4817 and this supplement. Any differences that are merely terminology should be reconcilable but not necessarily altered.

1.8 The use of the term SHALL indicates a mandatory requirement as per AS 4817. Any guidance is listed separately

### Limitations

1.9 This supplement does not address reporting requirements nor acceptance of the EVM system by Defence. These requirements are project specific and will be detailed in the contract.

**CHAPTER 2**  
**DEFENCE GENERAL REQUIREMENTS**  
**BASIS OF REPORTING**

**Cost Basis**

2.1 **Requirement 1.** The EVMS SHALL be constructed on the basis of cost to the Contractor and reported to the Project Authority on the same basis.

**Current Date versus Base Date**

2.2 **Requirement 2.** All data elements SHALL be reported on the same basis.

2.3 **Requirement 3.** The contractor SHALL advise the basis of costs and explain the process for escalation or de escalation.

2.4 **Guidance.** Defence prefers base date reporting which enables effective trend analysis, integration into existing Defence reporting mechanisms and reporting to senior management. Where the contract requires base date for payment, it is reasonable to expect that the performance measurement system will provide data on that same basis.

2.5 Where an EVMS exists and the basis is other than base date, Project Office personnel will need access to detailed data and processes for escalation to ensure that the BASELINE integrity is being maintained and that any reported variances are meaningful. The use of current date values will require further verification by the Project Office due to the increased level of complexity and potentially reduced level of insight into performance.

2.6 The following requirements and their associated guidance have been correlated to the steps contained in AS 4817 for simplicity.

## CHAPTER 3

### STEP SPECIFIC REQUIREMENTS

#### STEP 1: DECOMPOSE THE PROJECT OR PROGRAMME SCOPE

3.1 *Nil additional requirements.*

#### STEP 2: ASSIGN RESPONSIBILITY

##### Work Assignment

3.2 **Requirement 1.** A CONTROL ACCOUNT MANAGER (CAM), or designated WORK PACKAGE manager, SHALL:

- a. Accept responsibility for achieving assigned work scope, schedule and resource targets;
- b. Demonstrate the basis of planning (resource and schedule estimates);
- c. Be responsible for the accuracy of information generated at the CONTROL ACCOUNT level; and
- d. Analyse and act upon variances from planned performance.

#### STEP 3: SCHEDULE THE WORK

##### Relationship between the Schedule and WBS

3.3 **Requirement 1.** The WBS SHALL be used as the basis to develop the PROJECT schedule.

3.4 **Requirement 2.** There SHALL be an interface between the WBS and the schedule to enable WORK PACKAGES and/or activities to be easily traced between the two without the need for a traceability matrix.

3.5 **Guidance.** The WBS will represent all of the work to be completed. It will form the basis for resource estimation, and performance measurement. Integration of the WBS and schedule serves to integrate schedule information with the resource targets, SCOPE and accumulated costs contained in the EVMS. The level of the WBS chosen to integrate the EVMS with the schedule will allow effective development of the schedule activity network. Activity descriptions, durations and interdependencies will be developed so they accurately reflect the sequence of work and provide a network capable of forecasting completion dates for all contract deliverables.

##### Schedule Integrity

3.6 **Requirement 3.** The schedule SHALL be vertically and horizontally traceable.

3.7 **Guidance.** All work SCOPE is traceable throughout the PROJECT to each level of schedule consistent with its level of planning, and the logical relationship between WORK PACKAGES is established. Vertical and horizontal traceability results in zero inconsistencies between schedules at any level.

#### STEP 4: DEVELOP TIME-PHASED BUDGET

##### Integration with Schedules

3.8 **Requirement 1.** The Contract Master Schedule (CMS) and PERFORMANCE MEASUREMENT BASELINE (PMB) SHALL be integrated.

3.9 **Requirement 2.** The schedule(s) and PMB SHALL be identical in planning and consistent in their representation of progress.



## **Management Reserve**

3.10 **Requirement 3.** MANAGEMENT RESERVE (MR) SHALL be set aside for unforeseen work within SCOPE and known risks that may or may not eventuate.

3.11 **Requirement 4.** The use of MR SHALL be controlled and documented.

3.12 **Guidance.** MR will typically include an estimate for unknown risk and known risks that may or may not occur. MR is generally consumed over the duration of the contract as risks eventuate and MR is allocated to the PMB through the change control processes. MR may neither be eliminated by Defence nor used to absorb the cost of contract changes (unless a sharing arrangement has been agreed for the contract change).

## **Rework**

3.13 **Requirement 5.** Where there is a high probability of rework occurring within SCOPE (eg document revisions, retesting), provision for that work SHALL be included in the PMB.

3.14 **Requirement 6.** Where rework is required, zero BUDGET WORK PACKAGES SHALL not be used and BUDGET SHALL be assigned, the effort planned and performance measured.

3.15 **Guidance.** Rework is often encountered when documents are reviewed, equipment is tested, or assembly and integration is required. Whether rework is to be expected will depend upon the nature of the work to be undertaken, past experiences and industry norms.

## **Development of Budgets**

3.16 **Requirement 7.** The basis of estimate of all resource requirements SHALL be documented.

3.17 **Requirement 8.** The basis of estimate SHALL be developed using sound estimating principles.

3.18 **Guidance.** The development of a BASELINE relies upon the underlying estimates for undertaking the SCOPE of work. For the BASELINE to be meaningful and provide valid measurement data, the basis must be sound (e.g. historical performance, industry standards, learning curve development). To enable effective variance analysis, the basis of estimate must be documented so that any changes to assumptions can be noted and explained.

## **Mixed Elements of Cost**

3.19 **Requirement 9.** ELEMENTS OF COST SHALL not be mixed in the one WORK PACKAGE where a variance in performance of one element will make an assessment of EV misleading or inaccurate.

3.20 **Guidance.** Different ELEMENTS OF COST are permissible within a single WORK PACKAGE. This, however, SHOULD only occur where the techniques and performance data are clearly identifiable and the resulting variances are not distorted.

## **STEP 5: ASSIGN OBJECTIVE MEASURES OF PERFORMANCE**

3.21 *Nil additional requirements.*

## **STEP 6: SET THE PERFORMANCE MEASUREMENT BASELINE**

3.22 *Nil additional requirements.*

## **STEP 7: AUTHORISE AND PERFORM THE WORK**

### **Work Authorisation**

3.23 **Requirement 1.** A formal authorisation system SHALL be used to authorise work.

3.24 **Requirement 2.** There SHALL be traceability between authorisation documents.

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- 3.25 **Requirement 3.** The work authorisation for each level SHALL clearly identify:
- a. What is to be done;
  - b. Who is to do it;
  - c. When it is to be done;
  - d. Amount of resources budgeted;
  - e. Acceptance by person responsible for work; and
  - f. Agreement of other stakeholders (eg Scheduler, Functional Manager etc).

## **STEP 8: ACCUMULATE AND REPORT PERFORMANCE DATA**

### **Accounting**

3.26 **Requirement 1.** Interfaces between accounting systems and the EVMS SHALL be defined with resulting data reconciled and controlled.

### **Indirect Costs**

3.27 **Requirement 2.** A process SHALL exist, and be implemented, for recording, managing and recovering all INDIRECT COSTS which are allocated to the contract.

3.28 **Guidance.** It will not be sufficient to state that INDIRECT COSTS / overheads are allocated to the contract. Once INDIRECT COSTS are allocated to a contract they MAY be managed at the level, determined by the contractor, appropriate as needed for effective management control.

### **Direct Costs**

3.29 **Requirement 3.** DIRECT COSTS SHALL be recorded in a manner consistent with generally acceptable accounting principles.

3.30 **Requirement 4.** DIRECT COSTS SHALL be recorded in a manner consistent with the manner in which BUDGETS were planned.

3.31 **Guidance.** DIRECT COSTS SHOULD be derived from contractor accounting systems without the need to duplicate data. An EVMS SHOULD be using data from the financial tools for cost collection.

### **Material and Subcontractor Data**

3.32 **Requirement 5.** The contractor SHALL have defined processes to deal with progress to be claimed for commonly encountered items such as material and subcontractor effort.

3.33 **Requirement 6.** Recording and measuring the progress of material SHALL be no earlier than actual receipt and acceptance of the item by the contractor.

3.34 **Guidance.** Material and subcontractor PLANNED VALUE and EARNED VALUE SHOULD reflect events that reflect performance and achievement of outcomes not merely administrative or financial events (booking of costs or invoice payments). This aligns with the requirement to have objective measures (as per Step 5).

3.35 The purpose of defining processes is to ensure a consistent approach is taken throughout the EVMS. Contractors SHOULD consider the method of performance reporting that the Subcontractors are required to implement based on risk and the contractor's subcontractor management requirements.

## **STEP 9: ANALYSE PERFORMANCE DATA**

### **Data Analysis**

- 3.36 **Requirement 1.** The contractor SHALL explain variances between schedules and performance data within the EVMS.
- 3.37 **Requirement 2.** Variances associated with material items SHALL be analysed to distinguish between usage variances and price variances.
- 3.38 **Guidance.** As material frequently forms a significant portion of Defence projects, the need to track the performance is vital due to the impact it may have as time progresses. Material price variance is an essential element of material cost control. Price variance refers to that aspect of variation that is strictly related to a change in the costs of material.
- 3.39 Usage variance refers to the quantity of material used. To manage materials, the EVMS SHOULD be capable of tracking the cost of material usage, any resulting scrap or excess materials.

## **STEP 10: TAKE MANAGEMENT ACTION**

- 3.40 *Nil additional requirements.*

## **STEP 11: MAINTAIN THE BASELINE**

### **Baseline Control**

- 3.41 **Requirement 1.** SCOPE and BUDGET SHALL not be transferred independently of one another.
- 3.42 **Requirement 2.** Changes to the PMB SHALL be controlled and implemented in a timely manner to enable effective performance management.
- 3.43 **Guidance.** Controlling changes to the BASELINE is fundamental to ensuring that the PMB remains a sound reference point for performance management analysis. A BASELINE that is subject to continual fluctuations quickly becomes unusable for trend analysis and performance forecasts. Where identified SCOPE is transferred to another area for completion, the associated BUDGET must also be transferred to avoid distortion of the PMB.
- 3.44 Due to the importance of maintaining a valid BASELINE for performance management, changes need to be implemented in a systematic and timely manner. Failure to incorporate changes expeditiously will result in a meaningless BASELINE as the SCOPE of work will differ from actual work being undertaken.

### **Control of Future Effort**

- 3.45 **Requirement 3.** Time-phased BUDGETS SHALL be controlled to prevent the premature use of BUDGET planned and required for far-term effort.
- 3.46 **Requirement 4.** A process SHALL exist for rolling wave planning, including freeze periods, to enable management of PLANNING PACKAGES and the progression of WORK PACKAGES.
- 3.47 **Requirement 5.** PLANNING PACKAGES SHALL be converted into WORK PACKAGES prior to the current period.
- 3.48 **Requirement 6.** The SCOPE of the PLANNING PACKAGE SHALL not be altered without appropriate change control.
- 3.49 **Guidance.** PLANNING PACKAGES will only be necessary where all work cannot be planned in detail. Far term effort that is not yet planned in detail logically resides in a Planning Package. A Planning Package will contain BUDGET and schedule data but will not be broken into detailed WORK PACKAGES until the plan for that work becomes more defined.

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3.50 Rolling wave planning enables the identification and detailed planning of work SCOPE in PLANNING PACKAGES which are due to commence in the near term. This ensures that future work, which is not yet detail planned, is reviewed and planned in detail prior to the activities commencing.

### **Internal Replanning**

3.51 **Requirement 7.** No changes SHALL be made to an open WORK PACKAGE once EV, PV or AC has been allocated to it with the exception of administrative changes or reprogramming.

3.52 **Requirement 8.** INTERNAL REPLANNING SHALL not be used as an alternative to proper initial planning, nor SHALL it be used to mask variances.

3.53 **Guidance.** It may be necessary to perform INTERNAL REPLANNING actions within the SCOPE of the PROJECT BUDGET to compensate for problems which have caused the original plan to become unrealistic. Such replanning SHOULD be accomplished within the constraints of the existing CMS and BUDGET. The nature of WORK PACKAGES SHOULD result in short duration, detailed planned activities; as a result, changes to open WORK PACKAGES are undesirable due to the effect this has on reporting progress. Where it can be demonstrated that no distortion of progress has occurred or will occur in the future, replanning of future effort within open WORK PACKAGES may be necessary to reduce administrative burdens. This SHOULD not be routine and Defence will require visibility of the process should this be undertaken in this manner.

### **Reprogramming**

3.54 **Requirement 9.** Project Authority approval SHALL be sought prior to the implementation of a revised PMB which exceeds the PROJECT BUDGET.

3.55 **Requirement 10.** In the event that reprogramming is required:

3.56 PV and EV SHALL be set equal to AC to date;

3.57 the WORK PACKAGE SHALL be closed;

3.58 remaining BUDGET SHALL be transferred to MR or UB as appropriate; and

3.59 a new WORK PACKAGE SHALL be created for the remaining work SCOPE in accordance with the steps described in AS 4817.

3.60 **Guidance.** Situations may arise where available BUDGETS for the remaining work are insufficient. Under these circumstances performance measurement against existing BUDGETS becomes unrealistic. Replanning activities which result in a PMB which exceeds the available BUDGET (PROJECT BUDGET) are known as “reprogramming” and require Project Authority approval.

3.61 Thorough analysis of remaining work and progress to date SHOULD precede the implementation of a BUDGET in excess of the PROJECT BUDGET.

3.62 Approval to implement a revised PMB in excess of the PROJECT BUDGET in no way obligates the Project Authority to fund the revised PMB.

### **Logs**

3.63 **Requirement 11.** LOGS SHALL be maintained to enable traceability of changes occurring within the EVMS and to provide assurance of data integrity.

3.64 **Requirement 12.** As a minimum, changes to the PMB, UB, and MR SHALL be recorded in a LOG or LOGS.

3.65 **Guidance.** The purpose of the LOGS is to control and document all changes thereby enabling changes to be tracked. The types and number of LOGS will vary dependant on the complexity of the EVMS. It is possible to have one LOG to record and document all changes to the PMB, UB and MR. The LOGS SHOULD be an indexed chronological record of all transactions and indicate the reason for the change or link to the documentation detailing the change.

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**ANNEX A: CLARIFICATION – RELATIONSHIP BETWEEN DIFFERENT ELEMENTS**

1. This clarification is required due to confusion around the use of the word ACTIVITY in AS 4817 and its possible impact on the implementation of an EVM system that will meet Defence's requirements.
2. For any requirement listed in AS 4817, the term ACTIVITY is taken to mean WORK PACKAGE. The term ACTIVITY in this supplement refers to a sub-division of the WORK PACKAGE. The relationship diagram below illustrates the relationship between the CONTROL ACCOUNT, WORK PACKAGE and ACTIVITY.

CONTRACT PRICE		
PROJECT BUDGET		PROFIT/ MARGIN
PERFORMANCE MEASUREMENT BASELINE		MR
CONTROL ACCOUNT (DISTRIBUTED BUDGET)	UNDISTRIBUTED BUDGET	
WORK PACKAGES	PLANNING PACKAGES	
ACTIVITIES		