

## MILITARY STANDARD

MIL-STD-1567A  
NOTICE 1  
3 MAY 1986

## WORK MEASUREMENT

TO ALL HOLDERS OF MIL-STD-1567A:

1. THE FOLLOWING PAGES OF MIL-STD-1567A HAVE BEEN REVISED AND SUPERSEDE THE PAGES LISTED:

NEW PAGE	DATE	SUPERSEDED PAGE	DATE
iii	11 March 1983	Reprinted without change	
iv	3 May 1986	iv and v	11 March 1983
v and vi	3 May 1986	vi and vii	11 March 1983

2. INSERT THE ENCLOSED APPENDIX AFTER PAGE 8 OF MIL-STD-1567A.

3. RETAIN THIS NOTICE AND INSERT BEFORE TABLE OF CONTENTS.

4. Holders of MIL-STD-1567A will verify that page changes and additions indicated above have been entered. This notice page will be retained as a check sheet. This issuance, together with appended pages, is a separate publication. Each notice is to be retained by stocking points until the military standard is completely revised or canceled.

## Custodians:

Army - MI  
Navy - AS  
Air Force - 10  
Defense Logistics Agency - SE

## Preparing activity:

Air Force - 10

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Army - AL, AR, AT, AV, CE, CR, EA, ER, GL, ME, MR  
Navy - EC, SH, YD  
Air Force - 01, 11, 13, 14, 16, 18, 19

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## FOREWORD

The purpose of this standard is to assist in achieving increased discipline in contractors' work measurement programs with the objective of improved productivity and efficiency in contractor industrial operations. Experience has shown that excess manpower and lost time can be identified, reduced, and continued method improvements made regularly where work measurement programs have been implemented and conscientiously pursued.

Active support of the program by all affected levels of management, based on an appreciation of work measurement and its objectives, is vitally important. Work Measurement and the reporting of labor performance is not considered an end in itself but a means to more effective management. Understanding the implication inherent in the objectives of the work measurement program will promote realization of its full value. It is important that objectives be presented and clearly demonstrated to all personnel who will be closely associated with the program.

The following are benefits which can accrue as a result of the employment of a work measurement program.

- (a) Achieving greater output from a given amount of resources.
- (b) Obtaining lower unit cost at all levels of production because production is more efficient.
- (c) Reducing the amount of waste time in performing operations.
- (d) Reducing extra operations and the extra equipment needed to perform these operations.
- (e) Encouraging continued attention to methods and process analysis because of the necessity for achieving improved performance.
- (f) Improving the budgeting process and providing a basis for price estimating, including the development of Government Cost Estimates and should cost analyses.
- (g) Acting as a basis for planning for long-term manpower, equipment, and capital requirements.
- (h) Improving production control activities and delivery time estimation.

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(i) Focusing continual attention on cost reduction and cost control.

(j) Helping in the solution of layout and materials handling problems by providing accurate figures for planning and utilization of such equipment.

(k) Providing an objective and measured base from which management and labor can project piecework requirements, earnings and performance incentives.

Feedback on the success or difficulties encountered (benefits and costs) in the application of this standard on specific contracts is encouraged. Contractor/industry and Government experience should be forwarded to the address indicated on page 11.

Supersedes pages iv and v of 11 March 1983.

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WORK MEASUREMENT APPLICATION GUIDANCE

1. SCOPE

1.1 Purpose.

The purpose of this Appendix is to provide non-contractual information on when and how to apply MIL-STD-1567A, the source of and flexibility inherent within specific document requirements, the purpose and intent of certain requirements, and the extent of Government review and approval. The guidance is intended to promote consistency in application and interpretation of requirements and a better understanding of their source.

This appendix is for guidance only, does not contain requirements, and is not to be cited contractually. Section headings correspond to those in the basic standard. Feedback on the success or difficulties encountered (benefits and costs) in the application of this standard on specific contracts is encouraged. Government and contractor/industry experience should be forwarded to the address indicated on page ii of the basic standard.

A. Overview.

1. Work Measurement (as embodied in MIL-STD-1567A) is one of many tools available to DOD to reduce costs and increase productivity.

2. DOD is committed to using Work Measurement in a complementary fashion with its other productivity improvement efforts to reduce "total cost."

B. DOD Objectives in Applying MIL-STD-1567A.

1. DOD wants contractors to reduce systems and equipment costs by cost-effectively applying recognized industrial engineering techniques.

2. MIL-STD-1567A provides broad criteria which a disciplined, effective work measurement system should meet. These criteria include:

a. Establish the most cost-effective manufacturing method (paras 5.1, 5.2).

b. Set sufficiently accurate engineered labor standards to measure and improve direct manufacturing touch labor performance (paras 4.1.d, 5.1).

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c. Apply these engineered standards to 80 percent of the direct manufacturing touch labor hours. Apply estimated standards to the remaining work (para 5.4).

d. Measure the actual time and compare it to the standard time earned (paras 5.8.3, 5.13).

e. Analyze significant differences between the actual time and the standard time (the "variance") (para 5.13.1).

f. Set aggressive performance improvement goals (para 5.13).

g. Take appropriate corrective action to reduce variance and meet performance improvement goals (para 5.13.1).

h. Establish an effective methods improvement program to improve manufacturing operations and reduce standard hour content (para 4.1.e).

i. Maintain labor standards to reflect the current method (paras 4.1.d, 4.1.g, 5.11).

j. Use labor standard information to manage (i.e., budget, plan, schedule, estimate, measure performance) (paras 4.1.f, 5.8).

3. Provide reasonable government visibility into contractor performance so that the government can:

a. Use labor standard information to price and negotiate.

b. Encourage effective contractor methods improvement.

c. Encourage effective contractor variance analysis to improve performance.

d. Measure/evaluate contractor performance.

C. DOD Objectives in Issuing Application Guidance for Military Standard 1567A, Work Measurement.

1. This application guidance provides noncontractual information on when and how to use MIL-STD-1567A, the source of and flexibility inherent within specific document requirements, information on what is required to satisfy document requirements, and the extent of government review and approval. This application guidance is intended to help promote consistency in applying and interpreting MIL-STD-1567A requirements.

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2. Throughout the application guide, the emphasis will be on cost-effectively applying and interpreting MIL-STD-1567A provisions to improve manufacturing performance including acceptable product quality.

1.2 Applicability.

A. Except for thresholds identified in para 1.2.1 Subcontracting, financial application criteria established in MIL-STD-1567A are program (not contract) values based on the current Five Year Defense Program (FYDP) budget submissions. That is, the MIL-STD is intended to be applied via individual contracts within programs meeting the application criteria. Subcontract and/or subcontract modification financial thresholds are contract values.

B. However, it is DOD policy to ensure cost-effective specifications and standards are applied to each acquisition. Some circumstances may warrant departure from normal Standard application.

a. Unique program characteristics (for example, low volume or length of production, low level of touch labor).

b. Program phase (for example, too early, or too late to have meaningful impact).

C. It may sometimes be beneficial to apply MIL-STD-1567A via contracts for programs not meeting the application criteria (for example, in particular shipbuilding applications or to encourage consistent implementation throughout a factory). Such application should be considered on a case-by-case basis with particular emphasis on cost-effectiveness.

D. Normally a good work measurement system (especially the management information portion) is applicable to all programs. However, labor standards developed for some operations (for example, final assembly, or installation and check-out) even though they may be developed from standard time data applicable to all programs (para 3.13 and application guide para 5.4.1.A), may themselves be program-unique. Therefore, the government should be aware of the costs (both direct and indirect) of work measurement, and assure that the contractor is charging work measurement costs in accordance with the contractor's disclosure statement.

E. When incorporating MIL-STD-1567A without modification is not cost-effective and waiver or tailoring appear warranted:



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1. Contractors (prime or sub) may propose waiving or tailoring the Standard in response to an RFP, or as an alternate proposal to an RFP. Normally, the contractor or subcontractor will be asked to support the request with a cost/benefits analysis comparing recurring and nonrecurring costs with projected total cost (direct and indirect) avoidance. This information is critical when evaluating a waiver, and sometimes a tailoring, request.

2. Prime contractors should submit such requests (with supporting rationale described above) to the buying activity with a copy to the cognizant Contract Administration Office (CAO).

3. Subcontractors should send such requests to the prime contractor with a copy to the cognizant subcontractor CAO. If the prime contractor agrees, the request should be sent to the buying activity.

4. The buying activity will review the request in accordance with Service policy and advise the prime contractor of its decision as quickly as possible.

## 1.2.a

A. During full-scale acquisition program developments, emphasis should be placed on developing and implementing the technical and management tools, techniques, and processes necessary to support an effective work measurement system during production.

## 1.2.b

A. Generally, application of the MIL-STD to depot level maintenance, repair, and overhaul will be limited to those areas for which consistent unit-to-unit processes are expected. Unanticipated tasks which cannot be readily defined and quantified beforehand (for example, teardown/removal or fault analysis) will normally not be included since such activities are not repetitive at the elemental level of standards application.

B. Off-the-shelf commodities normally include items which have been developed and produced to military, federal, or commercial standards and specifications, are readily available for delivery from an industrial source, and can be procured without change to satisfy a military requirement. If delivery is delayed due to a manufacturer's backlog, the items are still considered to be "off-the-shelf." Off-the-shelf items include items stocked by distributors for which Government contracts may be received.

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1.2.c

A. Self-explanatory.

1.2.1 Subcontracting.

A. Prime contractors are responsible to see that their subcontractors comply with the requirements of MIL-STD-1567A when provisions are flowed down to such subcontractors. In some instances it may not be feasible or appropriate for a prime contractor to monitor subcontractor work measurement performance. In such instances, the prime contractor can ask the government (buying activity and/or CAO) to assist in this effort.

1.3 Contractual Intent.

A. Self-explanatory.

1.4 Corrective Actions.

A. Notice of Noncompliance. For purposes of this application guidance if a contractor fails to meet the requirements of MIL-STD-1567A or fails to properly manage subcontractor compliance to the MIL-STD, the government contracting officer should notify the contractor in writing of the non-compliance and ask for a corrective action plan. Any notification should identify all areas found deficient, cite the relevant section or paragraph in the standard, and include data substantiating the finding. The contractor or subcontractor should have sufficient opportunity to either provide data refuting the finding or to prepare and submit a corrective action plan. If the contractor or subcontractor fails to correct the deficiencies within a reasonable time, the government (or prime contractor, as appropriate) may disapprove the work measurement system and take action as permitted in the contract. (See application guide, ANNEX A, paragraph B., subpara (d)).

1.5 Documentation.

A. Self-explanatory.

2. REFERENCED DOCUMENTS

This section is not applicable to this appendix.

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## 3. DEFINITIONS

3.1 Actual Hours.

A. The unadjusted (actual) time charged by an operator, or group of operators, to accomplish an operation or task as covered by a Type I or Type II labor standard (i.e., measured work). It might not include time charges for "unmeasured" work (operations or tasks without labor time standards). It might not include actual time charges for work beyond the control of the operator(s) such as "idle" or "lost" time due to delays awaiting material, parts, or inspection, or machine downtime. Also, it might not include rework/repair/scrap due to engineering changes or vendor problems. It normally does include operator(s) time charges associated with rework/repair/scrap due to operator error.

3.2 Earned Hours.

A. Self-explanatory.

3.3 Labor Efficiency

A. Labor Efficiency % =  $\frac{\text{Earned Hours}}{\text{Actual Hours}} \times 100$

This is a measure of "operator" efficiency against a particular task or aggregation of tasks. Labor efficiency is not necessarily the inverse of "Realization Factor" (para 3.7). Realization Factor generally measures overall performance ("shop, product line, plant").

3.4 Methods Engineering.

A. Methods engineering is the function of selecting or adapting the most cost-effective process technologies to fulfill a given manufacturing (including quality) requirement. Generally, methods engineering studies should include a clear description of the work station/layout, the method to be employed, and the work unit under consideration. The method chosen serves as the basis for development of the touch labor standard (see para 3.10).

B. Methods engineering also includes those functions which attempt to improve existing processes or reduce existing work content. The result of such methods engineering is often called methods improvement.

C. For some contractors, development, adaptation, or design of new processes may be accomplished by functions other than industrial engineering. Selection of existing processes may also be accomplished by functions other than industrial engineering.

D. Methods engineering functions can be identified on an individual basis and may include the proper use or application of specific operations or processes determined by diverse functional organizations.

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E. Although other efforts, such as Suggestion Program, Zero Defects, Value Engineering, etc., provide a positive impact on methods, they are normally not an integral part of a contractor's methods engineering program/system. These efforts of and by themselves do not satisfy the methods engineering requirement.

### 3.5 Operation Analysis.

A. An operation analysis is a technique used to evaluate all productive and nonproductive elements of an operation with an emphasis on productivity improvement. The analysis could consider such factors as potential for design changes, production rate, and labor content. Each analysis should emphasize those areas which are most cost-effective.

B. Operations analysis should contain information for as many of the following areas as possible: (1) A description of the tools, workplace and any other physical conditions involved in the work; (2) A detailed description of what work is being done (including tasks that ensure product quality) and why it is accomplished in this manner (i.e., balancing cost with results); (3) A chronological sequencing of when events take place in the work cycle; (4) A description of how the worker applies himself to the tools, equipment or parts to accomplish the job; (5) The constraints on where the work is being done; (6) A description of who is doing the job (skills required, assembly, mechanic, helper, machinist, etc.).

C. The above analysis can be made using many techniques available to the trained labor standards engineer. These procedures will reveal to the analyst whether or not the optimum working conditions exist prior to developing the standard or standard data. It will also record existing conditions when the standard is developed. It will result in a record of all physical aspects of the task for audits and for updates when any working conditions change in the work place.

### 3.6 Predetermined Time System.

A. Self-explanatory.

### 3.7 Realization Factor.

A. Realization Factor =  $\frac{\text{Total Actual Hours}}{\text{Earned Hours}}$

Where "Total Actual Hours" include all manufacturing touch labor hours (reconcilable with payroll hours) associated with tasks represented by the "Earned Hours" in the denominator, including "lost time" or "idle time" accounts and/or "off standard" or "unmeasured" work (application guide paras 3.1.A, 3.14.C and 4.1.b.8). Realization Factor is generally a measure of overall performance ("shop, product line, plant"). Realization factor is not necessarily the inverse of "Labor Efficiency" (para 3.3). Labor Efficiency is used to measure "operator" performance against a particular task or aggregation of tasks.

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B. Realization Factors have also sometimes been characterized as performance, learning, or experience curve factors. When realization factors are used for budgeting or estimating purposes, the contractor should identify relationships and document assumptions and supporting rationale.

C. See para 5.9 for an additional discussion of Realization Factor.

### 3.8 Subcontract.

A. Self-explanatory.

### 3.9 Touch Labor

A. Self-explanatory.

### 3.10 Touch Labor Standard.

A. Touch labor standards are the foundation of the work measurement system. They represent the baseline from which performance should be measured. Consequently, touch labor standards, in and of themselves, should not contain elements of "inefficiency," "realization," or "variance". Touch labor standards may be modified by "realization factors" (or other inefficiency factors) for purposes of planning, budgeting, scheduling, or estimating. However, only unmodified touch labor standards should be used to evaluate performance (reference paras 3.3, 3.7, 5.8.3, 5.13, and 5.13.1).

### 3.11 Type I Engineered Labor Standards.

A. In certain circumstances, it may be appropriate to use work sampling to set Type I standards if required accuracy and confidence levels can be demonstrated. Those circumstances could include complex, extremely long cycle operations, or where specific tasks require a team of workers operating in a congested area.

### 3.12 Type II Labor Standard.

A. Type II Labor Standards are Touch Labor Standards (reference para 3.10) that predict the time an element or operation should take based on the best information that is available.

### 3.13 Standard Time Data.

A. Some examples of standard time data programs or systems include Defense Work Measurement Standard Time Data, predetermined time systems, contractor standard data.

### 3.14 Touch Labor Normal/Standard Time.

A. Personal allowance is a time value or percentage of time by which normal time is increased to allow for personal needs (for example, getting a drink of water, going to the restroom, washing hands).

B. Fatigue allowance is a time value or percentage of time by which normal time is increased to allow for a decrease in an operator's capacity to produce due to physical or mental fatigue.

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C. Unavoidable delay allowance is a time value or percentage of time by which normal time is increased to allow for unavoidable minor delays beyond the control of the operator. Other irregularly occurring or major delays are normally not absorbed by this supplemental allowance, but are charged in accordance with the contractor's overhead charging procedures. Such "lost time" or "idle time" (application guide para 3.1.A) accounts are normally monitored and evaluated separately.

D. DOD Document Standardization of Work Measurement (DOD 5010.15.1-M); Basic Volume, "General Guidance"; Appendix II, "Personal, Fatigue and Delay (PF&D) Allowances" provides information on how such allowances could be calculated.

E. Standard Time, when applied to a touch labor operation, becomes the Touch Labor Standard (reference para 3.10).

### 3.15 Operation.

A. Self-explanatory.

### 3.16 Element.

A. Self-explanatory.

## 4. GENERAL REQUIREMENTS

### 4.1 General.

#### 4.1.a

A. Reference paras 3.10 Touch Labor Standard, 3.14 Touch Labor Normal/Standard Time. The definition should state whether the touch labor standard time includes set-up time; personal, fatigue; and unavoidable delay allowances, or other such items. The definition should also describe how such items are applied to the touch labor standard time.

#### 4.1.b.

A. The work measurement plan is the written documentation which describes the contractor's work measurement system. The plan should describe how the contractor will comply with the General (para 4) and Specific (para 5) requirements of the Standard. If a review by the government or the contractor determines that the system does not comply with the requirements of MIL-STD-1567A (or such compliance as is contractually required), the plan will normally also include a time-phased milestone schedule to accomplish full compliance. The time-phased milestone schedule should recognize the status of the contractor's existing work measurement system and be mutually agreed to by the buying activity and the contractor.

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B. The work measurement plan should also discuss how "lost time" or "idle time" accounts (application guide paras 3.1.A and 3.14.C) and/or "off standard" or "unmeasured" work will be monitored, evaluated, and reported. Off standard" or "unmeasured" work is work which must be accomplished by touch labor personnel to support a particular task but which is not directly charged against that task (application guide para 3.1.A).

C. The work measurement plan should be consistent with the contractor's disclosure statement.

4.1.c

A. Self-explanatory.

4.1.d

A. Self-explanatory.

4.1.e

A. Methods improvements to improve operations and reduce work content is an integral part of a good work measurement system. An aggressive methods improvement program is of particular interest to the government because effective methods improvement can simultaneously reduce "variance" and standard hour work content. Periodically setting and achieving time-phased goals for significant standard hour content reduction are good indications of a disciplined and effective methods improvement program.

B. Normally, operations identified by variance reports or other sources will be cost-effectively considered and selected for methods improvement studies. Candidate operations could include those having a relatively high actual labor content, those with a history of shop floor discrepancies (including poor quality or production bottlenecks), or those independently identified by industrial engineers or manufacturing engineers as good candidates for significant standard hour content reduction.

C. All methods improvement studies which affect the touch labor standard should be documented and made available to the government for review upon request.

4.1.f

A. Self-explanatory.

4.1.g

A. Self-explanatory.



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## 5. SPECIFIC REQUIREMENTS

5.1 Type I Engineered Labor Standards.

A. To demonstrate compliance to this paragraph, all standard data (plus a record of revisions and audits pertaining to the data) should be retained by the organization which developed the data. Specific documentation requirements should be limited to those necessary for the contractor or government to have reasonable confidence that recognized industrial engineering techniques have been correctly applied in a consistent and accurate manner. If supporting documentation is not available for systems established prior to the application of this standard, a statistically valid sampling approach may be used to attempt to "reconstruct" the labor standards. If such reconstruction confirms the accuracy of existing labor standards, no additional documentation will be required for those labor standards from which the sample was selected.

B. As used in the Standard, "accuracy" is intended to mean the degree of correctness or exactness of labor standard operations. Normally, the degree of accuracy is determined by comparing the average time of a statistically valid sample of measurements with the proposed labor standard. Proper use and application of appropriate predetermined time systems can be assumed to satisfy Government requirements for system accuracy.

## 5.1.a

A. The contractor should be prepared to provide evidence that cost-effective operations analysis was performed. Video tapes or computer-aided-design/computer-aided-manufacturing (CAD/CAM) displays may be used to supplement or replace documentation as appropriate (see application guide para 3.5).

## 5.1.b

A. Two ways (others may also be appropriate) in which standard practice or method could be demonstrated are:

1. A separate method sheet could be provided which includes all elements of the operation to be performed, in sequence, with all tooling and material requirements identified.

2. An elemental breakdown could be provided adjacent to the cycle times. With predetermined time systems, the elements may be further broken down into basic movements opposite the resulting times.

B. Introduction of new technology or new or modified equipment will almost always impact the original labor time standard. When this happens, elements of the time standard should be revised or deleted. Revisions to the original labor time standard should be traceable to, and a part of, standard data documentation.

## 5.1.c

A. A predetermined time system assigns a pre-established time value (which does not permit interpretation by analysts) to each basic motion encountered. Rating or leveling of this data is not necessary.



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B. If time studies are used to develop labor standards, an appropriate performance rating system should be used. The person doing the rating should be skilled and well-trained in the application of whatever system is utilized. Training devices such as films or video tapes should be used to improve proficiency. The contractor should record and retain a schedule of training and the results of practice ratings for each engineer who uses time studies to develop labor standards. The observer should record the performance of the operator studied in order to determine how the allowed time was calculated.

## 5.1.d

A. The computations necessary to develop the standard should be included with the back-up data for developing a standard. These should be available for audit purposes by contractor and by the government.

## 5.1.e

A. Self-explanatory.

5.1.1 Predetermined Time Systems.

A. A standard data package with its supporting information should contain concise, complete data on the conditions and method employed. Demonstration of standard data development is not difficult if an audit trail is included in the package. Check studies in the standard data (to determine if all elements have been addressed) should also normally be a part of each package. Check studies are normally a part of the contractor's internal audit verifying accuracy and (if available) should be provided to the government for review, upon request.

5.2 Operations Analysis.

A. Self-explanatory - (See application guide, para 3.5)

5.3 Standard Data.

A. Self-explanatory.

5.4 Labor Standards Coverage.

A. Labor standards coverage is defined as total Type I standard labor hours divided by the total of all Type I, Type II, and estimated "unmeasured" or "off-standard" touch labor hours (application guide paras 4.1.a and 4.1.b.B). Because of the speed with which Type II Standards can be set, the Work Measurement Coverage Plan should emphasize methods improvements and setting Type I Standards.

B. For Contracts in the Conceptual or Validation Phase. If it is anticipated that the Full Scale Development (FSD) and/or Production phase(s) of the program will require implementation of the Standard, the contractor may be asked in the Conceptual or Validation Phase to describe his existing work measurement system, and, if it does not comply with the provisions of MIL-STD-1567A, how and when he will meet the requirements of the Standard. Touch Labor Standards are normally not necessary during this phase. See application guide, Annex A, paragraph A, for sample contract language.

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C. For Full Scale Development (FSD) Program Contracts. It is the government's intent that work measurement information be developed and used to the maximum extent feasible during this phase. The sample contract language contained in Annex A, Paragraph B, requires the contractor to establish, maintain, and use a work measurement system meeting the criteria of MIL-STD-1567A in this and subsequent phases.

During FSD, if the contractor does not already have a fully compliant work measurement system or if the design and manufacturing processes have not stabilized, the contractor should propose and describe the work measurement system to be used including the type of labor standards he proposes to develop. Subcontractor applicability should be carefully addressed. The contractor should also provide a time-phased plan (that may extend beyond the period of performance of the contract) to bring the systems into compliance with the provisions of MIL-STD-1567A. Converting Type II standards to Type I standards as production drawings and specifications are released (or earlier in an intensive CAD/CAM environment) is an example of a possible phasing schedule. Government negotiation and acceptance of this plan will constitute the basis of contractual requirements. One tradeoff the Government should consider is how it may expect to use work measurement information in the negotiation or decision processes for subsequent phases versus the cost of generating such information in certain forms or at specific maturity levels. The program manager has authority and responsibility for final definition of requirements in this phase.

D. For Production Contracts. Type I standards should be applied to 80 percent of touch labor hours in accordance with the previously agreed to schedule (application guide para 4.1.b.A). See Annex A, paragraph B, for sample contract language.

#### 5.4.1 Cost Trade-Off Analysis.

A. Since the standard time data approach is generally a cost-effective work measurement technique with which to develop Type I standards, the Work Measurement Coverage Plan should emphasize the development and use of standard time data.

#### 5.4.2 Initial Coverage.

A. Self-explanatory.

#### 5.4.3 Upgrading.

A. Self-explanatory.

#### 5.5 Leveling/Performance Rating.

A. Rating is necessary in time studies to attain a leveled or normal time. The rating technique, how it is applied, and analyst training should be demonstrated (reference application guide paras 5.1.c.A and 5.1.c.B). Maintaining consistency among analysts should be emphasized.

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**5.6 Allowances.**

A. Personal, Fatigue, and Unavoidable Delay (PF&D) allowances should be developed for each standard. Each element of PF&D should be rationally justified and documented. PF&D allowances should not be overlooked as a potential area for improvement. (DOD 5010.15.1-M, Basic Volume, Appendix II, contains information on how PF&D allowances could be calculated.)

**5.7 Estimating.**

A. As stated in application guide paragraph 1.1.B.3.a, this is an area of emphasis to the government in keeping with its intention to use labor standard information to price and negotiate.

**5.8 Use of Labor Standards.**

A. The government applies MIL-STD-1567A to encourage contractors to reduce costs by cost-effectively using recognized industrial engineering techniques. Therefore, the contractor should use work measurement data to the fullest extent possible consistent with good management practices.

**5.8.1 Budgets, Plans, and Schedules.**

A. Self-explanatory.

**5.8.2 Touch Labor Hours.**

A. As stated in application guide para 5.7, the use of labor standards in estimating is an area of emphasis to the government. The government intends to require labor standards to be used as the basis for estimating touch labor hours for changes to contracts, initial and replenishment spares, and follow-on production buys, when such standards are available.

B. Since the design and/or manufacturing processes may not be stable during development or prior to initial production, touch labor standards may not be available for estimates associated with such efforts. This is why MIL-STD-1567A specifies labor standards are to be used for estimating "...follow-on production buys, when available."

C. Labor standards may be adjusted by a realization factor to arrive at a projected unit value. (See application guide para 5.9.C for a discussion of realization factor elements to be identified and analyzed.) Appropriate improvement curves may be selected and applied. The realization factor and corresponding improvement curve should be selected giving due consideration to appropriate factors such as the program environment (including design stability), the configuration baseline, past inefficiencies which have been, or should be, corrected, anticipated methods and process changes (including expected performance increases due to methods improvement and variance reduction), concurrency of design and production, and working conditions.

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**5.8.3 Measuring Performance.**

A. Performance measurement is another area of emphasis to the government. Consequently, touch labor performance should be measured at the work center/department level and summarized and reported at higher levels meaningful to a company's organizational structure. This reporting summary should complement monitoring, analyzing, and improving performance in accordance with pre-established contractor improvement goals.

B. Although work measurement systems are generally process--not product--oriented, the government is primarily interested in cost-effectively acquiring end items (a "product" whether it be a spare part, component, or system). Therefore, contractors should summarize performance to the end item (or other selected production count work unit) level when requested to do so by the government. Such performance is usually summarized as labor hours (total actual, actual or earned standard) per "equivalent" unit; or per completed unit. If "equivalent units" are used, they should be calculated as described in para 5.12.1.A of this guide. The use of equivalent units minimizes the impact of "lag" time between manufacture of piece parts, subsystems, or components, and completion/acceptance of end items. However, unless "fabrication" and "assembly" tasks are proceeding proportionately, equivalent unit reporting could "skew" performance indications and present a misleading picture of current performance. This is because fabrication operations generally experience a higher labor efficiency (para 3.3) and a lower realization factor (para 3.7) than assembly operations. If there is a temporary preponderance of either fabrication or assembly work during a particular reporting period, performance indicators may be "biased" toward either fabrication or assembly.

C. Performance should be measured as either labor efficiency (para 3.3) or realization factor (para 3.7).

D. If labor efficiency is chosen as the performance measurement unit, "lost time" or "idle time" accounts as discussed in application guide para 3.14.C and/or "off standard" or "unmeasured" work should be monitored, evaluated, and reported separately in accordance with the contractor's work measurement plan and supporting procedures (application guide para 4.1.b.8). (See also application guide para 3.1.A).

**5.9 Realization Factor.**

A. Elements of the realization factor should be identified and quantified in sufficient detail to permit a reasonable "...analysis supporting each element..."

The word "identified" is intended to imply more than a "listing" of realization factor elements. If the elements of the realization factor were simply "listed," the required "...analysis supporting element..." would not be possible.

B. This is also an area of government emphasis since realization factors must be described in sufficient detail to permit the government to use work measurement data (for example, labor standards modified by realization factors) in a should cost approach to pricing and negotiating contracts.

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C. Typical elements of realization could include "learning" (such as familiarization and instruction in reading engineering drawings and operation sheets, and in using the appropriate method); "technical" (such items as engineering changes, design errors, fit problems, operation sheet errors, tooling errors, sequencing errors, manufacturing/design engineering coordination, and scrap/rework/repair/reinspection); "logistics" (such items as incorrect hardware, part shortages, and waiting for inspection); and "miscellaneous" items such as excessive overtime and/or fatigue (beyond that included in the basic touch labor standard). The significance of individual elements often varies depending on program environment characteristics such as design stability, production process maturity, and operation complexity. The elements should be identified and analyzed at an organizational level consistent with the cost effective gathering of supporting data while also keeping in mind the impact of realization factors in performance measurement, and planning, budgeting, scheduling, and estimating.

D. Setting and achieving aggressive goals for reducing realization factors beyond historical "improvement curve" effects will be a prime factor in government review of contractor performance. Achieving aggressive performance goals is an excellent indicator of contractor compliance to MIL-STD-1567A provisions.

#### 5.10 Labor Efficiency.

A. Setting and achieving aggressive labor efficiency improvement goals (beyond historical "improvement curve" effects) will be viewed by the government as an excellent indicator of contractor compliance to MIL-STD-1567A provisions.

#### 5.11 Revisions.

A. Other circumstances (for example, worker or supervisor statements) may also indicate labor standards should be reviewed.

#### 5.12 Production Count.

A. Work unit production count during a specified period is of importance primarily for purposes of monitoring, evaluating, and forecasting contractor performance. Therefore, the contractor should make available to the government (upon request) the count of the total and/or equivalent number of end items completed during a specific time period.

B. Cost effectiveness, and consistent and accurate results, should be considered when selecting the production count work unit.

##### 5.12.1 Partial Credit.

A. One method of determining partial credit could be to estimate the "equivalent work units" produced. This could be calculated by dividing the "Earned Hours" (para 3.2) during a specified period for a selected work unit by the total "Touch Labor Standards" (para 3.10) associated with that same work unit. Other methods of determining partial credit for work-in-process may also be appropriate.

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**5.13 Labor Performance Reporting.**

A. Performance reporting should include labor efficiency (para 3.3) or realization factor (para 3.7). If labor efficiency is chosen as the unit with which to report performance, "lost time" or "idle time" accounts and/or any "off standard" or "unmeasured" work (application guide paras 3.1.A, 3.14.C, 4.1.b.B and 5.8.3.D) not included in "labor efficiency" should also be reported.

B. Aggressive performance improvement goals (both for standard hour reduction and for variance improvements) should be established at organizational levels consistent with those levels at which performance is measured (application guidance para 5.8.3). These goals should be summarized at the end item (or other selected production count work unit) level, and made available to the government upon request.

C. The government and the contractor are encouraged to come to an agreement on specific goals and the organizational level(s) at which they will be measured. These levels could be the work center, budget center, end item, or other level mutually agreed to. Achievement of such goals would then be considered to demonstrate contractor compliance to MIL-STD-1567A requirements associated with method/process improvements, performance reporting, and variance analysis/corrective action. This procedure minimizes the need for additional government review of contractor performance in these areas.

**5.13.1 Variance Analysis.**

A. The contractor's work measurement documentation should describe when a variance analysis should occur. Thresholds which trigger a variance analysis should be related to pre-established goals at organizational levels such that cost-effective analysis will be accomplished. It is not the intent of the Standard to require an analysis for every operation which may have exceeded the labor standard. Analysis and corrective action may be directed to any organizational level and may be based on trends.

B. Meeting pre-established goals will be considered to demonstrate that appropriate and effective variance analyses are being conducted.

**5.13.2 Report Retention.**

A. Self-explanatory.

**5.14 System Audit.**

A. Audit Procedures. The purpose of the function of audit is to: (1) determine or find facts, and (2) to evaluate whether the facts indicate that there is a significant adverse effect on the work measurement system. The audit should be written and indicate whether a corrective action is required and if it was in fact implemented. The contractor should determine priorities for corrective action and should implement required corrective actions as expeditiously and cost-effectively as possible.



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**B. Audit Techniques.** Audit techniques should be employed based upon the following major principles:

1. Sound industrial engineering practices and techniques.
2. A statistically valid sample.
3. Independent audits should be performed only by engineers and specialists thoroughly familiar with, and trained in the use of, Industrial Engineering Work Measurement practices and techniques. Proper assignment of this function is the contractor's responsibility.
4. Audits may be performed throughout the year. A single comprehensive annual audit is not required. However, audit requirements identified in para 5.14.1 must be completed at least once per year.
5. For some contractors with extensive computer systems and systems interfaces for work measurement, some functions of audit may be performed by monitoring exception reports for exactness and consistency. This provides continuous surveillance. The contractor should describe how this procedure merges with his overall audit program. In these situations (continuous audit) written analysis is not necessarily required, nor is written corrective action, although it may in some instances be appropriate.
6. In some situations (such as for audits of the payroll or inventory systems) touch labor audits may be performed by other than the work measurement unit.

**C.** Cognizant CAO representatives will review the contractor's audit during review periods mutually agreed upon. It is advisable for the government representatives to work with the contractor personnel during the contractor audit of the work measurement system.

**D.** Buying activities may request an audit of portions of the system. Normally, such an audit will be performed during the mutually agreed to review period described in application guide para 5.14.C, above. At their option the buying activity may assist the CAO in performing this effort.

#### 5.14.1 Scope of Audit.

##### 5.14.1.a

**A.** The contractor's audit program should differentiate between audit of the basic developed labor standard (which may be defined as standard data); and the application of the developed data to planning paper (which describes the processing required for manufacture).

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1. The principal purpose of auditing developed standard data is to determine if significant changes have taken place since the standard was first developed or since its last review. This can only be accomplished by comparing the present method in use on the floor with the method which was documented during the last development/review. Auditing may employ a sampling approach or may be generally focused depending on the needs and requirements of the contractor and on sound industrial engineering techniques and practices.

2. The principal purpose of auditing applied standard data is to determine consistency and accuracy of application. The audit must determine whether the standard on the planning paper is consistent with its rules of application. A sampling approach may be employed, but must be demonstrated to be statistically valid. Operations may be grouped into super operations per para 5.1 of the Standard.

## 5.14.1.b

A. Self-explanatory.

## 5.14.1.c

A. Self-explanatory.

## 5.14.1.d

A. Self-explanatory.

## 5.14.1.e

A. The CAO will selectively review systems and procedures, will audit compliance with the requirements of this standard, and will report findings to all other government agencies or representatives.

## 5.14.1.f

A. Self-explanatory.

## 5.14.1.g

A. Self-explanatory.

5.14.2 Audit Reports.

A. Self-explanatory.

ANNEX A

A. Sample Contract Language for Contracts in the Conceptual or Validation Phase. Insert the following provisions (see related section 5.4.B of this guidance):



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**"Notice of Work Measurement System":** The contractor shall: (1) describe his existing work measurement system, and (2) provide a time-phased plan to bring into compliance those areas where his work measurement system does not meet the requirements of DOD MIL-STD-1567A, Work Measurement. The time-phased plan will be mutually agreed to by the government and the contractor, and may extend beyond the period of performance of this contract. If the contractor is operating a work measurement system which has been previously accepted by the government, evidence of such may be submitted to demonstrate compliance for the contract in question. If the contractor does not have a work measurement system, the proposal will describe how and when the requirements of DOD MIL-STD-1567A will be met.

**B. Sample Contract Language for Full Scale Development and Production Contracts.** Insert the following (see related sections 5.4.C and 5.4.D of this guidance):

Work Measurement Systems:

"(a) The contractor shall establish, maintain, and use in the performance of his contract, a work measurement system meeting the criteria of DOD MIL-STD-1567A, Work Measurement. If the contractor does not have a previously accepted work measurement system, compliance to the requirements of DOD MIL-STD-1567A as represented in the contractor's phasing plan will be mutually agreed upon between the contractor and the buying activity. As part of the acceptance procedure, the contractor shall make available to the government a description of the work measurement system applicable to this contract in such form and detail as indicated in DOD MIL-STD-1567A or as mutually agreed to by the government and the contractor. The audit of the contractor's Work Measurement System will assure compliance to the requirements of DOD MIL-STD-1567A.

(b) The contractor shall incorporate DOD MIL-STD-1567A in each subcontract which meets the criteria set forth in DOD MIL-STD-1567A. The contractor shall incorporate in the subcontract adequate provisions for demonstrations, review, acceptance, and surveillance of the subcontractor's system. The assessment for subcontractor compliance to the requirements of DOD MIL-STD-1567A will be the responsibility of the contractor unless otherwise mutually agreed to between the government and the contractor. Documented evidence of compliance by the subcontractor will be made available to the government upon request.

(c) If the contractor or subcontractor is operating a work measurement system that has been previously accepted, evidence of such may be submitted in lieu of demonstration and review described above.

(d) Maintenance of a work measurement system in compliance with DOD MIL-STD-1567A constitutes a "material requirement of the contract" within the meaning of paragraph (c)(1) of the FAR 52.232-16 Progress Payments Clauses. The parties must agree that, for progress payments clause administration purposes, a predetermined percent of the contract value for maintaining an acceptable work measurement system will be negotiated.