AD-A142 321 INSPECTION AND QUALITY ASSURANCE IN GOVERNMENT CONTRACTS(U) AIR FORCE INST OF TECH WRIGHT-PATTERSON AFB OH C R PENNINGTON 1983 AFIT/CI/NR-84-8T 1/3

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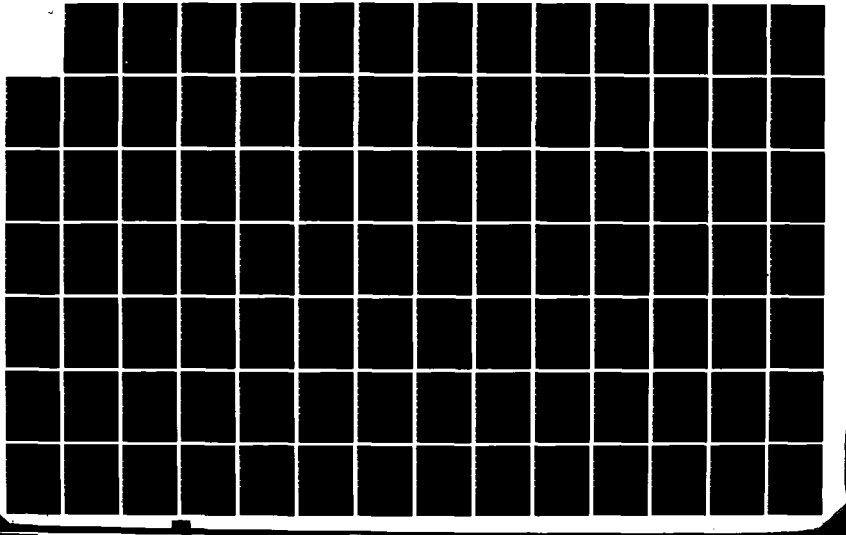

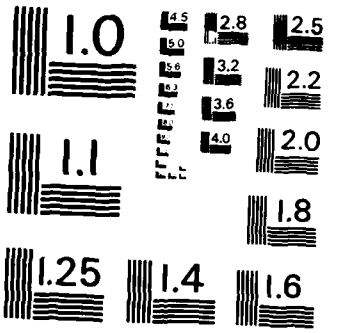

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READ INSTRUCTIONS BEFORE COMPLETING FORM

1. AFIT/CI/NR 84-8T	2. GOVT ACCESSION NO. / 3. RECIPIENT'S CATALOG NUMBER
4. TITLE (and Subtitle) Inspection and Quality Assurance in Government Contracts	5. TYPE OF REPORT & PERIOD COVERED THESIS/DISSERTATION
	6. PERFORMING ORG. REPORT NUMBER
7. AUTHOR(s) Clarence Richard Pennington	8. CONTRACT OR GRANT NUMBER(s)
9. PERFORMING ORGANIZATION NAME AND ADDRESS AFIT STUDENT AT: The George Washington University	10. PROGRAM ELEMENT, PROJECT, TASK AREA & WORK UNIT NUMBERS
11. CONTROLLING OFFICE NAME AND ADDRESS AFIT/NR WPAFB OH 45433	12. REPORT DATE 1983 / 13. NUMBER OF PAGES 253
14. MONITORING AGENCY NAME & ADDRESS(if different from Controlling Office)	15. SECURITY CLASS. (of this report) UNCLASS / 15a. DECLASSIFICATION/DOWNGRADING SCHEDULE

16. DISTRIBUTION STATEMENT (of this Report)

APPROVED FOR PUBLIC RELEASE; DISTRIBUTION UNLIMITED

JUN 2 1 1984

A

17. DISTRIBUTION STATEMENT (of the abstract entered in Block 20, if different from Report)

18. SUPPLEMENTARY NOTES

APPROVED FOR PUBLIC RELEASE: IAW AFR 190-17

LYNN E. WOLAVER
Dean for Research and
Professional Development
AFIT, Wright-Patterson AFB OH

19. KEY WORDS (Continue on reverse side if necessary and identify by block number)

20. ABSTRACT (Continue on reverse side if necessary and identify by block number)

ATTACHED

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DD FORM 1 JAN 73 1473 EDITION OF 1 NOV 65 IS OBSOLETE

UNCLASS

SECURITY CLASSIFICATION OF THIS PAGE (When Data Entered)

THESIS EXTRACT

Title: Inspection and Quality Assurance in Government Contracts

Author: Clarence Richard Pennington
Major USAF

Date: 1983

Pages: 253

Degree: Masters of Laws (L.L.M.) in Government Procurement Law

Institution: The George Washington University

Bibliography:

Federal Court Decisions
Court of Claims Decisions
Defense Acquisition Regulations
NASA Procurement Regulations
Federal Procurement Regulations
Standard Military Specifications on Sampling and Quality Assurance
Assorted GSA and DOD Inspection/Quality Assurance Regulations and Handbooks

Summary: The paper analyzes the regulatory provisions and substantive rules which define the limits on and propriety of Government inspection and quality assurance. The limits on the location, time, and manner of Government inspection are discussed. Emphasis is on the ability of the Government to change the inspection location and liability for interference and hindrance caused by Government inspection practices. Chapter II evaluates the substantive rules which assess propriety of inspection and tests as determinants of contract compliance. The analysis covers specified and unspecified inspections and tests. The relationship between inspections and contract requirements are discussed, and the reasonableness of inspection is

evaluated in the context of varying degrees of inspection subjectivity. In Chapter III, the interference and propriety analysis is applied to the special problems of sampling and verification inspections. In Chapter IV, the allocation of the costs and responsibilities of inspection is discussed, with emphasis on the Government duty to inspect and cooperate with the contractor. There is substantial discussion about Government liability where it apparently knows about defective performance. Finally, the paper concludes with an analysis of contractor quality assurance responsibilities, with emphasis on contractor responsibility for inspection, testing, and quality system implementation. The paper concludes with a brief discussion of Government remedies for contractor quality system failures. The Appendices to the paper include standard inspection clauses, standard quality system specifications, sampling specifications, and Navy and Army construction contract quality programs.

Inspection and Quality Assurance in Government Contracts

By

Clarence Richard Pennington
B.S. June 1972, U.S. Air Force Academy
J.D. June 1979, University of Denver

A Thesis submitted to
The Faculty of

The National Law Center
of The George Washington University in partial satisfaction
of the requirements for the degree of Master of Laws

September 30, 1983

Thesis directed by
Ralph Clarke Nash, Jr.
Professor of Law

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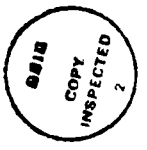

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INTRODUCTION

The purpose of this paper is to analyze the substantive rules which relate to the problems of inspection and quality assurance. The analysis will be limited to inspection in firm, fixed price contracts. Because it was necessary to limit the scope of this paper, and because of the nature of the contracts generally treated in the decisions, only supply, construction, and service contracts will be considered.

The emphasis of the analysis will be on the substantive rules themselves. While a certain amount of description of the inspection processes is necessary in order to understand the issues and the cases, there are simply too many methods of quality assurance used by the agencies to enable a complete description. Some areas will recieve more discussion than others, though. For example, sampling inspection has posed quite a problem in the past, and the specification that is commonly used, MIL-STD-105D, will be discussed. Similarly, the agency policies on surveillance and verification will be described, as will the contractor inspection system provisions which are commonly used.

There have had to be other limits to this analysis. It is difficult to write about this area without touching almost all of the substantive areas. For example, pre-award surveys are an important initial step in assuring the quality of a product, but contractor responsibility will not be covered.

Nor will this paper be concerned with the issues involved in first article testing, although some of those cases are useful in determining the propriety of Government inspections.

There are some other important issues which involve inspection but are beyond the scope of this analysis. One of the most substantial involves the question of what can be done with the inspection results even assuming they appropriately evaluate the work. There are substantive limits on the rejection of work which is close to meeting the contract requirements. In construction contracts, this is known as the substantial performance doctrine.[1] In supply contracts, there may be a limit on the right to default terminate where a contractor has timely delivered goods which it believes are acceptable but which are defective in certain minor respects. This Radiation Technology[2] doctrine is also a limit on Government rights after inspection, but it will not be analyzed here. Nor will the apparent rule which has similar effect in service contracts.[3]

One final qualification which should be made relates to the inspector authority issue. Where a contractor is arguing that the Government has changed the contract through the acts of an inspector, the Government invariably makes authority an issue. The problem will be discussed only peripherally in Chapter V.

What will be discussed are the liabilities arising from the inspection process itself. When the Government chooses to conduct the inspection in a certain way, and the contractor's

costs increase above what was expected when a bid or proposal was prepared, there are often claims against the Government for having constructively changed the contract. Chapter I will evaluate the rules which appear to limit the Government's broad right to inspect at all times and places. The Government designates the place where inspection will take place, and the effect of those designations on the Government's right to inspect at other places will be evaluated. Also, the standard inspection clauses require the Government inspect so the contractor is not unduly or unnecessarily delayed. The rule in these cases has been defined as one of reasonableness; Chapter I will analyze the considerations in the determination of whether the contractor was unreasonably delayed.

In Chapter II, the focus will shift to the ability of the Government inspection to measure the contractor's compliance with the contract. Under the inspection clause, the Government has the right to reject defective work, and the inspection is used to determine whether the work complies with the contract. If the inspection method imposes requirements in excess of those in the contract, or if the inspection or test is otherwise unreasonable, the rejection may be invalid. The rules with respect to the validity of inspection or testing vary depending on whether there are specified or unspecified inspection methods in the contract, and on the degree of subjectivity involved.

Chapter III will evaluate the rules relating to sampling inspection. There are special problems whenever the Government

rejects work based on an examination of only a portion of it. MIL-STD-105D, which is the standard sampling specification commonly used, will also be discussed.

In the latter half of Chapter III, Government verification inspections in supply contracts will be discussed. There has been some recent confusion about the conditions under which the Government can loosen and tighten its inspection practices when it has chosen not to conduct full acceptance testing and to rely on contractor quality control instead. The issues involved are an extension of the delay issues discussed in Chapter I, but the existence of specific agency procedures and policies warrant their separate discussion. Chapter III was an appropriate place for the analysis because there has been confusion about the effect of sampling specifications on the ability of the Government to tighten its verification inspection procedure.

In the final two chapters, the focus once again shifts. Chapter IV will evaluate the allocation of the costs of Government inspection and testing. The chapter will conclude with an examination of the duties that the Government assumes during quality assurance, considering the commonly repeated statement that Government inspection is for its own benefit and does not relieve the contractor of obligations under the contract.

Finally, Chapter V will evaluate the obligation of the contractor to conduct testing. The chapter will also analyze the contractor's inspection system obligation under the

standard inspection clause, as well as under the supplemental quality control provisions which the agencies use on more complicated supply and construction contracts. The chapter will end with a discussion of the remedies which the Government has when the contractor inspection systems fail, or the contractor does not perform specific quality control responsibilities.

As can be seen from this introduction, the emphasis will not be on the remedial provisions in the inspection clauses. In a way, this analysis stops at a point just short of rejection, and the procedural aspects of rejection and termination for default will not be analyzed. Consistent with that limitation on scope, the post-acceptance rights of the Government will also be left out of the analysis. To put the scope of this paper as briefly as possible, it will be concerned with the propriety of inspection and testing and the allocation of the responsibilities of inspection and its costs. Of course, to a certain extent the discussion has to be done in the context of liabilities for failure to meet the duties which exist.

The current inspection clauses which are used in fixed price supply, construction, and service contracts are reproduced in Appendix A. In doing research in this area, one has the luxury of consistency in the contract language which has been used. The current version of the clause used in Department of Defense supply contracts has been the same for twenty-five years. In fact, there is a reported case which

reproduces the 1949 version of the supply contract inspection clause; it is almost identical.[4]

The language in construction contracts has slowly evolved, however. The contractor inspection system requirement, used in some Department of Defense construction contracts, was added in 1961.[5] In 1976, there was a revision of the clause which clarified the right of the Government to charge the costs of reinspection made necessary by a prior rejection.[6] There has also been a change in the language relating to the effect of inspection of materials before delivery to the site; that change is discussed in Chapter I. Otherwise, the language which is pertinent to this analysis has been the same.

Considering this constancy in the language, one final note is in order before beginning the substantive discussion. A recurring theme throughout the decisions is the need to assess the objective expectations of parties to these kinds of contracts. Sometimes it seems from the decisions that terms like "reasonableness" take on a separate life of their own, and they appear to mask an intuitive decision by the court or board about the propriety of Government inspection activity. However, most of the rules make sense if the analysis is done with one eye on what the parties could reasonably have expected when they entered the transaction. From that perspective, what is reasonable in terms of interference with the contractor's performance involves different considerations than does the reasonableness of

an inspection or test in relation to its ability to measure the contractor's compliance or noncompliance with contract requirements. An attempt has been made throughout this paper to return to that fundamental approach where possible.

Apparently neither the nature of the issues nor their analysis is going to change in the foreseeable future. The proposed Federal Acquisition Regulation inspection clauses have been included in the Appendix B, but they have received little attention in this paper. That is because they change very little. The clauses are basically an adoption of the Department of Defense contract provisions as they existed before the November 1982 revision of the supply inspection clause. In fact, the FAR fixed price, supply inspection clause really only adds a requirement that the contractor furnish the Government advance notice when it tests and when supplies are ready for inspection. That may have an impact on the delay issues discussed in Chapter I.[7] The construction contract Inspection and Acceptance clause combines several DAR clauses, including the Contractor Inspection System and Government Inspectors clauses.[8] What this means is an expansion of uncertainty about the meaning and effect of the standard inspection system provision to other federal agency contracts;[9] only the DAR had the requirement before. The FAR proposals also have a clause which is very similar to to DAR Responsibility for Inspection clause,[10] and the scheme for use of advanced quality control requirements is the same.[11] For these reasons, the issues analyzed in this paper will remain important.

INTRODUCTION FOOTNOTES

[1] See H.L.C. & Associates Constr. Co. v. United States, 176 Ct. Cl. 285, 367 F.2d 586 (1966).

[2] 177 Ct. Cl. 227, 366 F.2d 1003 (1966).

[3] See, e.g., San Antonio Constr. Co., ASBCA 8110, 1964 B.C.A. ¶ 4479 (1964).

[4] Winder Aircraft Corp. v. United States, 188 Ct. Cl. 799,809, 412 F.2d 1270 (1969).

[5] ASPR Revision 6, 15 November 1961.

[6] Defense Procurement Circular 76-5, 15 October 1976.

[7] See pp 17-21.

[8] DAR ¶ 7-602.10; DAR ¶ 7-602.43.

[9] See p 164ff.

[10] Compare FAR ¶ 52.246-1, Contractor Inspection Responsibility, and DAR ¶7-103.24.

[11] FAR ¶ 46.202. The FAR bases the choice of quality system or clause on the complexity or criticality of the item procured, as does the DAR. The FAR accomodates, however, all of the different agency quality programs. See the description at pp 172ff of the different quality programs used in supply contracts.

CHAPTER I

LIMITS ON THE LOCATION, TIME, AND MANNER OF GOVERNMENT INSPECTION

All of the inspection clauses give the Government broad rights to inspect supplies and services. In fixed price supply contracts, the Government is given the right to inspect "all supplies . . . to the extent practicable at all times and places including the period of manufacture, and in any event prior to acceptance."[1] The right of inspection in construction contracts is similarly broad and gives the Government the right to inspect and test "at all reasonable times and at all places prior to acceptance."[2]

Yet the contracts also contain language which limits the right. A Government obligation to not delay the work is found in that part of the clause which requires the Government to inspect "in such a manner as not to unduly delay the work" in supply contracts.[3] In construction contracts, the Government must inspect "in such a manner as not unnecessarily to delay the work."[4]

Apart from this contract language which mentions delay, the right of inspection is also circumscribed by the implied obligation not to interfere with, or hinder, performance of the contractor. When the Government engages in activity that contravenes a contract provision limiting inspection, or

that is beyond the scope of permissible inspection, or that is an unreasonable method of conducting inspection, the Government may be liable for increased production costs. Further, the contractor will be excused from any resulting delay in performance.

The first problem area which will be discussed in detail is the location of the Government inspection. The procurement regulations generally require that the contract designate the places of inspection.[5] Generally, the inspection either is done at the place of manufacture, often the contractor's plant, or the inspection is done at the destination or construction site. For simplicity, these alternatives will be referred to as the source and destination inspections. This discussion will analyze the extent to which these contract provisions limit the right of the Government to inspect at all times and places.

Changing the Geographical Location of Government Inspection

Contractor claims arise in two contexts. In one, the contractor argues that the Government can only reject supplies or materials based upon source inspections if designated in the contract. This argument is used to avoid the effects of rejection when it is based on inspection at the destination. The other context involves a claim for compensation. The contractor seeks payment for increased costs caused by the change of the inspection location from the source to the destination.

The Right to Change the Inspection Location

In 1979, the Court of Claims resolved the first issue in A.B.G. Engineering v. United States.[6] The court held that the inspection clause in supply contracts gives the Government the right to base a rejection on an inspection done at the destination even though the contract specifies the source as the place of inspection. The court reasoned that the inspection clause gives the Government the right to inspect at all times and places prior to acceptance, and that acceptance does not occur until delivery at the destination under the standard clauses. The designation of the contractor's plant as the place of inspection does not limit that right.

A.B.G. Engineering did not make any great departure from precedent, at least as far as supply contracts are concerned. In 1965, the Armed Services Board of Contract Appeals had similarly permitted the Government to reject supplies based on an inspection at destination, although source inspection was specified in the contract.[7]

A.B.G. Engineering did not resolve the confusion about the effect of Federal Procurement Regulation provisions which specifically say that destination inspections should examine only for damage in transit, quantity, and possible substitution or fraud when source inspection is specified in the contract.[8] Boards have reached conflicting conclusions about whether the regulation limits the Government's right to inspect at the destination.[9] Some agencies have amended their regulations so that they now expressly allow Government inspection

at destination although source inspection is specified.[10]

Construction contracts have had a different analysis of the problem because of unique language in their inspection clauses. Previous editions of the clause gave the Government the right to inspect at "any and all times during manufacture and/or construction and any and all places where such manufacture and/or construction are carried on."[11] The clause also stated that inspection would be "made at the place of production, manufacture, or shipment, whenever the quantity justifies it . . . and such inspection and written or other formal acceptance, unless otherwise stated in the specifications, shall be final, except as regards latent defects, departures from the specific requirements of the contract, damage or loss in transit, fraud, or such gross mistakes as amount to fraud."[12] The Boards have historically held that the clause operates to attach "finality" of acceptance to the inspection at the source, precluding a later inspection at the destination or site.[13]

That clause is different from the one currently used in construction contracts, which does not characterize the source inspection in terms of "acceptance" or "finality."[14] That difference in language has been cited as the reason for reaching a different result when the current clause is used.[15] The rule now appears to be the same as that in supply contracts; designations of source inspection do not alone preclude the Government's rejection of nonconforming materials after an inspection at the destination or site of construction.

Compensation for the Change

The conclusion that the Government has the right to conduct the inspection at the destination does not mean that the Government is not liable for any increased costs incurred by the contractor which were caused by the change in inspection location.

In Merritt-Chapman & Scott Corp. v. United States,[16] the Court of Claims considered a claim by the contractor that it was entitled to the costs of correction when the Government inspected at the site and ordered correction there. The court, while considering the claim for compensation, wrote:

> In sum, it is concluded that the contract read as a whole establishes that final acceptance of the gates was to be at the job site and not at the fabrication plant. Moreover, the record before the Board overwhelmingly supports the Board's finding that the corrective work required to be performed was necessary to correct deficiencies in fabrication . . . Indeed, plaintiff [contractor] could not cite one instance where the corrective work went beyond specification requirements.[17]

The court held that the costs of correcting defective work must be paid by the contractor. That result seems consistent with the conclusion that the Government has the right to inspect at destination even where source inspection is specified. Yet other cases have charged the Government with some costs caused by these changes.

In Merritt-Chapman the Government had been performing source inspections as agreed upon between the parties,[18] although some defects had apparently passed the first inspections undetected.

It appears that the contractor must bear the costs of correction after rejection so long as the Government is not ignoring its promise to inspect at the source.

A 1978 Armed Services Board of Contract Appeals decision, Boeing-Vertol Co.,[19] suggested this rule. During performance of a supply contract for the production of helicopters, the Government began noting problems with the quality of the product and elected to move its final inspection. The contract included the standard supply inspection clause and stated that the Government inspection would be performed during manufacture; final inspection was to be done at the contractor's plant. The Board noted the standard contract provision which requires the contractor to provide reasonable facilities and assistance to Government inspectors, but it concluded that the contractor was entitled to reimbursement for the extra production costs caused by the change. Those costs included increased hours expended by the contractor's quality assurance personnel and personnel reassignment costs.

The Board reasoned that the contractor had "established that the working relationship between the parties had extended for some time and that the contract price was predicated on prior experience" and that "the appellant [contractor] was entitled to rely upon the past practice that had been followed by the parties. When the Government elected to change its inspection practices, this became a change pursuant to the contract's changes provisions and the appellant is entitled to be compensated for any additional costs it reasonably

incurred as a result of that change."[20]

It appears that the key to the decision is the nature of the Government change. The entire inspection practice was changed. No more source inspection at all was conducted. That distinction from the Merritt-Chapman situation seems supported later in the decision. In the portion of the decision dealing with quantum of entitlement, the Board did not allow recovery of costs for "performing more thorough inspections by the appellant's [contractor's] own inspectors and the correction of additional defects which were being located by both appellant and Government inspection personnel." Those costs were characterized as "attributable to the effort necessary to produce quality aircraft which the Government was entitled to receive under the terms of its contract . . . They are not costs reasonably attributed to the Government's change in inspection practices."[21] On the other hand, the cost arising from the need to allocate additional personnel to the quality assurance effort was allowed.

There has not been yet any clear case which defines which costs the contractor must bear when the Government changes the location of inspection. It appears that, while the Government has the right to base rejections on the later inspection, it must bear the increased costs of production unless the source inspections have been conducted as contemplated by the parties. In that case, the contractor probably must pay the costs associated with rejections based on inspections at the destination or site. In any event, the contractor remains

responsible for the quality of the end product, whether inspections occur at the source or at the destination. The contractor always must bear the costs associated with correcting rejected goods, except that the Government apparently must bear the marginal cost increases caused by a total change of its inspection from one conducted at the source, as agreed between the parties.

Delayed Government Inspection and Inspector Unavailability

Although the inspection clauses use different words to express the limits on the right of the Government to delay the contractor when it inspects,[22] the duty of diligence has not been defined differently by the cases. They appear to evaluate the delay based on its reasonableness. This seems to be done by assessing the reasonable expectations of parties when they enter similar contracts. When parties contract, of course, they probably have no idea of how long it should take the Government to conduct its inspections, but expectations are likely more in terms of how much hindrance the contractor can expect from Government inspection. It would also seem that these expectations would be tied to the utility of the Government activity. The cases seem to support this analysis.

For example, in Russell R. Gannon Co. v. United States,[23] the Government had directed the contractor to not begin tests until a Government inspector was available to witness the beginning and end of required tests. There were numerous occasions when no Government inspector was available at the

beginning of the test period, and other times when the test had to be continued longer than necessary because there was no available inspector to witness its end. The contractor had been promised that an inspector would be furnished on an 'on-call" basis. It was clear from the findings that the contractor was on a tight production schedule and that inspector unavailability was at least partially responsible for the contractor's failure to produce and ship supplies on twelve workdays, out of a total performance period of about six months. The court found the delay unreasonable.

Considerations in the Analysis of Reasonableness of Delay

Gannon Co. suggests a requirement for more diligence when contractor progress is directly tied to the availability of an inspector. In these circumstances there is probably much more opportunity for substantial cost impact when the Government is not diligent in inspecting. In fact, the Armed Services Board of Contract Appeals has concluded that an inspector in such situations must respond in a 'reasonably prompt and cooperative manner' when the Government insists that contractors wait for inspectors to be present.[24] In circumstances where contractor progress is linked to Government approval of stages of performance, the Court of Claims has stated that the Government must do "whatever is necessary to enable him to perform."[25]

Where the contractor asserts that delayed inspection during

performance caused increased costs, it must establish that the linkage of contractor progress to Government inspection was pursuant to the contract. If, instead, the Government is merely accommodating the contractor, who is voluntarily waiting for inspector approvals before beginning other parts of the work, there appears to be no Government liability for these kinds of delay.[26]

Even when the Government is under a duty to conduct these inspections diligently, and the contract requires the contractor to await approval before beginning other stages of work, there appears to be a contractor duty to mitigate delay by shifting effort to other parts of the work where possible.[27]

The determination of the reasonableness of inspection delay must be done on a case-by-case basis.[28] The length of the delay itself has been called "meaningless,"[29] although there are delays which are intuitively so long, such as six months without explanation, that they receive little judicial analysis.[30] A comparison of the length of delay and the total time for performance is apparently also relevant to the determination of reasonableness.[31]

The decisions do appear to allow delays of a "day or two" without Government liability for them,[32] and delays over weekends or federal holidays have been held reasonable where there was no evidence of a contrary intent of the parties when they entered the contract.[33] As has been discussed, however, the known impact of inspection delay on the contractor's costs

is important.[34] One decision found one day's delay the maximum reasonable where the Government had contractually assumed the responsibility for testing during construction.[35]

The decisions treat other delays as reasonable, apparently because they are to be expected by the parties. The illness of an inspector has caused delays which were held reasonable,[36] as has Government testing delay caused by the occasional breakdown of testing equipment.[37]

Another consideration which supports this approach is the extent to which inspector behavior is questionable. Evidence of dilatory behavior, such as long lunch breaks, unexplained failures to meet appointments, or unusually short work hours, tends to demonstrate unreasonableness of the resulting delay.[39] However, there is no requirement for perfection in inspector conduct, and occasional tardiness does not automatically make delay unreasonable. There appears to be sensitivity to inspector schedules and workloads.[40]

So the unreasonableness of the act which causes delay is a factor to be considered in determining its reasonableness.[41] It seems probable that the parties expect that Government inspectors will not always respond instantaneously.[42] But while the usual approach in decisions involves an estimation of just how much delay would be reasonable under the circumstances, with the Government not being held accountable for that portion,[43] if the reason for the delay is itself unreasonable, it is probable that the entire period of delay will be held unreasonable, even when a Suspension of Work clause is included

in the contract.[44]

Where the Government is unquestionably engaging in productive activity, such as testing, there appears to be more tolerance for some delay. One Board even characterized a permissible inspection practice as "reasonable, if leisurely, action."[45] One of the situations which may lead to more careful, deliberate inspection is discovery that the work may not meet contract requirements. Delay which is a result of such a discovery is more likely to be held reasonable.[46] The grounds for suspicion must be ones which are contract requirements. For example, delays where work does not look right would not be reasonable where cosmetic appearance was not a contract requirement.[47]

On the other hand, a United States District Court has sanctioned a six month delay in testing before acceptance.[48] The contractor was required to manufacture and supply water purification tablets. When they were delivered, they had spots in them which caused the Government to inspect and test more closely for impurities. The court noted the proposed use of the item and the potential safety implications and concluded that the suspicion justified the "careful steps that it took to be sure that the tablets were in strict conformance with the specifications . . ."[49] The language seems to sanction the use of visual suspicions where appearance was not a contract requirement. However, the spots on the tablets were unusual, and the court considered those spots as a reasonable indication of a problem with purity, which was a contract requirement.

When the contractor complains about the length of time the Government took to inspect or test, the contractor must demonstrate that the inspection was inefficient, needlessly slow, or the result of an absence of "effective liaison" between the inspector and supervisors or other Government personnel.[50] When a laboratory is involved, its workload is a proper consideration.[51] Where a particular inspector's inexperience with similar work prolongs the inspection, a contractor will be entitled to compensation for the resulting delays.[52]

One final consideration that is particularly important is the presence or absence of contractor complaints contemporaneous with the delay.[53] Considering the fact that reasonableness of delay is evaluated using party expectations when the contract was entered, it makes sense that one would expect a contractor to object when a delay exceeded those expectations.[54]

The Time From Which the Government Is Accountable For Delay

The contract clauses do not specify the time from which the Government must exercise reasonable diligence. Of course, where the Government is obligated to approve parts of the work during performance, the analysis will change depending upon the particular contract clause involved. What this section will consider is the obligation to conduct inspection prior to acceptance or rejection generally.

There has not been much discussion of the issue in supply contracts, probably because the time when supplies are ready for inspection is more easily identified by the act of delivery or tender. But in construction contracts, the assessment of liquidated damages against contractors for late performance has led to arguments by them that the Government did not inspect the job within a reasonable time. The rule is that inspection must be done after the work is substantially complete.[55] Perfection is not required,[56] and the work is ready for inspection when the facility is capable of adequately serving its intended purpose.[57]

Where the contract requires that notice be given to the Government when the work is ready for inspection, the Government will not be charged with delay if the contractor fails to provide the notice,[58] unless the Government can be charged with knowledge that the work is completed, as may be the case when the Government has possession of the work.[59]

Where there is a requirement in the contract that the contractor maintain an acceptable inspection system which incorporates specified tests, the work is not complete until the tests and inspections have been completed by the contractor.[60] Although the standard inspection system requirement alone[61] does not does not establish a characteristic which is independent of the technical requirements of the products themselves,[61] where the number of defects discovered during the initial stages of inspection demonstrate a substantial failure of the "system," apparently the Government can refuse further inspection.[62]

Contractor Remedies and Burdens Of Proof

The contractor can recover the costs caused by Government inspection delay as a constructive change[63] or as a constructive suspension of work where the Suspension of Work clause is included in the contract.[64] The period of delay is not charged to the contractor's period of performance, and liquidated damages based on a period of unreasonable Government inspection delay will be remitted.[65]

The contractor has the burden of proving the amount of its own delay in performance to be attributed to the Government delay, where it is seeking to have performance delay excused.[66] The contractor must prove the amount by which the unreasonable Government delay caused its performance costs to increase when the contractor is seeking compensation.[67] Where the contractor is attempting to have its total failure of performance excused, there is a more difficult burden of proving that the Government inspection delay impeded contractor performance to the point of excusability, which has been defined as the point when the Government made continued performance "impossible."[68]

When the contractor is appealing the assessment of liquidated damages, the burden of proof is different. The Government must show that the inspection was arranged and carried out as soon as reasonably possible after receiving notice that the work was completed.[69]

Hindering and Interfering With Contractor Performance

The last part of this chapter will cover other instances in which Government activity can delay the contractor and otherwise increase its costs of performance. While in the last section, the focus was on finite periods of Government delay in its own inspection, this discussion will evaluate Government liability for its use of unreasonable methods of inspection.

The interference cases which are most clear, but of least interest to this analysis, are those cases where quality assurance personnel engage in excessive supervision of contractor employees by exercising "complete dominion and control over the contractor."[70] This interference issue has arisen primarily in construction contracts; it constitutes a breach of the implied obligation not to hinder the contractor in the discharge of its obligations.[71] Even though there are contract provisions which give the inspector some supervision or technical direction authority over work,[72] "complete dominion and control over the contractor" is beyond the intent of that provision.[73] Even where the inspector is ordering the contractor to comply with his interpretation of the contract, there may be interference unless the inspector is correct.[74]

The touchstone of the analysis of interference and hindrance claims is reasonableness.[75] Most inspections and tests interfere with contractor performance to some extent, but the scope of the inspection right operates to require the

contractor to bear some of the cost.[76]

As always, the parties' expectations when they entered the contract are controlling. So specific contract provisions may limit the time and manner in which the Government may inspect, and contractors may recover costs incurred when the Government chooses to ignore those requirements.[77] Well-known and well-established trade practices can also limit the scope of the Government right to inspect.[78]

The normal remedies available to the contractor are compensation for increased production costs and excusal of delays attributable to the Government hindrance,[79] but it is possible for interference and hindrance to rise to such a level as to make performance impossible, excusing further contractor performance.[80] The contractor bears the burden of showing that the Government inspection impermissibly interfered with performance and the effect and extent of any Government-caused delays on performance.[81]

The Use of Incremental Inspections In Construction Contracts

The Inspection and Acceptance clause used in construction contracts allows the Government to inspect at all reasonable times and at all places prior to acceptance.[82] Inspection of construction projects by phases or parts of the work is a recognized way of conducting construction projects.[83]

Where the contract does not require the Government to make incremental inspections at specific stages of production, the contractor has no right to insist that the Government

change to incremental inspection to accommodate the contractor.[84] Even on a construction contract where weather might degrade otherwise acceptable, completed parts of performance, the Government has no obligation to do incremental inspections and acceptances.[85]

On the other hand, even where not specified, the Government can choose to inspect during production or construction. It is constrained by the general obligation not to "unnecessarily" delay the work.[86] The rule appears to be that the Government has only a very limited right under these standard provisions to condition contractor progress on Government inspection activity.

For example, in Edward E. Stafford v. United States,[87] the Court of Claims held that the requirement that an inspector supervise the planting of each of ten thousand trees and shrubs was unreasonable. That procedure was not required by the contract, and the court considered the short time for performance, the intensity of the effort, and the availability of only one inspector to do the supervising.[88] The rationale of the court seems very similar to the impact analysis done when finite periods of Government delays are evaluated for reasonableness.[89]

Similarly, a 1964 Court of Claims decision, Dale Construction Co. v. United States,[90] held the Government accountable for all delays caused by an incremental inspection and approval procedure implemented for no other reason than as a cautionary measure. The contract was for installation of

a water main. The contract required sterilization of a section of pipe before acceptance of that section. The Army engineers, exercising an "abundance of caution," required an independent bacteriological test of samples drawn from the pipe and did not allow the contractor to work on succeeding sections until the test result was returned. No contamination was discovered. The court found that about twenty days of delay were caused by the procedure and held the Government responsible for the entire period.

On the other hand, Forsberg & Gregory, Inc. involved a limited incremental inspection and approval procedure that was held to be reasonable.[91] In that housing construction contract, the contractor was complaining about the hindrance caused by an inspector's practice of subdividing of framing into distinct parts. The inspector would inspect a phase and require correction of defective work before allowing the contractor to proceed.[92] The Board considered the Government's right to inspect in conjunction with the contractor obligation to replace defective work and concluded that this method of inspection was reasonable. The Board did not specifically comment on the fact that the contractor's scheduling of its work sequence was being interrupted by the requirement that it make corrections before continuing other work. However, the implication was that the practice was approved.

Forsberg & Gregory probably is distinguishable from Dale Construction Co.. First there was no suggestion in Forsberg & Gregory that having to correct defects immediately

was causing any real problem to the contractor, whose real complaint appeared to be the entire incremental inspection procedure, not just the immediate correction of defects. In Dale Construction Co., on the other hand, the effects of the hindrance were more clear and the contractor was clearly challenging, not the inspection, but the delays in waiting for test approvals that were neither required nor authorized by the contract.

That is the other major distinction. In Forsberg & Gregory the delays were a result of a specific Government right in the contract to inspect and require correction. What interference there was only arose after defective work was discovered. That seems more reasonable than the routine test approval practice in Dale Construction Co. where delays were experienced although there were no problems with the contractor's performance.

A synthesis of the results apparently allows the Government to inspect during construction if it wishes, but it may not require the contractor to routinely wait for its test results before allowing performance to continue. However, where an inspection discloses a defect, the Government can require its correction before other work commences. The contract must make special provision for the Government to condition contractor performance progress on Government inspection activity otherwise.

"Tightening' Supply Contract
Surveillance Inspection

In Chapter III of this paper, the contract provisions relating to sampling and verification inspections will be discussed. Generally, the procurement regulations allow for more reliance on contractor quality control, with reduced Government inspection of end products, where the nature of supplies allow and the contractor has a good record for meeting quality requirements.[93] At the other extreme, there may be such a critical need for in-process control of intermediate characteristics of supplies that the Government makes an intensive effort to verify contract compliance during production.[94] In either case, the Government may become dissatisfied with contractor performance and choose to change the frequency or time when it conducts the inspections so product conformance can be more adequately assured. Those kinds of changes often lead to increases in production costs in continuous production items because production lines get delayed.

The effect of contract provisions on these rights of the parties will be discussed later. This subsection will evaluate liability of the Government for hindrance where there is no contract provision speaking directly to the issue. Such a case arose in Allied Paint Manufacturing v. United States.[95]

In that case, the agency responsible for Government quality assurance changed from the Department of Defense to the General Services Administration. The contract was for supply of paint,

The prior inspection practice had required the contractor to conduct testing of paint samples during production, and the Government inspectors would base their inspection on surveillance of that process, with some verification inspection done by the Government. The new agency instituted a 'general tightening" of inspection procedures, which was not provoked by any specific problems with the quality of the contractor's paint. The new procedures included lot-by-lot testing by the Government, with no shipping authorization until test results were reviewed and found satisfactory. The court characterized this as a 'switchover to complete acceptance testing,'[96] compared to the previous moving lot inspection which relied on contractor quality control records. The changed procedure caused saturation of the contractor s warehouse; accumulation times before shipment rose from two days to about four months. The inventory pile-up curtailed manufacturing capacity.

The court found no agreement which precluded the Government from changing to a complete acceptance testing procedure of its own, noting that '[s]uch a result would require a quality assurance agreement between the parties . . .'[97] The court held that the contract did not prohibit the change of testing procedure, and the termination for default was upheld.

It appears from Allied Paint that, absent a contractual agreement between the parties, the Government may always use complete acceptance testing, even though it has chosen a relaxed

inspection practice initially. While the facts in Allied Paint made the result seem harsh, it makes sense that a contractor should expect the Government to use its broad inspection right except as specifically circumscribed by the agreement. Of course, the Government always remains liable if it unreasonably delays the contractor[98] through dilatory behavior, needless or unreasonably duplicative inspection, and the like. Finite Government delays have been discussed. To the remaining kinds of unreasonable inspection activity the discussion now turns.

Hindering by Using Unreasonable Inspection Practices

If the Government hinders the contractor through the use of unreasonable inspections and tests, the resulting delay is excused, and the contractor is entitled to an equitable adjustment if it incurs increased costs.[99]

Inspector Misconduct and Failures to Cooperate

As early as 1926, the Court of Claims found Government liability where an inspector had harrassed the contractor, was prone to quarrel, had constantly used abusive language towards the contractor, and had generally demonstrated conduct "not due to the exercise of the spirit and discretion which were contemplated in discharge of his duties."[100] Where a contractor can prove that an inspector was arbitrary and capricious in the performance of his duties, the inspection is unreasonable.[101] Evidence of bad faith of the inspector toward the contractor is relevant,[102] but such allegations

carry a heavy burden of proof. There is a presumption that public officials act conscientiously in discharge of their duties.[103]

The emerging duty of cooperation has also been a source of findings of hindrance where it was breached. In Larco-Industrial Painting Corp.[104] the construction contract called for painting of buildings. During the walk-through inspection, only minor deficiencies were noted; among them was a loose screw (of four) that held a security grille in place and paint which had adhered to a door frame because the door had been closed before the paint was dry. Upon learning of the defects, the contractor immediately corrected them. The problem was that the inspectors had refused to designate the minor deficiencies, even after the contractor requested them to. The Board held the practice unreasonable, stating:

> The conduct of respondent's inspectors in refusing, upon request, to designate minor deficiencies of which only they were aware was unreasonable. It was a hindrance to appellant, because the deficiencies were so minor that appellant's painters could not reasonably have been expected to cure the deficiencies unless respondent's inspectors identified them.[105]

Unreasonable Amounts of Inspection

Even where there is no question about the inspector's conduct, or his good faith, decisions have also considered the amount of inspection activity. The Government does not have unlimited authority or discretion to conduct product inspection without regard to the impact its inspection practices may have upon the contractor's production.[106]

Government liability for costs incurred by the contractor has been found under the Changes clause of a supply contract where Government quality assurance personnel made about five hundred visits to a contractor's plant within six months after the contractor began having production problems.[107]

The usefulness of the inspection activity also appears important to the determination of reasonableness. In Lumen, Inc., the costs caused by a substantial increase in paperwork requirements during contract performance were held compensable.[108] The contractor had been experiencing production problems on a supply contract for the manufacture of movie projectors. Ten or eleven different inspectors were assigned to the contract, and a requirement for additional forms and reports was initiated by Government inspectors. There were an estimated five or six thousand reports required. The contractor computed that about 500,000 signatures of contractor quality control personnel were required during performance. The Board noted that Government inspector initials or stamps appeared on the reports and forms rarely, and concluded that 'the enormity of this paperwork imposed on the contractor a burden outside of reasonable contract requirements."[109]

Vacillating Inspections

When the Government subjects the contractor to a proliferation of inexperienced inspectors making unreasonable inspections and demands, the Government is liable for the costs caused by the interference.[110] In fact, in 1978 the Armed Services Board of Contract Appeals invalidated a Navy

inspection procedure for use in janitorial services contracts where a separate "inspector" was appointed for each of the forty buildings covered by the contract.[111] The inspectors were actually "building monitors" who had no prior experience with custodial maintenance contracts and were given only about two hours of training in inspection techniques. The Government had taken deficiency deductions in the contract price based on deficiency reports submitted by those "inspectors." The Board concluded that "such serious flaws in the Navy's inspection system taint all the deficiency deductions made during its use . . ."[112] The case exemplifies the importance that boards and courts tend to place on inspector experience and training as a consideration in assessing inspection reasonableness.[113] Inspector experience and training will show up again in this paper in the discussion about the reasonableness of subjective judgements during inspection.[114]

When the Government uses an inspection practice that produces conflicting results and hinders the contractor, the Government will be held liable. For example, when a contractor has work approved by one inspector and is consistently facing disapproval of the same work by other personnel, such confusing and vacillating inspections are unreasonable.[115] This Government liability from the use of inconsistent inspection practices should be distinguished from the general rule that inspection of work does not preclude its later rejection even though the work was approved.[116] In interference cases, the issue involves a <u>continuing</u> Government

practice, apparently, rather than a single inspection. In W.F. Kilbride Construction, Inc.,[117] the rule was stated as:

> . . . [I]f inspection procedures are confusing and vacillating, and the contractor's work is subjected to multiple inspections to differing standards by different officials, an equitable adjustment should be granted under the Changes Clause for any delay or increased costs.[118]

Improper Testing or Inspection

The failure by the Government to conduct testing properly will entitle the contractor to an equitable adjustment under the Changes clause and an extension in performance completion time where its costs and time of performance are increased.[119] Any inspection that holds the contractor to a higher standard of performance than demanded by the contract will entitle the contractor to an equitable adjustment in contract price, usually under the Changes clause.[120] While these kinds of problems are generally treated as constructive changes, they have also been characterized as a breach of contract. In WRB Corp. v. United States,[121] the Court of Claims held that the inspector's use of a "zero tolerance" during inspection was contrary to contract requirements and a breach of the Government's duty not to impede performance.

The focus of that analysis is on the standard of work demanded by the contract. An inspection that does not appropriately evaluate work is probably another example of unreasonable activity that will subject the Government to liability for delay. But the key to resolving the issue

lies in an analysis of the propriety of the inspection as a basis for making the decision to reject or accept. In that way, the issue is somewhat different from the analysis that has been discussed in this chapter.

It seems that in these other interference cases, the boards and courts are often faced with activity which cannot be neatly separated into proper and improper inspection and tests. In some cases, there is at least some inspection that is proper, although the entire practice appears vacillating, inconsistent, or very excessive. At some point, the activity becomes so suspect that contractor recovery is predicated on an overall conclusion of unreasonableness.

Nevertheless, the WRB Corp. factual situation bears exploration. The determination of the propriety of inspections and tests as determinants of contract compliance will be discussed in Chapter II.

Conclusions

Where the Government agrees to conduct its inspection at a certain place, that does not alone foreclose its inspecting at another place. However, where the Government changes the location of its inspection and causes increased production costs, it is liable for those increases. This rule seems sensible in that it allows contractors to plan their own costs based on the expectation that the Government will inspect where it promises to. However, the contractor cannot expect the Government to give up its right to inspect elsewhere; it

can inspect at the destination and require the contractor to bear the costs of correction so long as the Government source inspection has been performed as agreed.

Issues which involve delays in Government inspection and contractor hindrance do have contract language embodying the parties expectations, but it is very ambiguous. The decisions have to apply a reasonableness analysis to determine whether the Government is liable for delay caused by its inspection. The considerations appear to approximate those one would expect reasonable parties to find important at the time of contracting. There is a balancing of the impact on the contractor against the reason for the delay. Inspection which is necessary is probably within the expectations of the parties. But where the contractor is hindered by dilatory inspector behavior, failures of cooperation, the use of useless or unnecessary inspections, unreasonable amounts of inspection, conflicting or vacillating inspections, or the use of invalid tests or inspections, such reasons for delay are probably outside of the reasonable expectations of the parties.

CHAPTER I FOOTNOTES

[1] Defense Acquisition Regulations (DAR) ¶ 7-103.5(b); Federal Procurement Regulations (FPR) § 1-7-103.5(b); NASA Procurement Regulations (NASA PR) ¶ 7.103-5(a).

[2] DAR ¶ 7-602.11(a); FPR § 1-7.602-11(a).

[3] DAR ¶ 7-103.5(d); FPR 1-7.102-5(c); NASA PR ¶ 7-105-4(c).

[4] DAR ¶ 7-602.11(d); FPR § 1-7.602-11(d).

[5] DAR ¶ 14-305.1; NASA PR ¶ 14.206; GSA Procurement Regulations, 41 C.F.R. § 5-14.105-1 (1982).

[6] 219 Ct. Cl. 381, 593 F. 2d 394 (1979).

[7] See Washington Technological Assoc., ASBCA 10048, 65-2 B.C.A. ¶ 4892 (1965).

[8] FPR § 1-14.105.

[9] See APCO Mossberg Co., GSBCA 3440, 72-1 B.C.A. ¶ 9403 (1972) (holding that the regulation was binding and precluded inspection at destination). But see Trevco Eng'g and Sales, VACAB 1021, 73-2 B.C.A. ¶ 10096 (1973)(holding that the regulations do not limit the right to inspect at destination and reject supplies found to be nonconforming).

[10] Department of Agriculture Procurement Regulations, 41 C.F.R. § 4-14.105-1 (1982); General Services Administration Procurement Regulations, 41 C.F.R. § 5A-2.201-78 (1982).

[11] See J.A. Jones Constr. Co., ENGBCA 2728, 69-2 B.C.A. ¶ 7814, at 36,314 (1969).

[12] Id.

[13] Id. See also Gordon H. Ball, Inc., ASBCA 8316, 1963 B.C.A. ¶ 3925 (1963). But see S.S. Silberblatt v. United States, 193 Ct. Cl. 269, 433 F. 2d 1314 (1970)(construing the same contract provision but holding the items not within the operation of the source inspection provisions).

[14] DAR ¶ 7-602.11(a); FPR § 1-7.602-11(a).

[15] See Carrier Corp., ASBCA 23,753, 79-2 B.C.A. ¶ 14,044 (1979).

[16] 178 Ct. Cl. 883 (1967), cert. denied, 389 U.S. 851 (1967).

[17] Id. at 907.

[18] Id. at 890.

[19] ASBCA 18,838, 78-2 B.C.A. ¶ 13,377 (1978).

[20] Id. at 65 404. See also Sunroc Refrigeration Co., ASBCA 3452, 56-2 B.C.A. ¶ 1135 (1956).

[21] Boeing-Vertol Co., 78-2 B.C.A. at 65,405.

[22] The supply contract inspection clause uses the words 'unduly delay.' DAR ¶ 7-103.5(d); FPR § 1-7.102-5(c); NASA PR ¶ 7-105-4(c). The clause in construction contracts uses the words "unnecessarily delay." DAR ¶ 7-602.11 (d); FPR § 1-7.602-11(d).

[23] 189 Ct. Cl. 328, 417 F. 2d 1356 (1969).

[24] G.W. Galloway Co., ASBCA 16,656, 73-2 B.C.A. ¶ 10,270 (1973). See also Max Bauer Meat Packers, Inc. v. United States, 198 Ct. Cl. 97, 458 F. 2d 88 (1972)(which held that a four hour delay in rejection of freezing meat was unreasonable because of the impact on the contractor); Cone Bros. Contracting Co., ASBCA 16,078, 72-1 B.C.A. ¶ 9444 (1972)(where the Board held one day to be the maximum reasonable time within which to notify contractor of results of concrete tests; the Government had assumed the responsibility of testing concrete as it was poured).

[25] See Kehm Corp. v. United States, 119 Ct. Cl. 454, 93 F. Supp. 620 (1951).

[26] See Southbend Corp., ASBCA 25,746, 83-1 B.C.A. ¶ 16,211 (1982); Ventilation Cleaning Engineers, Inc., ASBCA 16,678, 72-2 B.C.A. ¶ 9537 (1972).

[27] See Southbend Corp., supra note 26.

[28] Jim Challinor, AGBCA 75-133, 78-2 B.C.A. ¶ 13,278 (1978).

[29] Tri-Cor, Inc. v. United States, 198 Ct. Cl. 187, 458 F. 2d 112 (1972). Accord Continental Chemical Corp., GSBCA 4200, 75-1 B.C.A. ¶ 11,255 (1975).

[30] Snyder-Lynch Motors, Inc. v. United States, 154 Ct. Cl. 476 (1961).

[31] See Bracewell Constr. Co., GSBCA 1353, 65-1 B.C.A. ¶ 4556 (1964).

[32] See Timberline Foresters, AGBCA 81-161-1, 83-1 B.C.A. ¶ 16,361 (1982); Sydney Constr. Co., ASBCA 16,250, 72-2 B.C.A. ¶ 9726 (1972); B.D. Click, GSBCA 2945, 71-2 B.C.A. ¶ 9079 (1971).

[33] See Leitner Constr. Co., AGBCA 78-126, 79-1 B.C.A. ¶ 13,838 (1979).

[34] See Tri-Cor,Inc., supra note 29.

[35] Cf. Cone Bros. Contracting Co., ASBCA 16,078, 72-1 B.C.A. ¶ 9444 (1972).

[36] Woodchips, Inc., AGBCA 82-147-3, 82-2 B.C.A. ¶ 15 941 (1982).

[37] AAI Corp., ASBCA 14,277, 74-1 B.C.A. ¶ 10,493 (1973).

[38] See Southern Roofing and Petroleum Co., ASBCA 12841, 69-1 B.C.A. ¶ 7599 (1969); see also Thorson, Inc., IBCA 993-4-73, 75-1 B.C.A. ¶ 11,340 (1975).

[39] See Maintenance Engineers, ASBCA 17,474, 74-2 B.C.A. ¶ 10,760 (1964).

[40] See Southbend Corp., supra note 26.

[41] Cf. Davho Co., VACAB 1005, 72-2 B.C.A. ¶ 9683 (1972).

[42] Cf. Southbend Corp., supra note 26.

[43] See Martell Constr. Co., ASBCA 23679, 80-1 B.C.A. ¶ 14,429 (1980)(where the board held that the inspection should have been done no later than the next day); Bracewell Constr. Co., GSBCA 1353, 65-1 B.C.A. ¶ 4556 (1964) (five days were found a reasonable time within which to inspect).

[44] See the cases in note 38. See also Maintenance Engineers, ASBCA 17,474, 74-2 B.C.A. ¶ 10,760 (1974).

[45] Charles A. Ketcham, ASBCA 4937, 59-1 B.C.A. ¶ 2084 (1959).

[46] See Southern Roofing and Petroleum Co., ASBCA 12,841, 69-1 B.C.A. ¶ 7599 (1969); D.H. Dave and Gerben Contracting Co., ASBCA 6257 1962 B.C.A. ¶ 3493 (1962).

47 Thorson, Inc., IBCA 993-4-73, 75-1 B.C.A. ¶ 11,340 (1975).

48 Mann Chemical Laboratories, Inc. v. United States, 182 F. Supp. 40 (D.C. Mass. 1960).

49 Id.

50 Winder Aircraft Corp. v. United States, 188 Ct. Cl. 799, 412 F. 2d 1270 (1969).

51 Id. See also Kenyon Magnetics, Inc., GSBCA 4769, 77-2 B.C.A. ¶ 12,786 (1977)(where the Board concluded that three weeks was a reasonable time to get samples to the laboratory, tested, and returned even though actual testing only took three days).

52 See Carroll Co., ASBCA 10,034, 67-1 B.C.A. ¶ 6130 (1966). See also Hardeman-Monier-Hutcherson, ASBCA 11,869, 67-2 B.C.A. ¶ 6522, at 30,310 (1967).

53 See Maintenance Engineers, ASBCA 17,474, 74-2 B.C.A. ¶ 10,760 (1964); Charles A. Ketcham, ASBCA 4937, 59-1 B.C.A. ¶ 2084 (1959).

54 See Charles A. Ketcham, supra note 53.

55 Martell Constr. Co., ASBCA 23,679, 80-1 B.C.A. ¶ 14,429 (1980); Fidelity Constr. Co., DOTCAB No. 75-19, 77-2 B.C.A. ¶ 12,831 (1971).

56 Sydney Constr. Co., ASBCA 16,250, 72-2 B.C.A. ¶ 9726 (1972).

57 Fidelity Constr. Co., supra note 55.

58 See G.W. Galloway Co., ASBCA 17,436, 77-2 B.C.A. ¶ 12,640 (1977); M.J. Newsom, GSBCA 1469, 65-2 B.C.A. ¶ 4926 (1965).

59 See Martell Constr. Co., ASBCA 23,679, 80-1 B.C.A. ¶ 14,429 (1980).

60 See National Painting Co., ASBCA 9715, 65-2 B.C.A. ¶ 4925 (1965); see also Herlo Corp., ASBCA 18,612, 75-1 B.C.A. ¶ 11,347, at 54,051 (1975).

61 All of the standard inspection clauses for use in supply contracts include a requirement that the contractor maintain an inspection system acceptable to the Government. Only the Department of Defense includes an inspection system requirement in construction contracts. See the discussion in Chapter V.

[62] See Mel Williamson, Inc., ASBCA 22,983, 80-2 B.C.A. ¶ 14,631 (1980). See the discussion at

[63] See, e.g., Russell R. Gannon Co., 189 Ct. Cl. 328, 417 F. 2d 1356 (1969).

[64] See, e.g., Woodchips, Inc., AGBCA 82-147-3, 82-2 B.C.A. ¶ 15,941 (1982).

[65] See, e.g., Martell Constr. Co., Inc., ASBCA 23679, 80-1 B.C.A. ¶ 14,429 (1980).

[66] Continental Chemical Corp., GSBCA 4483, 76-2 B.C.A. ¶ 11,948 (1976); Orion Electronics Corp., ASBCA 18,010, 75-1 B.C.A. ¶ 11,006 (1974).

[67] Charles H. Siever Co., ASBCA 24,814, 83-1 B.C.A. ¶ 16,242 (1982).

[68] The Pinel Tool Co., GSBCA 4380, 76-2 B.C.A. ¶ 12,009 (1976). See also AAA Forestry Serv., AGBCA 81-101-1, 82-2 B.C.A. ¶ 15, 930 (1982).

[69] Martell Constr. Co., Inc., supra note 65.

[70] Joseph H. Roberts v. United States, 174 Ct. Cl. 940, 357 F. 2d 938 (1966); see also Robert L. Rich, DOTCAB 1026, 82-2 B.C.A. ¶ 15,900 (1982); Stanley W. Wasco, ASBCA 12,288, 68-1 B.C.A.¶ 6986 (1968).

[71] Joseph H. Roberts, 174 Ct. Cl. at 945.

[72] See, e.g., Robert L. Rich, supra note 70.

[73] Id. See also Robert L. Rich, supra note 70.

[74] Eastman Reforestation Co. v. United States, Ct. Cl. No. 558-80C, 29 C.C.F.(CCH) ¶81,900 (September 29,1981).

[75] See Larco-Industrial Corp., ASBCA 14,647, 73-2 B.C.A. ¶ 10073 (1973).

[76] See the discussion of allocation of costs and responsibilities in Chapter IV.

[77] Contract Maintenance, Inc., ASBCA 19,603, 75-1 B.C.A. ¶ 11,097 (1975).

[78] See The Jordan Co., ASBCA 10,874, 66-2 B.C.A. ¶ 6030 (1966).

[79] See W.F. Kilbride Constr. Co., Inc., ASBCA 19,484, 78-2 B.C.A. ¶ 13,316 (1976).

[80] See AAA Forestry Services, AGBCA 81-101-1, 82-2 B.C.A ¶ 15,930 (1982); Puma Chemical Co., GSBCA 5254, 81-1 B.C.A. ¶ 14,844 (1980).

[81] See Charles H. Siever, Co., ASBCA 24,814, 83-1 B.C.A. ¶ 16,242 (1982); Mann Constr. Co., AGBCA 76-111-4, 81-1 B.C.A. ¶ 15,087 (1981).

[82] DAR ¶ 7-602.11(a); FPR § 1-7.602-11(a).

[83] Walsky Constr. Co., ASBCA 19,855, 77-1 B.C.A. ¶ 12,388, aff'd on reconsideration , 77-2 B.C.A. ¶ 12,632 (1977).

[84] See Southbend Corp., ASBCA q5,746, 83-1 B.C.A. ¶ 16,211 (1982); Clavier Corp. , ASBCA 12,495, 70-2 B.C.A. ¶ 8459 (1970).

[85] Ventilation Cleaning Engineers, Inc., ASBCA 16,678, 72-2 B.C.A. ¶ 9537 (1972).

[86] DAR ¶ 7-602.11(d); FPR § 1-7.602-11(a).

[87] 109 Ct. Cl. 479, 74 F. Supp. 155 (1947).

[88] Id. at 509-511.

[89] See Tri-Cor, Inc. v. United States, 198 Ct. Cl. 187, 458 F. 2d 112 (1972).

[90] 168 Ct. Cl. 692 (1964).

[91] ASBCA 17,598, 75-1 B.C.A. ¶ 11,176 (1975).

[92] Forsberg & Gregory, Inc., 75-1 B.C.A. at 53,225.

[93] See the discussion in Chapter III on verification inspections.

[94] Ibid. For Department of Defense Verification Inspection procedures, refer to DLAM 8200.1, Section IV, Part IV.

[95] 200 Ct. Cl. 313, 470 F. 2d 556 (1972).

[96] Id.at 323.

[97] Id. at 326.

[98] Allied Paint approved the Board's delay analysis, although the Board and the court both found insufficient evidence that the Government unreasonably delayed the contractor.

[99] See H. B. Hinojos and Sons Building Maintenance, GSBCA 5956, 82-1 B.C.A. ¶ 15,771 (1982).

[100] Eaton, Brown & Simpson, Inc. v. United States, 62 Ct. Cl. 668 (1926), cert. denied, 274 U.S. 746 (1926).

[101] See Edwards v. United States, 80 Ct. Cl. 118 (1934); Tidewater Management Services, Inc., ASBCA 21,643, 77-2 B.C.A. ¶ 12,672 (1977).

[102] See Mudsharks Co-op, Inc., AGBCA 81-238-3, 82-2 B.C.A. ¶ 16,117 (1982).

[103] Kalvar Corp. v. United States, 211 Ct. Cl. 192, 543 F. 2d 1298 (1976); Maintenance Engineers, ASBCA 23131, 81-2 B.C.A. ¶ 15,168 (1981).

[104] ASBCA 14,647, 73-2 B.C.A. ¶ 10,073 (1973).

[105] Id. at 47,324.

[106] G.W. Galloway Co., ASBCA 16,656, 73-2 B.C.A. ¶ 10,270 (1973).

[107] Id.

[108] ASBCA 8364, 1964 B.C.A. ¶ 4436 (1964).

[109] Id.at 21, 374.

[110] Mann Constr. Co., AGBCA 76-111-4, 81-1 B.C.A. ¶ 15,087 (1981).

[111] North American Maintenance Co., ASBCA 21,986, 78-2 B.C.A. ¶ 13,316 (1978).

[112] Id. at 65,133.

[113] See Barton & Sons Co., ASBCA 9477, 65-2 B.C.A. ¶ 4874 (1965).

[114] See Chapter II, p 70.

[115] See W. F. Kilbride Constr. Co., Inc., ASBCA 19,484, 78-2 B.C.A. ¶ 13,316 (1976).

[116] Robert McMullan & Son, Inc., ASBCA 21455, 77-1 B.C.A. ¶ 12,456 (1977).

[117] Supra note 115.

[118] W. F. Kilbride, 78-2 B.C.A. at 55,884.

[119] See N. Fiorito Co. v. United States, 189 Ct. Cl. 215, 230 416 F. 2d 1284 (1969).

[120] See Kenneth Reed Constr. Corp. v. United States, 201 Ct. Cl. 282, 475 F. 2d 583 (1973).

[121] 183 Ct. Cl. 409 (1968).

CHAPTER II

THE PROPRIETY OF TESTS AND INSPECTIONS AS DETERMINANTS OF CONTRACT COMPLIANCE

The last chapter evaluated the rules under which the Government can be held liable for delay and hindrance of a contractor when it uses unreasonable inspection practices. In general, that problem had less to do with product quality requirements than with party expectations about the manner in which the Government would conduct routine inspections. The chapter concluded with a suggestion that the use of improper tests routinely would subject the Government to liability for interference, but the more common interference case involves excessive inspection, delays caused by inspection, or other instances when the Government conducts its inspections at unreasonable times or in unreasonable manners which may impede the contractor.

This chapter will, on the other hand, consider the propriety of inspection and testing as it relates to the specific quality requirements that the contract establishes. There are substantive rules used to evaluate whether the tests and inspections used by the Government determine contract compliance. The rules appear to be different depending upon whether the activity is an inspection or a test, although there is no clear distinction between the two.

Yet there is a spectrum of subjectivity involved in the various kinds of inspections and tests that the Government uses. This chapter will evaluate the substantive rules in light of that spectrum, since that seems to be the important distinguishing feature in the choice of rules.

The first subject discussed will be the use of tests which are specified in the contract. Then, the analysis will move to the use of unspecified tests and inspections and the rules for evaluation of the reasonableness of inspections. The last substantive area discussed will be resolution of disputes where the inspection involves subjective judgments, and the emphasis there will be on inspection in custodial maintenance service contracts. Finally, the chapter will close with a summary of the remedies available to the contractor who encounters improper inspection and a discussion of the burden of proof encountered in the claim that the Government used an invalid or improper inspection.

Specified Inspections and Tests

An inspection is an examination (including testing) of supplies and services to determine whether the supplies and services conform to contract requirements.[1] Testing is considered an element of inspection and generally denotes the determination by technical means of the properties or elements of supplies and involves the application of established scientific principles and procedures.[2] Testing generally involves less personal judgment of the inspector.[3]

There are no generalizations about what tests one may find in the contract specifications, but they can be spread throughout the document along with the rest of the specifications which define the physical and operational characteristics the product must have. Sometimes test specifications will refer to attributes the product must have at various stages of production. For example, component specifications may require one type of test and end item specifications may have another. Generally, the contractor must produce an item that meets both.[4]

The Government may use a test specified in the contract to evaluate performance or design, even if the test is severe and imposes conditions not likely to be encountered in actual use.[5] The tests to determine compliance with the contract, and the contract requirements, constitute an equation.[6] So, in general, where a contract requirement or characteristic is defined in terms of a test, it can be used by the Government in making its rejection and acceptance decision.

The only real exceptions to the rule involve tests which cannot be passed. For example, where the contract specifies a test as a means of determining compliance with a specified, unambiguous requirement, the test must not be impossible of attainment or, although possible of attainment, not involve an unforseeable, novel factor which makes attainment impossible from a reasonable and practical viewpoint.[7] Also, a specified test may not be used if it is intended to measure a clear performance requirement and the test is more

demanding.[8] These issues involve subsidiary problems which are beyond the scope of this analysis which are present in any dispute involving an allegation that Government furnished specifications are defective. For example, the contractor may have assumed the risk,[9] or it may have a duty to inquire.[10]

Defining The Test

Identification of the precise test procedures which must be followed is a matter of contract interpretation. This paper will not attempt to retrace the development of the rules of interpretation,[11] but it probably is useful to highlight some which are important in this context.

For example, where there are unresolved ambiguities in defining test results that are acceptable and those that are not, the ambiguity is resolved in favor of the contractor's reasonable interpretation.[12] On the other hand, where only one interpretation of a test is reasonable, that one is adopted.[13]

Where tests are ambiguous, contemporaneous actions of the parties during the course of testing are relevant to the interpretation, and a failure of the contractor to object to the Government's method of testing has been cited as a reason not to hold the Government test improper,[14] particularly where the absence of objections has continued over a continued course of time.[15]

Of course, where there has been a joint approval of testing equipment, their use by the Government is proper.[16]

The specifications do not usually dictate every detail in the performance of a test. Sometimes they simply refer to a test by its customary name. In such a case, industry practice is used to resolve an ambiguity in the specifics of test procedure.[17] In this regard, there are also detailed test procedures which are published by some agencies in handbooks and pamplets which might be relevant to deciding whether a Government inspector has improperly performed a specified test.[18]

Test Performance

Equipment Accuracy and Operating Conditions

The Government test must be conducted so it does not introduce contaminants or otherwise induce characteristics which are grounds for rejection.[19] For example, tests for purity must be controlled so that they prevent contamination.[20]

Some tests are operational in nature. That is, they test performance characteristics instead of dimensions or other physical requirements. Such tests must be representative of the conditions to be encountered during use of the product if no operating conditions are specified.[21] For example, where a contract specifies that an item must be capable of twenty-four hour operation, that does not mean that the worst possible conditions can be imposed during testing.[22]

Test instruments used by the Government must meet specified calibration standards. The use of defective test

equipment or gauges will invalidate a rejection based on them.[23] Likewise, a rejection is wrongful where the Government uses equipment which cannot be relied on where close tolerances are involved and the equipment yields varied results.[24]

Compliance With Test Procedures

Where the contract specifies a test procedure to be followed, a failure to comply will invalidate the test results. However, absolute identity is not required. One decision has approved the use of a procedure which "approximated" those described in a treatise which defined the procedure.[25] The focus of attention, though, probably should be on whether the faulty testing is sufficiently deviant to undermine the Government's assertion that the items do not comply with the specifications.[26]

Where a test requirement is considered of limited value or has no "rational basis," it is enforced, but less deviation is tolerated.[27] Even a very small error in testing procedures would invalidate a rejection where the prescribed test is measuring a characteristic with precision and a standard of relative perfection is demanded.[28] But if the Government can prove that the difference in procedure does not effect the evaluation of relevant characteristics, then the deviation is immaterial.[29]

Specified Inspections

Apart from the common specification of tests as a measure of contract compliance, the contract may also prescribe

a procedure for an inspection which involves more opportunity for subjective judgments. The analysis of these cases appears to be the same as that used in analyzing testing, although the number of cases is not as great. As an example, in Contract Maintenance, Inc.,[30] the contractor was providing custodial maintenance services. The inspection was required to be done at specific times of day, but the Government inspector chose to do the inspections at all times of the day or night. He had no set time for inspection but did it "when he felt like it."[31] The Board noted the importance of adhering to time constraints during inspection of service contracts because cleaning will degrade with time and use. The Board concluded that "[t]he failure of the Government Inspector to conduct his inspection within the four corners of the contract is fatal to the Government's case and permits recovery by the appellant [contractor] of all monies withheld under this contract."[32]

It appears that although it is difficult to clearly distinguish between an inspection and a test, analysis of their propriety uses the same rule structure where procedures specified in the contract are not used. Government failure to follow the specified procedure makes the inspection presumptively invalid; the Government has the burden of proving that procedural deficiencies did not affect the outcome. Contract Maintenance implies this rule, but more will be said about the burdens of proof at the end of this chapter.

Unspecified Inspections and Tests

The more difficult issues of inspection and test propriety involve inspection procedures which are not constrained by specific contract provisions. In 1961, the Court of Claims established the basic criterion for these inspections as one of reasonableness.[33] A reasonable inspection is one that, if properly performed, determines whether the goods or services conform to specifications. The Government may perform any reasonable inspection, even if not described in the contract, so long as it does not impose requirements different from or more stringent than those set out in the contract. A more current statement of the rule appears in Puma Chemical Co.[34] where the Board approved inspection methods and tests not specifically detailed in the contract as a basis for rejection of a product where (a) the tests are accurate and reasonably calculated to determine compliance with the specifications, and (b) do not force the contractor to meet different or more stringent standards and requirements than those demanded in the contract and specifications.

Arguments have been made that if tests are specified in a contract, then the Government is preempted from using other tests. Crown Coat Front Co. v. United States, the Court of Claims decision referred to above, addressed that issue. There, the contractor was required to supply felt canteen covers which were required to be mildew resistant and have a specified content of a mildew inhibitor. The contract specified a test for mildew resistance but none for the

inhibitor content. The Government used a test to determine the amount of mildew inhibitor and rejected the lots based on those tests. The contractor argued that the Government was precluded from using any tests other than the one specified.

The court disagreed and held that the tests for content of mildew inhibitor were both reasonable and necessary and were accomplished in such a manner as not to unduly delay the work. The court reasoned that although tests were specified for some contract characteristics, the Government was entitled under contract inspection clauses to inspect for strict compliance with other contract requirements.

This seems like a sensible result; contractors probably do not expect that the Government will turn its head away from characteristics which have no specified tests in the contract. This line of reasoning was applied in Waltham Electronics, Corp.,[35] where the Board held that when a contract specified that electronic equipment meet frequency "stability" requirements, the contractor should expect that tests to determine whether the equipment conformed would be used.

There are decisions, however, where the Government has been precluded from using unspecified test methods. In American Machine Foundry Co.,[36] the Board found that the use of test procedures different from those specified without more made the Government's inspection invalid. There was no further analysis to determine whether the different procedures were prejudicial by causing adherence to standards

more stringent than those in the contract. In fact, the Board suggested that such evidence would not even be relevant when it stated, "[t]hese findings without more sustain appellant's stated position."[37] The Board's apparent refusal to allow any deviation from the test specified may be explained by the fact that the Board thought the particular test requirement arbitrary.

The Crown Coat analysis has also been modified when the contractor and Government agree to a specified test procedure by contract modification in order to resolve a dispute about contract requirements. In Process Equipment Co.[38] the contractor had been having performance difficulties and had failed some performance tests. The parties executed a specific test procedure by amendment to the contract, and the Board allowed no deviation from it.

Other than these two limited exceptions to the right of the Government to use unspecified tests and inspections, the Government is primarily constrained by the remaining requirement that the inspections not change the contract requirements, which appears to be the touchstone of reasonableness.

Changes To Contract Requirements

From Crown Coat one learns that an unspecified inspection or test may not impose a different requirement for a physical or performance characteristic or enforce them more stringently. But the "Government is clearly entitled to get precisely what it bargained for in the contract."[39] If strict, intensive inspection is necessary to assure this, then the contractor has no valid complaint,[40] and the Government can insist on contract

requirements even if deviations would not impair usefulness of the item.[41]

Changes to Standards of Workmanship

If an objective standard of performance can be identified, an inspection which demands a higher standard of performance is improper and any subsequent rejection is invalid.[42] But often, there is no quantified characteristic which will give a court or board the luxury of comparing the standard applied by the inspection against it. In that case, the rules of contract interpretation must be used.

Unwritten 'tolerance" policies which have been applied "for years" have at least once precluded enforcement of clear specification requirements,[43] but it is more common for extrinsic evidence to be used to interpret ambiguous contract provisions. For example, a practical construction which the parties themselves have given to a contract during its performance and before the controversy arose is properly accorded great interpretative weight.[44] Also, workmanship standards which are well-known and well-established in industry are relevant to interpretation of ambiguous workmanship standards.[45] These summarizations of interpretation rules are not meant as a complete analysis of these problems — that is beyond the scope of this paper—but they serve as an introduction to considerations which the decisions employ to determine the objective intent of the parties when they entered the contract.[46]

Even more important, those rules serve as a contrast to an important qualification. It appears that where the Government has definitive standard specifications available which define the standard of performance it is arguing should be incorporated by trade practice, it will not be. In welding jobs for example, identification of requirements is confused because the description of work incorporates generic terms such as "workmanlike." Then various standards are incorporated by reference to military standard specifications, American National Standards Institute publications, American Society For Testing and Materials standards, and American Welding Society publications. In Reliance Enterprises, Inc.[47] a dispute arose over the standard of workmanship for welding. Although some of these publications were incorporated by reference in the contract, the Government was arguing that one not included should have been incorporated as a trade practice. The Board held that the Government has an obligation to incorporate them in the contract if it wants them applied. The impact of the availability of standard specifications will be also considered during the discussion of the standard contractor inspection system requirement in Chapter V.

This subsection has considered changes to any given standard or characteristic. A related problem, that will now be considered, is the effect of the Government's evaluation of a new characteristic not required in the contract.

Impermissibly Evaluating New Characteristics

Where an unspecified test or inspection evaluates a characteristic not called for in the contract, rejection based on failure of the item to satisfy the inspection or test is wrongful. For example, an inspection can not evaluate cosmetic appearance unless it is a contract requirement.[48] Sometimes this problem is difficult to detect.

For example, in Spec Tool Co.[49] the contractor was required to manufacture and furnish accelerometers. The contract required that the accelerometers be able to withstand specified impact shock and vibration tests within a temperature operating range of -55 degrees C to 70 degrees C. The Government began its test by putting the accelerometers in a refrigerator cooled to -55 degrees C. After cooling, they were immediately removed and placed into an oven which was preheated to a temperature of 70 degrees C. The Board invalidated the test and subsequent rejection on the ground that the test imposed a requirement not contemplated in the contract. The extra-contractual requirement for resistance to "thermal shock," which is the ability to withstand rapid changes in temperature, was not in the contract.

An inspection or test which imposes a new requirement is clearly an example of the kind of new contract requirement cited by Crown Coat.[50] But there is one final way of evaluating these changes to contract requirements. The Government can also forfeit its right to use unspecified tests by using unreasonable standards of inspection. The distinction between standards of

performance and standards of inspection is a subtle one, but one that is recognized.[51]

The Reasonableness of the Inspection

The need to recognize the distinction arises because in some work, especially construction and service contracts, there are some work requirements which can be defined in no other way than through use of a reasonable inspection. For example, in a construction contract which requires painting of a building, the specification might state that painting must be free from "runs." However, the existence of runs depends on whether inspection is done from a distance of 20 feet, 1 foot, or microscopically. Of course, if the contract specifies the procedure for observation, it must be followed, and failure to do so would invalidate rejections based on the inspection.[52] A decision which considered this set of facts drew the distinction this way:

> ". . . Implicit in this case appear to be two aspects of standards, that are sometimes taken as the same and sometimes taken as different, namely, standards of inspection and standards of workmanship or performance. Certainly, these two are closely related and in many instances are indistinguishable. However, in at least some of the tasks under the subject contracts a technical distinction can be made in theory if not in practice. Standards of workmanship can be taken to relate to the end product of work, with respect to such matters as straightness of lines, smoothness of finish etc. Standards of inspection can be taken to relate to the care, method, and frequency with which inspection is done, such as every inch of surface is viewed rather than random samples, more than one inspector passes on the same work, etc. . . .

> . . . In a case such as this, a high standard of inspection or even a varying standard of inspection should not, for the most part, alter the standards of workmanship, although it might increase the amount of work a contractor might perform, by reason of the fact that little work below the performance standard escaped detection. For example, the quality of paint work required is relatively independent of whether the inspectors pass through once a day or once a month. On the other hand, the workmanship required might be affected if the inspection standard were changed from a view at ten feet to a view at one foot.[53]

What seems clear is that the evaluation of the standard of inspection involves an objective examination of the intent of contracting parties; the subjective intent of one of the parties is not controlling. In Chelan Packing Co.,[54] for example, the contractor was supplying applesauce which was to be "reasonably" free from peel and other impurities. The contractor was claiming increased costs due to the alleged overly stringent inspections. The Board, in upholding the contractor's claim, concluded that the "reasonably free standard imposed by the contract was an objective standard the application of which depended on the exercise of subjective discriminating judgment by a person or persons with experience and expertise in the subject matter."[55] The Board held that the subjectivity involved in the application of the standard did not make it vague and indefinite or render it unenforceable. The Board considered favorably the existence of a referee inspection procedure, but it thought the application of the inspections too inconsistent to be reasonable.

Some discussion of the standards of inspection has already arisen in a different context. In the last chapter, the standards were evaluated in the context of delay and interference, namely, the standards which limit the time, place, and amount of Government inspection. The standards which are now of interest are those that relate directly to the quality of the product or service.

Besides bearing in mind that the decisions attempt to assess the objective intent of contracting parties under these circumstances, it may be useful to state some intial observations as an aid in understanding the discussion. First, as has already been discussed, the purpose of an inspection or test is to determine whether the work conforms to the contract requirements. It is useful not to lose sight of that overall objective as a reference point. Second, the rules of contract interpretation are an apparent aid in deciding what a reasonable inspection is. For example, the decisions consider other contract language, as well as trade usage and industry practice, in defining the parameters of reasonable inspection. This approach seems sensible. Objectively, one could expect the parties to a contract to reach expectations concerning the extent of inspection based on such considerations where the contract does not provide otherwise.

Accuracy

Where the Government is using tests, all of the substantive rules which govern the validity of specified tests are apparently applicable. The tests must be accurate,[56] that is, they must be capable of assessing the existence or nonexistence of the characteristic. The problems with contamination and other failures to control the operating conditions of tests would appear to equally affect the validity of unspecified tests.

The Contract Language and Trade Practice As Considerations

Where the contract incorporates tolerances which recognize less than perfection as the general standard of performance, an inspection which appears to demand perfection is unreasonable.[57] Besides the specific contract language, other evidence of agreement between the parties, such as extended past practice, is also relevant to the reasonableness inquiry.[58]

Methods of testing or inspection which are accepted in the industry are also reasonable.[59] For example, the tools used in common industry practice, such as "go-no go" gauges, may be reasonable.[60]

Similarly, if the Government uses methods or tools which are capable of measuring characteristics with great accuracy, and the practice is contrary to standard industry practice which is well-known and well-recognized, the inspection is unreasonable.[61] In Tree Best Reforesters[62] the contractor

entered a contract for tree planting. The planting sites were required to be "scalped" (vegetation removed) around the sites for a diameter of eighteen or twenty-four inches depending on the plant involved. The inspectors were measuring diameters with a tape measure at several different points around the circumference and would require rework if diameters were more than one half inch off the required diameter. The Board found the inspection invalid and found it more stringent than trade useage would allow, although the Board never defined what the tolerance was. The Board concluded that it was not persuaded that the Government method of inspection was the normal and usual method applied in the industry.

The use of techniques of unusual accuracy in construction contracts is unreasonable where the contract does not provide for them.[63] Similarly, the inspection of painting substantially closer than customary in trade practice is unreasonable.[64] The same result has been reached in supply contracts where roundness of bores has been customarily measured with go-no go gauges, and the Government used more precise methods.[65]

Intended Use as a Consideration

An unspecified inspection is unreasonable if it employs operating requirements or conditions which are unreasonable considering the product's intended use.[66] The intended use must be one reasonably gleaned from the contract, not the subjective desires of the Government.[67] So, for example, where a supply contract required packaging which would

"prevent movement or damage," a Board has interpreted the requirement to mean prevention of damage during ordinary handling; the Government's use of a rough handling test was held unreasonable.[68] Apparently these inspections and tests must be done under conditions which are substantially similar to those encountered during intended use.[69]

This consideration of intended use has also been found relevant in the interpretation of specified test results. While the contract may specify that a certain test be performed, there may be no definition of what result is satisfactory. In Ovidio Flores, Sr.[70] the contractor was supplying parachute harnass. The contract specified a four thousand pound stress test. During the test, one stitch stretched and one broke, but the Government conceded that the harnass was safe for its use with parachutes. The Board found the rejection unreasonable because the test results were unreasonably applied; the harnass was suitable for its intended use.

One final case that synthesizes many of these rules is B.H. Tanner.[71] In that case the construction contractor was required to install vinyl tile in a mess hall. The specification said only that the tile was to be resistant to water, grease, oil, mineral spirits, etc. The Government rejected the tile after sending it to a testing laboratory and submitting it to tests using alcohol, grease, and asphalt. The exposure to the corrosives lasted for as long as twenty-four hours. The contractor argued that it

had successful commercial experience with the tile; the Government argued that it had special needs because the floors would be subjected to more than normal abuse by military personnel. The Board applied the standard of reasonableness and noted that nothing in the contract appraised the bidders of the existence of special Government needs. The Board went on to say that ". . . when, as here, [there were specifications available to set these standards] the Government could have been specific as to the tests to be met but instead used such a general contract description, there are clearly limits to the degree of resistance that the Government can insist on. And the test is what the contract requires and not what the buyer needs . . ."[72]

Tanner adequately demonstrates the objective focus of the inquiry and the importance of the intended use of the product to the determination of reasonableness. Also, this preoccupation with the existence of other more definite specifications, which the Government could have used, again surfaces as an impediment to Government arguments that their interpretation of contract requirements is reasonable.[73]

Reasonable Consistency

In the last chapter, the problem of multiple inspections was discussed in the context of interference and hindrance. It is equally true that the Government cannot base a rejection on an inspection practice which is not reasonably consistent and uniform in identifying defective performance.[74]

Subjective Judgments By Inspectors

One common thread that ties all of these cases together, where there is no quantified standard of performance or where human observation is a part of the testing and inspection procedure, is a mention of inspector qualifications. To a certain extent this is probably caused by application of the rules of evidence. Inspectors are often testifying in these cases, and no doubt Government counsel are qualifying the inspectors as experts by asking their qualifications. But there are apparently substantive reasons why this is important.

There is an opportunity for injection of subjectivity into the inspection process almost without regard to the kind of inspection or test. Even where a specified test is used, unless the test instrument employs digital readout or go-no go indications, the reading and interpretation of the test instrument is a subjective act. More commonly, the use of hand tools for measurement gives the inspector opportunity to reach subjective judgments. More clearly, indefinite standards of workmanship such as "workmanlike" or "clean" in service contracts highlight the problem of subjectivity. One gets a sense from the cases that in some of these instances the boards go through the analysis that has just been described and are left with very little in the way of objective criteria to resolve the issue of contract compliance. Then, the case must be decided based on an inspector's report or his testimony at the hearing that the work was defective.

This is not always the case. In one instance, a Board was able to make the determination based on its own examination of the item. A contractor was required to furnish can openers which were to have handles which made operation comfortable. The Government rejected the can openers because it thought the handles were not designed so they were comfortable. The Board had the luxury of having the can openers at the hearing. The members of the Board apparently tried out the can opener and decided that it was not comfortable to operate.[75] The case offers an illustration of the difficulties of proof and decision when the issue finally gets down to the judgment of a Government official about whether the work is acceptable or not. The Board in this case obviously felt that it had the qualifications and experience to determine what contracting parties' expectations would be about the "feel" of a comfortable can opener. Considering the nature of the item, they were probably as knowledgeabe as anyone; their judgment as to comfort was probably just as valid as that of someone having more training and experience.

The problem is that the contract work usually does not survive to enable a Board to make such a judgment, or the judgment may be beyond the expertise of a Board because of the technical nature of the work. The most common example appears to be the custodial maintenance contract, where the quality of performance is closely related to the time since cleaning. Subjectivity of inspection, and the problems it poses to subsequent litigation, then is in plain focus.

In fact, it has been recognized explicity that in custodial service contracts opinions can honestly differ as to what constitutes satisfactory work. Apparently this recognition has led to a modified statement about what the Government can insist on in the way of quality. It is work to a reasonable standard, and not perfection, that is required.[76]

Subjectivity In General

It has been said that where one party has the option of specifying particulars of performance, it must be "within limits set by commercial reasonableness."[77] Although subjective inspection is not exactly an example of the specification of particulars by one party, it does seem analogous. Because contractors have entered a contract with "cleaning" the only guide to acceptable performance, it is sensible to allow the contractor to expect that commercial reasonableness will be the touchstone of Government inspection, unless of course the contract language clearly indicates otherwise.

The general rule for evaluating subjective standards in inspection has been stated this way:

> . . . It is not unusual for the application of inspection, testing, grading and classification standards to involve the application of subjective discriminating judgment by persons with experience and expertise in the subject matter, but this does not render the standards so vague and indefinite as to be incapable of application or make them unenforceable.[78]

It appears from the decisions that where the acceptability

of work gets down to the subjective judgment of the inspector, if the inspector is not exercising impartial, discriminating judgment, or is not suitably experienced with the subject matter to be able to make these kinds of judgments, then the inspection is unreasonable. No cases state the rule that way, but it is the apparent synthesis of the decisions.

Discriminating Judgment

Subjective inspections must be done impartially, and evidence of the treatment of other contractors on similar contracts is apparently relevant.[79] Evidence of inspector bad faith is relevant, although such allegations face a presumption that public officials act conscientiously in discharge of their duties.[80]

In custodial service contract inspections, inspector conduct which demonstrates awareness that work need not be to perfection, or spotless, demonstrates reasonableness.[81] So does an inspection practice which recognizes that the variation in age, style, use, and location of a building area will affect the performance.[82] The decisions treat favorably presence of inspector sensitivity to the problem of demanding perfection,[83] and they look for evidence that at least some doubts are resolved in favor of the contractor when disputes arise.[84]

Evidence which in other ways shows the deliberation and care exercised by the inspector is important,[85] and evidence of an unreasonable or arbitrary inspector attitude

will taint the Government's case.[86] The inspector is expected to adhere to guidance which is available[87] such as clarifications issued by superiors concerning deficiencies that are acceptable.[88]

Inspector Experience and Expertise

The presence or absence of inspector experience is a common factual finding in the decisions and sometimes is an explicit part of the rationale for decision.[89] Training and experience are both ways to establish inspector expertise.[90]

Even where default terminations are based on observations by individuals who have little experience in service contracts, however, they will be considered if the observations were not so involved as to have required extensive training.[91] This qualification seems consistent with the Boards approach to deciding whether can openers were comfortable in use.[92] No special experience is required probably to make that determination.

Yet, the extensive use of inexperienced inspectors to form the basis for deficiency deductions has been disapproved where each submission required subjective judgments of work acceptability, and the inspectors were given little or no training and had no experience in custodial maintenance contracts.[93] But it is permissible to involve building custodians, for example, in the initial stages of the evaluative process so long as there is a review of

discrepancy reports by someone with experience.[94] In fact, supervisory review of inspection reports has been favorably considered in other contexts.[95]

Remedies and Burdens of Proof

Remedies

Where the Government has based its rejection on an impermissible inspection or test, the rejection is improper.[96] A default termination based on such a rejection would be converted to a termination for convenience.[97] Where the Government engages in the use of such inspections and tests over an extended period of time, it will be liable for breach of its implied duty not to hinder or impede the contractor,[98] and any resulting delay caused the contractor is excused.[99]

Where the Government use of the improper inspection or test has caused the contractor to repair work which conformed to the contract or otherwise to perform to a higher standard than required by the contract, the increased costs are compensable as a constructive change.[100]

Burdens of Proof

The Government bears the burden of proving that work does not comply with contract requirements when work is rejected.[101] On the other hand, when the Government's inspection is cited as the reason for a contractor claim that the contract was constructively changed, the contractor has the burden of proving that the inspection was improper.[102]

There are several presumptions which operate to allocate the responsibility for proving certain elements of claims of inspection impropriety. First, there is a presumption that inspectors are conscientious in the discharge of their duties and that they perform them fairly and in good faith.[103] Second, there is a presumption that laboratory reports and other inspection reports prepared in the routine course of inspection are accurate.[104] Finally, there is a presumption that Government tests are proper,[105] which allows the Government to only make a prima facie showing of contract noncompliance by submission of a test report showing that the contractor's product failed to pass the tests.[106] Apparently, this presumption is applicable only to the technical or scientific tests performed in laboratories or by specially trained personnel applying a minimum of subjective judgment and using well-defined procedures.[107]

Once the Government makes this prima facie showing, the contractor has the burden of production. It must come forward to show that Government test was not in compliance with contract requirements or was otherwise improper.[108] The evidence need only be sufficient to meet the strength of the presumption, in which case the presumption apparently is no longer operative, and the Government bears the ultimate burden of proof that rejected work did not conform to contract requirements.[109] The presumption that testing is proper does not allow the Government to rely on the absence of evidence where the contractor puts on evidence

that its tests, which are more stringent than the Government's, show compliance with contract requirements and there are various methods of testing which can be used under the contract.[110]

The Government has the burden of proving that specified testing and inspection procedures, such as sampling procedures, were followed.[111] Where the Government deviates from proper test procedures, it has the burden of proving that the deviations did not prejudice the test results.[112]

Conclusions

Any conclusions that one draws about the law in this area has very little to do with specific contract language. The Government is generally given the right to inspect and reject; there is little definition in the contract about the limits of that procedure. The validity of the inspection as a measure of contract performance seems to have more to do with all of the technical requirements in the contract than anything else.

The decisions could be somewhat clearer about the analysis that is used when the validity of an inspection and test is questioned. Many of the considerations identified in this chapter are mentioned in the decisions, but their roles in the analysis are usually not very clear. The cases could do a better job of linking the reasonableness inquiry with the ultimate objective of determining whether the inspection demands more in terms of performance than was expected when

the contract was entered. Crown Coat sets up that framework for analysis.[113]

For that reason, the Government can use specified tests to de-ermine whether work conforms to requirements; the tests certainly were expected to define the contract requirements. If the Government uses a different test procedure, it must prove that the contractor was not required to perform to higher standards.

Where tests are not specified, the focus on the parties' expectations probably accounts for the similarily in analysis when courts interpret specifications and when they evaluate the reasonableness of inspections. The other contract language, prior course of dealing, industry practice, and the intended use of the product all seem relevant to determine the parties' expectations about stringency of inspection, particularly where there may not be a quantifiable standard of performance. In these cases, the decisions appear to allow contractors to expect that subjective judgments by inspectors will be discriminate and exercised by a person with experience.

The ultimate label that is usually attached to a valid inspection is that it is "reasonable." That term by itself is not a very useful tool for resolving these issues without an appreciation for the factual considerations which are important. In the last chapter, the reasonableness of the inspection was also part of the inquiry, yet the considerations there were different. Where contractor delay and interference

are the issues, the parties expectations, and the rationale of the decisions, seem to depend on the expected impact on the contractor balanced against the reason for the delay. In the inquiry done in this chapter, reasonableness is linked much more closely which expectations about the quality of the work. If there is any suggestion to be made after this analysis, it is that the decisions do a better job of not treating the reasonableness of inspection as if it had a life of its own. There probably is much inspection activity that the Government thinks reasonable and in the public interest but which exceeds the objective expectations of the parties when they entered the contract.

CHAPTER II FOOTNOTES

[1] DAR ¶ 14.001.3; FPR § 1-14.100(a); NASA PR ¶ 14.201(a).

[2] DAR ¶ 14-001.4; FPR § 1-14.100(b).

[3] NASA PR ¶ 14.201(b).

[4] Airflote, Inc., ASBCA 13,289, 70-1 B.C.A. ¶ 8112 (1970).

[5] See General Time Corp., ASBCA 22,306, 80-1 B.C.A. ¶ 14,393, at 70,982 (1980).

[6] Southwest Welding & Mfg. Co. v. United States, 188 Ct. Cl. 925, 413 F. 2d 1167 (1969).

[7] See Chaney & James Constr. Co., GSBCA 1307, 68-2 B.C.A. ¶ 7164 (1968), aff'd on reconsideration, 69-1 B.C.A. ¶ 7504 (1969); see also General Time Corp., ASBCA 22,306, 80-1 B.C.A. ¶ 14,393 (1980); Applied Devices Corp., ASBCA 10,129, 70-2 B.C.A. ¶ 8602 (1970).

[8] See Victoreen Instrument Co., ASBCA 14,497, 72-2 B.C.A. ¶ 9693 (1972).

[9] See, e.g., Bethlehem Corp. v. United States, 199 Ct. Cl. 247, 562 F.2d 1400 (1972); Austin Co. v. United States, 161 Ct. Cl. 76, 314 F.2d 518, cert. denied, 375 U.S. 830 (1963).

[10] See, e.g., Chris Berg, Inc. v. United States, 197 Ct. Cl. 503, 455 F.2d 1037 (1972); Max Drill, Inc. v. United States, 192 Ct. Cl. 608, 427 F. 2d 1233 (1970).

[11] See, e.g., Hardeman-Monier-Hutcherson, ASBCA 11,869, 67-2 B.C.A. ¶ 6522 (1967).

[12] See Electronic Crystals Corp., FAACAP No. 66-22, 66-1 B.C.A. ¶ 5392 (1966).

[13] See Baifield Industries, Division of A-T-O, Inc., ASBCA 13,418, 77-1 B.C.A. ¶ 12,308 (1976)(where the contractor's interpretation that any amount of force was allowable in chambering ammunition cases in test gauges was held unreasonable).

[14] Id. at 59,388.

[15] Dynametrics Corp., ASBCA 9570, 66-1 B.C.A. ¶ 5328, aff'g on reconsideration, 1964 B.C.A. ¶ 4512 (1964).

[16] Turner Constr. Co., GSBCA 2858, 70-1 B.C.A. ¶ 8171 (1970).

[17] See Elgin National Watch Co., ASBCA 9815, 65-1 B.C.A. ¶ 4615 (1965).

[18] For example, there is a joint service testing manual used in the Department of Defense called "Materials Testing". Air Force Manual 89-3, Army TM 5-530, Navy NAVFAC MO-330 (February 1971).

[19] See United Microwave Co., ASBCA 7947, 1963 B.C.A. ¶ 3701 (1963).

[20] See Vaqueria Tres Monjitas, Inc., VACAB 1120, 75-1 B.C.A. ¶ 11,308 (1975); see also Paul Bunyan Lumber Co., AGBCA 77-145, 79-2 B.C.A. ¶ 13,959 (1979).

[21] See Boston Pneumatics, Inc., GSBCA 3378, 73-1 B.C.A. ¶ 9967 (1973).

[22] A-Nam Cong-Ty, ASBCA 14,200, 70-1 B.C.A. ¶ 8106 (1970).

[23] See L.T. Industries, Inc., ASBCA 12,832, 69-1 B.C.A. ¶ 7534 (1969).

[24] The Roflan Co., ASBCA 8262, 1964 B.C.A. ¶ 4306 (1964).

[25] Peter Kiewit Son's, ASBCA 14,218, 71-1 B.C.A. ¶ 8847 (1971).

[26] Communitronics, Ltd., ASBCA 23,261, 80-1 B.C.A. ¶ 14,368 (1980); see Herlo Corp., ASBCA 18,612, 75-1 B.C.A. ¶ 11,347 (1975).

[27] See American Machine & Foundry Co., ASBCA 10,772, 68-1 B.C.A. ¶ 6900, reconsideration den., 68-2 B.C.A. ¶ 7170 (1968).

[28] Cf. N. Fiorito Co. v. United States, 189 Ct. Cl. 215, 416 F.2d 1284 (1969).

[29] American Airflow Corp., ASBCA 13,363, 70-1 B.C.A. ¶ 8133 (1970).

[30] ASBCA 19,603, 75-1 B.C.A. ¶ 11,097 (1975).

[31] Id. at 52,831.

[32] Id. at 52,832.

[33] Crown Coat Front Co. v. United States, 154 Ct. Cl. 613, 292 F.2d 290 (1961).

[34] GSBCA 5254, 81-1 B.C.A. ¶ 14,844 (1980).

[35] NASA BCA 19, 1962 B.C.A. ¶ 3378 (1962).

[36] ASBCA 10,772, 68-1 B.C.A. ¶ 6900 (1968).

[37] Id. at 31,878.

[38] NASA BCA 166-3, 67-1 B.C.A. ¶ 6142, aff'd on reconsideration 67-2 B.C.A. ¶ 6563 (1967).

[39] W.F. Kilbride Constr., Inc., ASBCA 19,484, 76-1 B.C.A. ¶ 11,726 (1976).

[40] Id. at 55,883.

[41] See Graybeal, Inc., ASBCA 7938, 1963 B.C.A. ¶ 3688 (1963).

[42] See Adams v. United States, 175 Ct. Cl. 288, 358 F.2d 986 (1966); Southwest Welding & Manufacturing Co., ASBCA 20,641, 76-2 B.C.A. ¶ 12,070 (1976).

[43] Vi-Mil, Inc., ASBCA 25,111, 82-2 B.C.A. ¶ 15,840 (1982).

[44] Kraus v. United States, 177 Ct. Cl. 108, 366 F.2d 975 (1966). Max M. Goldhaber, ASBCA 8277, 65-2 B.C.A. ¶ 5083 (1965).

[45] WRB Corp. v. United States, 183 Ct. Cl. 409 (1968).

[46] See Chelan Packing Co., ASBCA 14,419, 72-1 B.C.A. ¶ 9290 (1972).

[47] ASBCA 25,618, 83-1 B.C.A. ¶ 16,167 (1982).

[48] See J.D. Abrams, ENGBCA 3743, 78-2 B.C.A. ¶ 13,336 (1978).

[49] ASBCA 8539, 1964 B.C.A. ¶ 4158 (1964).

[50] Supra note 33.

[51] Benco Painting Co., ASBCA 16,352, 74-1 B.C.A. ¶ 10,393 (1973).

[52] See the discussion and cases cited at notes 25-32, pp. 51-52.

[53] Warren Painting Co., ASBCA 6511, 61-2 B.C.A. ¶ 3199 (1961).

[54] Supra note 46.

[55] Chelan Packing Co., 72-1 B.C.A. at 43,046.

[56] See Puma Chemical Co. GSBCA 5254, 81-1 B.C.A. ¶ 14,844 (1980); Gibbs Manufacturing & Research Corp., ASBCA 9547, 1964 B.C.A. ¶ 4515 (1964).

[57] See Kenneth Reed Constr. Corp. v. United States, 201 Ct. Cl. 282, 475 F.2d 583 (1973).

[58] Alton Iron Works, Inc., ASBCA 13,245, 69-2 B.C.A. ¶ 7984 (1969).

[59] Paul Bunyan Lumber Co., AGBCA 77-145, 79-2 B.C.A. ¶ 13,959 (1979).

[60] Hydro Fitting Manufacturing Corp., NASA BCA 1169-20, 71-2 B.C.A. ¶ 9042 (1971). See note 17.

[61] See Marvin Engineering Co., ASBCA 25,460, 82-2 B.C.A. ¶ 16,021 (1982).

[62] AGBCA 82-266-3, 83-1 B.C.A. ¶ 16,290 (1983).

[63] Forsberg & Gregory, Inc., ASBCA 17,598, 75-1 B.C.A. ¶ 11,176 (1975).

[64] Benco Painting Co., supra note 51.

[65] See Marvin Engineering Co., supra note 61.

[66] See Emerson-Sack-Warner Corp., ASBCA 9164, 1964 B.C.A. ¶ 4483 (1964); Austin-Wright Constr. Co., ASBCA 9864, 65-1 B.C.A. ¶ 4565 (1965).

[67] Chelan Packing Co., supra note 46; B.H. Tanner, infra note 71.

[68] General Motors Corp., ASBCA 10,418, 65-2 B.C.A. ¶ 4885 (1965).

[69] See The Newark Door Co. v. United States, 107 Ct. Cl. 606, 69 F. Supp. 121 (1947).

[70] ASBCA 21,967, 78-2 B.C.A. ¶ 13,481 (1978).

[71] ASBCA 4917, 58-2 B.C.A. ¶ 2046 (1958).

[72] Id. at 8598.

[73] See Reliance Enterprises, Inc., supra note 47.

[74] See W.F. Kilbride Constr., Inc., supra note 39.

[75] Bonny Products, Inc., GSBCA 4577, 76-2 B.C.A. ¶ 12,158 (1978).

[76] San Antonio Constr. Co., ASBCA 8110, 1964 B.C.A. ¶ 4479 (1964).

[77] See Goodyear Tire and Rubber Co., ASBCA 9647, 1964 B.C.A. ¶ 4399 (1964).

[78] Camrex Reliance Paint Co., GSBCA 5763, 81-2 B.C.A. ¶ 15,246, reconsideration den., 81-2 B.C.A. ¶ 15,341 (1981).

[79] See H. B. Hinojos & Sons Bldg. Maintenance, GSBCA 5956, 82-1 B.C.A. ¶ 15,771 (1982).

[80] See Globe Engineering Co., ASBCA 23,934, 83-1 B.C.A. ¶ 16,370 (1983).

[81] See Rice Cleaning Service, ASBCA 13754, 70-1 B.C.A. ¶ 8238 (1970); Garmon's Maintenance Service, ASBCA 11,469, 67-2 B.C.A. ¶ 6589 (1967).

[82] See Rice Cleaning Service, supra note 81.

[83] Maintenance Engineering, Inc., ASBCA 8045, 1963 B.C.A. ¶ 3694 (1963).

[84] Cf. Edwards v. United States, 80 Ct. Cl. 118, 134 (1934). See the cases cited in note 81.

[85] See Edwards supra note 84.

[86] See Mid-American Protection, Inc., GSBCA 5476, 83-1 B.C.A. ¶ 16,341 (1983); Metropolitan Security Services, Inc., ASBCA 14,876, 71-1 B.C.A. ¶ 8826 (1971).

[87] See Edwards supra note 84.

[88] Larco-Industrial Painting Corp., ASBCA 14,647, 73-2 B.C.A. ¶ 10,073 (1973).

[89] See, e.g., W.F. Kilbride Constr. Inc., ASBCA 19,484, 76-1 B.C.A. ¶ 11,726 (1976); Forsberg & Gregory, Inc., ASBCA 17,598, 75-1 B.C.A. ¶ 11,176 (1975).

[90] See Baifield Industries, Division of A-T-O, Inc., ASBCA 13,418, 77-1 B.C.A. ¶ 12,308, at 59,396 (1976).

[91] A & W General Cleaning Contractors, ASBCA 14,809, 71-2 B.C.A. ¶ 8994 (1971).

[92] Bonny Products at note 75.

[93] North American Maintenance Co., ASBCA 21,986, 78-2 B.C.A. ¶ 13,316 (1978). Compare Building Maintenance Specialists, Inc., DOTCAB 71-35, 72-2 B.C.A. ¶ 9553 (1972).

[94] See Garmon's Maintenance Service, ASBCA 11,469, 67-2 B.C.A. ¶ 6589 (1967).

[95] Mid American Protection, Inc., GSBCA 5476, 83-1 B.C.A. ¶ 16,341 (1983).

[96] Cf. Garland Foods, Inc., ASBCA 21,571, 79-1 B.C.A. ¶ 13,877 (1979).

[97] See, e.g., Land-Air, Inc., ASBCA 14,172, 73-2 B.C.A. ¶ 10,114 (1973).

[98] WRB Corp. v. United States, 183 Ct. Cl. 409 (1968).

[99] Ovidio Flores, Sr., ASBCA 21,967, 78-2 B.C.A. ¶ 13,481 (1978).

[100] See General Motors Corp., ASBCA 10,418, 65-2 B.C.A. ¶ 4885 (1965).

[101] Orion Electronics Corp., ASBCA 18,010, 75-1 B.C.A. ¶ 11,006 (1974); Air-O-Plastik Corp., GSBCA 4802, 81-2 B.C.A. ¶ 15,338 (1981).

[102] See R.C. Hedreen Co., ASBCA 20,043, 77-2 B.C.A. ¶ 12,836 (1977); Margold Electric Co., ASBCA 15,984, 72-2 B.C.A. ¶ 9646 (1972).

[103] See Globe Engineering Co., supra note 80.

[104] See Filcon Corp., ASBCA 19,578, 75-2 B.C.A. ¶ 11,527 (1975); Rice Cleaning Service, GSBCA 3136, 71-1 B.C.A. ¶ 8787 (1971).

[105] See Reliance Enterprises, Inc., ASBCA 25,618, 83-1 B.C.A. ¶ 16,167 (1982); Air-O-Plastik Corp., GSBCA 4802, 81-2 B.C.A. ¶ 15,338 (1981); Communitronics, Ltd., supra note 26.

[106] Air-O-Plastik Corp. supra note 105; see Solar Laboratories, Inc., ASBCA 19,269, 74-2 B.C.A. ¶ 10,897 (1974), aff'd on reconsideration, 75-1 B.C.A. ¶ 11,049 (1975).

[107] Cf. Camrex Reliance Paint Co., GSBCA 5763, 81-2 B.C.A. ¶ 15,246 (1981); Churchhill Chemical Corp., GSBCA 4321, 77-1 B.C.A. ¶ 12,318 (1977).

[108] Air-O-Plastik Corp., supra note 105.

[109] Id. See Reliance Enterprises, Inc., supra note 105.

[110] The Lutz Co., GSBCA 2237, 68-1 B.C.A. ¶ 6767 (1967).

[111] Cf. RODA Enterprises, Inc., ASBCA 22,323, 81-2 B.C.A. ¶ 15,419 (1981).

112 See Garland Foods, Inc., ASBCA 21,571, 79-1 B.C.A. ¶ 13,877, aff'd on reconsideration, 79-2 B.C.A. ¶ 14,141 (1979); American Air Flow Corp., ASBCA 13,363, 70-1 B.C.A. ¶ 8133 (1970).

113 Crown Coat Front Co., supra note 33.

CHAPTER III

SAMPLING AND VERIFICATION INSPECTION

In the previous two chapters, inspection was evaluated from two different perspectives. In the first chapter, the analysis was concerned with Government liability for delay and interference caused by its inspection activity. The focus of attention was less on the quality of the product than it was on the expected impact of the activity on the contractor compared to its utility. In the second chapter, on the other hand, the contract quality requirements were more directly in issue because the propriety of an inspection may be questioned after a rejection of work based on it.

In this chapter, one encounters elements of each. The propriety of Government sampling inspection is directly related to the quality requirements of the contract. Sampling generally represents a choice by the Government to give up 100 percent inspection and allow some amount of defective work to pass through to acceptance. Changes to the sampling procedures can raise or lower the probability that defects will be discovered.

Verification inspection, on the other hand, is the process used by the Government to make periodic checks of contractor work. It may be independent of the requirements imposed on the contractor for testing the work. For example, the contractor may be obligated to perform 100 percent testing, while the

Government might choose to rely on contractor test records and compliance certificates in making its decision to reject or accept. In this case, the Government may conduct its own verification testing periodically to insure that the contractor is controlling quality adequately to justify this reduced Government inspection. If the Government is dissatisfied, it may institute full acceptance testing or increase the level of its surveillance. As one can imagine, this problem has less to do with changing quality requirements than with interference with the contractor's performance. In that way it is distinguishable from sampling.

Sampling Without Contract Authorization

The supply contract inspection clause allows the Government to reject or require correction of 'supplies or lots of supplies" which are defective.[1] The Inspection and Acceptance clause in the construction contract, by contrast, gives the Government the right to direct the contractor to replace any material or correct any workmanship found by the Government not to conform to the contract requirements."[2] The question that arises is whether the Government can inspect a portion of work and reject an entire lot based on that partial inspection. In construction contracts, for example, an inspector might inspect part of the lumber used in framing and order the contractor to tear out and replace it all because the portion inspected was defective. The answer to the question apparently differs depending on whether a supply or construction contract is involved.

Supply Contracts

Because the supply contract Inspection clause speaks in terms of "lots of supplies," the Boards have interpreted that provision to allow rejection of an entire lot based on a random, representative sampling procedure though the contract does not specify one.[3] Where the supply is not a discrete item accumulated in lots, but is a product such as chemicals or other commodities which have not distinct existence apart from the lot, the sampling method must be one capable of accurately and uniformly predicting the physical characteristics of the entire lot.[4]

In Frank & Warren, Inc.,[5] for example, the contractor was awarded a fixed price contract to supply items with knurled knobs. The knurls made gripping the knobs easier; the knurls were supposed to run diagonally from the upper left to the lower right of the knob. The contract had no specified sampling procedure, but upon delivery, the Government inspected only 50 of the 313 items tendered. The fifty were inspected visually; nine had knurls running in the wrong direction. Fifteen of the 313 items were also inspected for the required dimensions, and all of those failed to meet the contract requirements. The Government rejected them all, and the contractor claimed the costs of reworking the lot.

The Board upheld the rejection on the ground that the sample size was reasonable and the sample representative of the entire lot. The Board reasoned that the contractor had

supplied a lot that was defective in quantity as well as quality; this was considered a valid basis for rejection.

What is confusing about the rationale is the need to find that the samples were representative and of a reasonable size. If one uses the defective quantity rationale, there would be a failure in quantity regardless of how the defects were discovered. It would not matter whether the samples were representative or not. The Board did not say so, but the reason for the requirement of representative samples of a reasonable size may be an outgrowth of the requirement that the defects in performance be more than de minimus.[6] Today, thefocus would be on the substantial compliance doctrine and involve a determination of whether the lot of supplies was timely delivered under the reasonable belief that they were acceptable, and whether the defects were minor and readily correctable.[7] For a board or court to resolve that issue, they will apparently impose these minimum requirements on sampling where it is not specified in the contract.

This conclusion seems supported by a more recent decision. In Filcon Corp.[8] the Board also considered non-contractual sampling and the subsequent rejection. The Board upheld the rejection by concluding that the sampling evidence was sufficient to establish the existence of "significant nonconformities" throughout the lot. The Board held that a sample in such a case must be representatve of the lot and the sample size reasonable.

If the sampling is conducted properly, the Government is under no duty to inspect each item of a lot and sort out those supplies which are acceptable from those which are not.[9]

There may be specific provisions in the contract which limit the right of the Government to conduct sampling inspections. MIL-STD-105D is a specification which prescribes the sampling procedures which must be followed when it is incorporated; it will be discussed later. However, other special contract language can also constrain the Government's use of sampling.

In Herlo Corp.,[10] for example, the contractor was required to supply rifle barrels. The contract provided that:

> . . . Barrels will be accepted based on an acceptable statement of findings. The Government, however, may conduct independent inspection to verify contractor findings. Such inspections shall be made at destination and non-conforming barrels shall be rejected and returned to the contractor. Such barrels may be reworked and resubmitted for acceptance.[11]

The Government rejected an entire lot of 571 barrels after having completely inspected only about 100 of them. The Board stated that this provision:

> . . . read alone could be understood as restricting the Government to rejecting only particular barrels that do not conform to the specifications as disclosed by the Government's inspection. Since, such barrels may be reworked and resubmitted, the clause at least implicitly requires correct notification of the defects to be reworked . . .[12]

What is important at this point of the discussion is the

limit this special provision placed on the Government's right to reject a whole lot based on a representative inspection. Herlo also is important, though, because the Board upheld the Government's rejection saying:

> . . . However, when read together with the contract requirement that the contractor maintain an inspection system, perform inspections and submit the results thereof with each barrel demonstrating that the barrels conform with all requirements, we think the Government's right is not restricted to rejecting individual barrels for individual stated defects.
>
> We believe the Government has a right not only to reject particular barrels for particular defects disclosed after an inspection of the particular barrel, but also to decline to inspect a shipment of barrels when an inspection of a reasonable number of barrels discloses, as here, such a large number of defects as demonstrates that the contractor's inspection system has failed adequately to screen out defective units.[13]

This result will be analyzed further in Chapter IV. But apparently, where the contractor has a specific inspection system and screening obligation, there may be a right by the Government to use a sampling inspection for rejection which might not otherwise have been allowed. The rule may be particularly important to construction contracts, which have had a rule regarding unspecified sampling which is decidedly different from that in supply contracts.

AD-A142 321 INSPECTION AND QUALITY ASSURANCE IN GOVERNMENT CONTRACTS(U) AIR FORCE INST OF TECH WRIGHT-PATTERSON AFB OH C R PENNINGTON 1983 AFIT/CI/NR-84-8T 2/3

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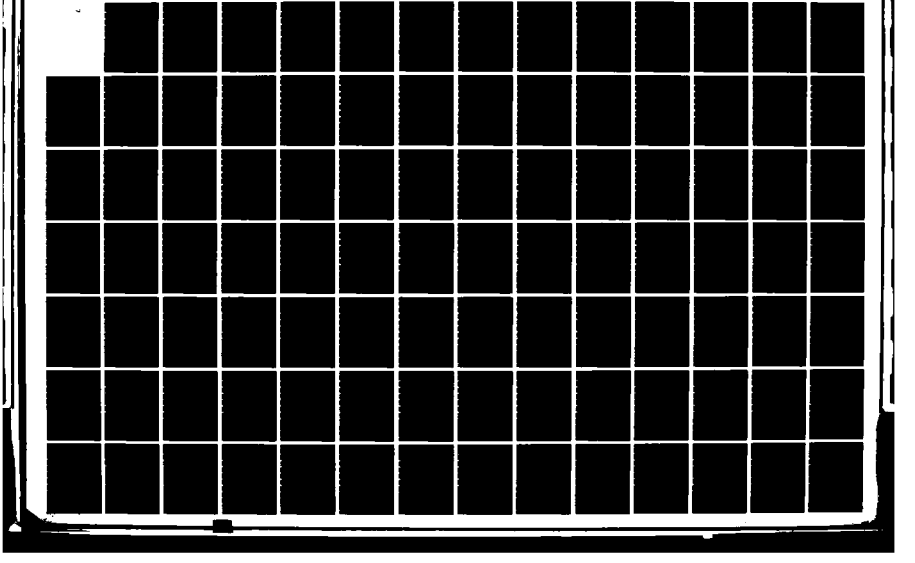

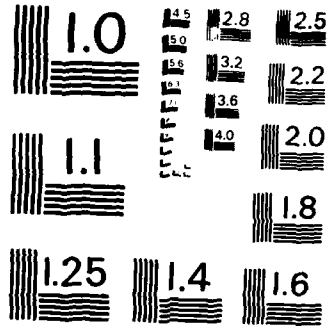

MICROCOPY RESOLUTION TEST CHART
NATIONAL BUREAU OF STANDARDS - 1963 - A

Construction Contracts

The Inspection and Acceptance clause used in construction contracts differs from that in supply contracts in that it does not specifically authorize the rejection of lots of materials. Perhaps that is the reason the decisions do not generally allow the Government to sample materials and base rejections or replacement orders on that kind of inspection. In a construction contract, rejection of material based upon sampling is only proper if the samples are representative and accurately determine the characteristics which are uniform throughout the work.[14]

For example, in Pams Products, Inc.[15] the contractor was awarded a fixed price construction contract for the maintenance of airfield pavement. The contract specified the proportions of ingredients to be used for protective sealant. After application of three coats of the sealant, the Government detected peeling of the surface. The Government selected a three square yard portion of the runway and scraped off some samples. They were sent to a laboratory and failed the testing. The contractor was then ordered to apply a fourth coat of sealant to the runway.

In upholding the contractor's claim for the costs of applying the additional coat, the Board found the sampling method inadequate. It reasoned that three square yards out of 725,000 square feet was an inadequate sample size and that the method of selection of the sample, "eyeballing" by the inspector, was not a representative method of sampling.

Such a sample, said the Board, was not proved to be representative of the entire area.

If the Government can prove that the characteristic being tested is uniformly dispersed throughout the materials being tested, such as the tint of paint which has been mixed in one operation, conceivably sampling can be used to demonstrate the defectiveness of the entire batch.[16] The burden is on the Government to prove the correctness of the sampling method.[17]

Contractually Specified Sampling

The presence of a contractual sampling plan may eliminate the uncertainty about what size sample must be selected as well as the need to demonstrate the representative nature of the sample so long as the plan is followed. However, the validity of the rejection then is closely tied to the use of the procedures properly that are specified. There are three generic classes of sampling plans that are used in Government contracts routinely.

The one encountered most commonly in the case law is MIL-STD-105D[18] or its previous editions. This sampling plan is referred to as inspection by attributes. The specification identifies the number of samples which are drawn based on lot size. The samples are evaluated for their characteristics with tolerances being applied as specified in the contract. The samples are rated on the basis of numbers of defects. If the number of defects exceeds a specified level, the lot is rejected.

MIL-STD-414 is a specification which embodies the second kind of sampling, inspection by variables.[19] The scheme is much the same as MIL-STD-105D so it will not be discussed in detail. This kind of plan can be used when a quality characteristic can be measured on a continuous scale and the quality can be expressed in terms of percent defective. For example, it can be used when the characteristic can be measured in terms such as pounds, inches, feet per second, and the like. When the samples are selected measurements are taken, and instead of an acceptable/unacceptable determination being made, the defects are expressed in percent defective. There is a statistical formula which is applied to the sums of the percent defectives and their mean. An acceptability constant is taken from tables in the specification and the rejection/acceptance decision is made based on a comparison of the constant with the percent defective quotient. This plan generally makes the chance of rejection dependent on the mean of the deviations from contract standards.

The third generic plan that one encounters is the continuous sampling plan.[20] Those procedures are used where products are submitted for inspection by conveyorized process or other straight-line materials handling methods where lot accumulation, necessary for the other two plans, is not feasible. For the continuous plan to be used, there must be a moving product, ample physical facilities to permit rapid 100% inspection when necessary, relative ease of inspection, and a process which produces a homogenous material. The plans

begin the sampling with 100% inspection. At this stage, the inspection is simply a sorting process, with rejected items taken off the production line and acceptable products allowed to pass through. As soon as a specified number of defect-free items passes during a given production interval (which are units of time such as shifts), the sampling begins. The specification specifies the 'trigger" number of defect-free items necessary to begin the sampling. The specification also prescribes the number of samples to be drawn during any given production interval. The specification also has "shifting" conditions for shifting back and forth between 100% inspection and sampling depending on the acceptability of the samples.[21]

The published decisions have involved the most common of the three sampling schemes, MIL-STD-105D. For that reason, portions of the specification have been reproduced in Appendix C. A more detailed analysis of the specification and the problems which arise will now be done.

MIL-STD-105D

An inspection by attribute is an "inspection whereby either the unit of product is classified simply as defective or nondefective, or the number of defects in the unit of product is counted, with respect to a given requirement or set of contract requirements."[22]

The specification classifies defects according to seriousness. A critical defect is one that judgment and experience indicate is likely to result in hazardous or unsafe

conditions for individuals using the product or one that is likely to prevent performance of the tactical function of a major end item such as an aircraft.[23] A major defect is a defect, other than critical, that is likely to result in failure, or to reduce materially the usability of the unit of product for its intended purpose.[24] A minor defect is one that is not likely to reduce materially the usability of the unit of product for its intended purpose, or is a departure from established standards having little bearing on the effective use or operation of the unit.[25] The defects are classified according to the highest category per unit. A unit gets only one classification, either critical defective, major defective, or minor defective.

These defectives are classified in terms of percent defective. The consumer agency specifies what is known as an Acceptable Quality Level that sets the standard of perfection for the lots or batches. The Acceptable Quality Level (AQL) is the maximum percent defective that can be considered satisfactory.[26] The consumer agency also specifies an inspection level which is the relationship between the lot and sample size. Then the tables in the specification are entered with the inspection level and AQL, and an acceptance number and a rejection number are extracted. When the percent defective is compared to this rejection number, the decision to either accept or reject is made.

The specification gives the Government the right to reject any unit found defective. The Government can, under

the specification, require the supplier to inspect every unit of the lot or batch for critical defects. Lots or batches which are found unacceptable can be resubmitted for reinspection only after all units have been reexamined or retested and all defective units removed or defects corrected. The Government reserves the right under the specification to determine whether normal or tightened inspection will be used during rescreening and whether reinspection will include all types or classes of defects or only the particular type or class of defect which caused the initial rejection.[27] This is important because the AQL may vary depending on the class of defect which is being considered. A rejection could be caused, for example, because of an excessive number of major defects, as specified by the agency. The specification allows the Government to order the contractor to conduct complete rescreening, including screening for the existence of minor defects. This right may be particularly important where the Government has been relying on a contractor's inspection system to adequately identify and correct these kinds of problems.[28] To the contractor, this specification of course means that there is potential for higher production costs.[29]

Sampling is done based on the accumulation of lots or batches. The supplier has the obligation to provide adequate and suitable storage space for each lot or batch, equipment needed for proper identification and presentation, and personnel for handling and drawing samples.[30] The samples

may be drawn after all of the units comprising the lot or batch have been assembled, or they may be drawn during assembly of the lot or batch.[31]

The specification also prescribes conditions under which the Government can switch from normal to tightened or reduced inspections.[32] In general, these conditions are a specified number of acceptable lots, for reduced inspection, or the rejection of a certain percentage of lots for the tightening of inspection. The specification allows discontinuation of inspection by the Government in the event that ten consecutive lots or batches remain on tightened inspection.[33] Normal inspection is generally used at the beginning of sampling unless otherwise directed by the Government; such a direction will be tested for arbitrariness.[34]

Failures to Follow Specified Sampling Procedures

The sampling specification does two things. First, it establishes the standard of perfection for the samples drawn from the lot.[35] Second, it establishes the size of the sample drawn.

Misapplication of the Acceptable Quality Level criteria by the Government will entitle the contractor to recover rework and reinspection costs after rejection.[36] Also, the failure by the Government to select a sample size designated by the contract will render the test results invalid.[37] These rules are examples of the general rule that contractually mandated sampling procedures will be strictly enforced.[38] The

burden is on the Government to prove that it followed them.[39]

A sample must be drawn randomly without regard to its quality.[40] "Eyeballing" work to extract a sample has been disapproved and a rejection invalidated because it is an imprecise method of insuring a representative sample is drawn.[41] Probably what is more important is that such methods offend the rule that samples must be drawn impartially and not with regard to a preliminary determination of quality.[42]

One case that applied this rule structure was A.B.G. Instrument and Engineering, Inc. v. United States.[43] There the Government failed to select a large enough sample size, which invalidated any argument that the lot was defective for the defect evaluated by sampling. However, as appears to be the case often, the contract specified a separate basis for rejection which was based on major defects alone. Although too small a sample was drawn, the major defect level was reached and the rejection was held proper on that basis. Note that the problem was not whether the sample was drawn randomly. Had that been the case, there may have been more discussion about whether the sample was representative, and the contract specification might have been strictly applied.[44]

There is an opportunity to escape the strictness of the rule, at least in the Armed Services Board of Contract Appeals, if the Government can prove that the deviation in sampling procedure caused "no appreciable difference in result."[45] In that case, the Board considered the impact of a smaller sample size. The Government had selected six cases of eggs

out of a lot of 125 cases. The specification required that the sample size be eight cases based on that lot size. The Board considered statistical evidence which showed the probability of acceptance was only about 2% lower using the modified procedure and upheld the rejection. Again, this question only related to sample size, not the random nature of the sampling and not AQL. At any rate, the Government apparently has the burden of proving that the defects in the procedure were not serious enough to effect the outcome appreciably.[46]

There is one decision that represents a departure from this line of reasoning and needs some examination, however. In Temco, Inc.[47] a contractor was required to supply steel shell bodies which had specified yield strength requirements. The contract had a special clause which allowed the Government to base rejection of lots of shell casings on the results of tension tests conducted on two shells. The contract did not contain MIL-STD-105D, but the Board found that the initial agreement provided for random selection of the shells.

Sometime after an extended period of time where this random selection was being used, and lots were uniformly being found acceptable, the Government had a shell fail during ballistics testing and suspected the tensile strength was inadequate. Because of the importance of this characteristic, the Government decided to change the method of selecting the two samples it tested in each lot.

There is a correlation between hardness and tensile

strength in steel. Hardness tests can be performed non-destructively, so the Government began 100% hardness testing on the shells and selected the softest two shells for tension testing. Of course, this procedure was designed to decide which shells had the most probability of failure. The rejection rate predictably went up, as did the contractor's production costs in accommodating the new hardness testing. The contractor claimed an equitable adjustment under the Changes clause for the increased costs, and the Board held:

> . . . the appellant is entitled to an equitable adjustment for costs which can be demonstrated as having been caused by the change in the testing procedure (as opposed to costs caused by rejections of lots or portions of lots the deficiencies of which might have escaped detection under the original test procedure). This would include such things as material handling; provision of space, heat, light, etc.; equipment, if any; the destruction of four bodies from each lot instead of two; and the delay costs, if any, occasioned because of the increased time required by the hardness testing of each body in a lot."[48]

The majority of the Board characterized the issue as:

> . . . whether the contract called for the appellant to deliver bodies, any one of which could, if tested, successfully pass the tension test or whether the contract called for the production of lots of bodies from which two drawn at random can pass the tension test. The latter interpretation would be the equivalent of saying that the test procedures specified by the Government were an essential part of the over-all technical requirements, and that these test procedures modified, limited, and subtracted from those requirements.[49]

The Board resolved the issue by reasoning that a promise to use a random sampling selection could not have reasonably been interpreted by the contractor to mean that the Government

assents to lower technical requirements, e.g., an agreement to accept some items with lower than required tensile strength. Therefore, said the Board, the Government could use an other than random sampling technique to insure compliance with the technical requirements.

The dissenting opinion seems more persuasive. There seems to be no explanation for an agreement to use random sampling other than that the Government has chosen to accept the occasional defects which will escape detection through use of the agreed system. Probably the Government expected that the production process would produce a homogenous product and that the examination of two shells would be sufficient to predict the characteristics of the whole.

The Government could have specified "selection" of the two shells most likely to fail the tensile test, yet it didn't. The only reasonable interpretation one can give this kind of provision is that it did specify an element of the technical quality requirements that the contractor was required to meet.[50]

Government Verification Inspections

Government verification inspection will be treated in this chapter so it can be contrasted to sampling. Sampling is a process of determining whether the work conforms to the contract by inspecting only a representative portion of the whole. Because the Government agrees to sampling as a basis for inspection, the decisions have treated deviations from contract procedures strictly. Sampling apparently is an element

of those parts of a contract, including the technical specifications and test requirements, which define the quality characteristics of work.[51] The Government, when it inspects by sampling, makes a decision to accept something less than perfection and even quantifies it when an AQL is specified.

Verification inspections similarly involve an examination of a portion of the work, but the purpose and legal effect may be different. The purpose is to verify that items produced are complying with contract quality requirements, but the inspection may be used for purposes beyond rejection. These inspections and surveillance procedures are used to insure that the contractor is doing inspection required by the contract, submitting accurate statements of quality where those are required, complying with the duty to maintain an inspection system acceptable to the Government, and otherwise performing contractor responsibilities in controlling quality.[52] While rejections may be based on the accumulated data, these inspections may also be the basis for other corrective action.

These verifications can consist of a range of activity, from simple review of contractor records to actual Government inspection and testing.[53] The problems which are arising do not so much involve contract quality as they do the potential for increasing the contractor's production costs based on the way the Government conducts these inspections.[54]

This analysis will necessarily involve supply contracts. The issues which were discussed in Chapter I are introductory. Also, the cases dealing with inspection during performance

of construction contracts were discussed in Chapter I.[55]

Contractual Requirements

The cases are infrequent, but when the Government and contractor agree to the conditions under which the Government may conduct its verification inspections, the contractor will be entitled to an equitable adjustment for cost increases caused by Government verification inspections not in accord with those provisions.[56] This rule was illustrated in Columbia Products, Inc.[57]

In that case the contract called for manufacture and delivery of soup to be used by the armed forces. The contract included MIL-STD-105D which allowed reduced inspection if ten consecutive lots were not defective. The contract also included Defense Personnel Support Center Manual 4155.5 which gave the Government the right to:

> . . . perform verification (examination or testing or both) to assure that the inspection performed or certificates furnished by the contractor are reliable. Initially, the amount of verification inspection may equal the amount of inspection performed by the contractor. It is the intent of the Government to be able to rely on the results of the examinations and tests performed by the contractor so that the amount of verification inspection may be reduced accordingly. . . When any element of the contractor inspection system (a particular test or examination of the end item or component) has been determined to be unreliable. . . the Government reserves the right to consider the inspection system as a whole unreliable, and to return to full lot by lot verification. . . Examination and testing by the Government will continue until such time as the contractor's reliability is again established to the satisfaction of the Administrative Contracting Officer.[58]

The Government experienced some problems with the contractor's performance and instituted full lot-by-lot testing. It refused to allow a return to reduced verification testing until ten successive lots had been tested and found acceptable, arguing that MIL-STD-105D provided for that procedure. The contractor, on the other hand, proved that prior practice under the clause had reduced the verification testing upon the acceptable submission of five consecutive lots. The contractor proved that it had relied on this contemplated reduced Government verification when it bid, and that the Government insistence on lot-by-lot testing deprived it of an important cost savings.[59]

The Board held for the contractor. It first held that the Government misconstrued the applicability of MIL-STD-105D. The switching provisions there, said the Board, related to the intensity of the sampling that either the Government or contractor would use to determine whether or not a lot complied to the contract requirements.[60] On the other hand, the DPSCM 4155.5 provision was the applicable provision which controlled the frequency of the Government inspection. The Board accepted the contractor's interpretation of that provision and ruled that the Government was not justified in withholding reduced verification inspection for ten consecutive, acceptable lots. The Board also considered alternative reasons advanced by the Government for continuing lot by lot inspection, including the failure of the contractor to submit required data, and concluded such a ground was not

contemplated by the agreement; the contractor had demonstrated that its inspection and test system was reliable, the only relevant condition.[61] The same result has been reached under a similar contract provision where the Government has agreed to conduct "moving lot" rather than "stationary lot" inspections. Failure to satisfy the contract conditions for shifting to the more costly procedure, in terms of contractor impact, will subject the Government to liability.[62]

What these decisions teach is that the Government can not rely on the switching procedures of the standard sampling specifications to justify verification inspection changes where the parties have agreed on the conditions for the changes. The sampling specifications are generally concerned with determining the quality of products, not specifying the conditions under which it is permissible for the Government to increase the extent to which it can interfere with the contractor's performance.

Verification Inspection Where Not Specified

It now appears that the Government's right to conduct verification inspection is only circumscribed by the general obligation not to unreasonably delay the contractor. Allied Paint Manufacturing v. United States,[63] which was discussed in Chapter I, suggested that rule. There, remember, the Government tightened its inspection procedure by going to full acceptance testing after it had been using reduced verification testing previously. The court considered the

standard inspection clause, which gives the Government the right to inspect at all times and places, as justification for that kind of change in the absence of a "quality assurance agreement between the parties. . ."[64] The court went on to approve the Board's analysis of unreasonable delay, implying that the obligation not to unreasonably delay is still important in these kinds of cases.

In G.W. Galloway Co.[65] a supply contractor asserted that a resident inspection force was excessive and that the inspections interfered with performance. The Board found that the Government had interfered impermissibly with the contractor's performance. The Board held that although the Government can inspect at all times and places, and the contractor can even be expected to incur some costs in assisting the Government with inspection, the Government does not have unlimited authority or discretion to conduct inspections without regard to the impact that its inspection practices may have upon the contractor's production process.

Implicit in this formulation of the rule are considerations that were identified in Chapter I and which are of particular relevance to this kind of issue.[66] Without restating those observations entirely, the question of unreasonable interference is probably resolved by gauging the parties expectations to such a contract. The process seems to come down to balancing the forseeable cost impact of inspection activity against its utility and necessity.[67]

There are policies and procedures for verification inspection located in different publications, most of which are not incorporated into the contract but serve to direct Government quality assurance personnel in the performance of their duties. While these manuals and regulations do not have the legal significance of provisions made a part of the contract, such as those in Columbia Products, they may nevertheless have some significance to any reasonableness analysis. It has been said that Government policy pronouncements may be considered in interpreting contract language.[68] It would seem sensible that the Government directives and procedures might be useful in defining reasonable upper limits of interference by verification inspection. With that in mind, the discussion will now turn to the regulatory provisions that apply.

Government Regulations and Policy Concerning Verification

The use of verification inspections implies that the Government will be engaged in quality assurance activity at the source, the contractor's plant. There is specific guidance about when source quality assurance action will be designated. Generally, when an advanced quality control specification or contractor inspection system requirement is incorporated into the contract because of the complexity or critical nature of the items, quality assurance at source will be conducted by the Government.[69] Additionally, these activities take place at the source when:[70]

1. performance of quality assurance at any other place would require uneconomical disassembly or destructive testing;

2. special instruments, gauges, or facilities are needed and are available only at source;

3. Government quality assurance during performance is essential, as where quality control is closely related to production methods;[71]

4. the supplies require inspection and are destined for overseas shipment; or

5. when otherwise in the best interests of the Government.[72]

There is no real standardization among the agencies in the use of these terms. Quality assurance has generally been taken to refer to the activity the Government engages in to determine whether the contractor has fulfilled its contract obligations pertaining to quality and quantity.[73] It is a planned and systematic pattern of all actions necessary to provide adequate confidence that adequate technical requirements are established, products and services conform to established technical requirements, and satisfactory performance is achieved.[74] These actions can include inspection of supplies and services, review of the contractor's inspection system or quality program, maintenance of Government records to reflect deficiencies and corrective measures, and review and evaluation of other quality data.[75]

The terms used to refer to the contractor's obligations vary; it may have to maintain an inspection system (DOD) or quality

control program.[77] These are the focus of all the attention.

The procurement regulations are uniform in requiring designation in the contract where the Government reserves the right to conduct inspection[78] or other quality assurance activity.[79] Generally when inspection is to be done at the source, the location may not be changed without the authorization of the contracting officer.[80] These requirements may have helped alert potential contractors to the degree of Government inspection they could expect, as well as help them form some estimate of how much it would cost in terms of production difficulties.

The specific mechanisms of verification inspection are contained in agency handbooks and manuals that may not be incorporated in the contract. Yet there are general policy statements which encourage reduced Government surveillance of contractor quality systems when the performance and product quality indicate that it is justified.[81]

One way that this is accomplished is through reliance on contractor statements of quality or certificates of conformance as a basis for shipment authorization or even acceptance.[82] Generally, however, the Government still does not forfeit its right to make periodic inspections, although they are not conducted routinely as a matter of policy.[83]

The techniques of verification by the Government range from actual inspection and test by the Government, to analysis of their records.[84] The Department of Defense employs probably the most elaborate verification process.[85]

The Department of Defense quality assurance procedures are published in a joint department publication, Defense Logistics Agency Manual (DLAM 8200.1.[86] NASA and GSA have published similar manuals for use by their own quality assurance personnel, although they are not as detailed.[87] DLAM 8200.1 is of particular interest because it is used by the Defense Contract Administration Service (DCAS) which performs much of the surveillance activity for other agencies.[88]

The verification activities described in the manual include[89] review of the contractor's quality control program, where one is applicable, as well as a review of the written procedures which the contractor has published to guide its own employees. The manual also prescribes the use of a "*Product Verification Inspection.*" The process begins generally with an initial product verification which includes a review of the physical facilities and an initial inspection of the product. Depending on the outcome of this initial inspection, the Government can use either a reduced or an intensified product verification. The continuing verification has sampling procedures which are much the same as those in sampling specifications, although they are not constrained by agreed procedures. There are also switching procedures for tightening and reducing the verification sampling, based on conformance of the product during verification testing.

This is but a brief description of the nature of the Government directives which control the verification inspection. These provisions are not contractually binding, unless of course

they are incorporated in the contract. But they might be useful to a contractor who is faced with what appears to be unreasonable interference by the Government. The policies, and the procedures used by the Government to implement them, could highlight unduly stringent surveillance of a contractor. For example, there is a provision in Defense Logistics Agency Manual 8200.2, used by the Defense Contract Administration Service, which says that routine surveillance will not be done of a contractor whose quality certificates are accepted unless there is a reason such as criticality of the end item or a basis for questioning the reliability of the certificates.[90]

Conclusion

It seems quite clear that rejection can be based on sampling inspection in supply contracts even if not specified. The sampling procedure must include an adequate size sample, impartial sample selection, and techniques which otherwise insure that the sample is representative. In construction contracts, however, the right to reject work based on sampling is very limited unless specified in the contract.

The standard sampling specifications are strictly applied when the Government agrees to base its rejections on those procedures, although there is apparently room for the Government to prove that deviations were statistically insignificant, where the only deviation was in sample size. The specifications also include other rights of the Government,

however, which are important to its ability to assure that work meets contract requirements. It can order tightened inspection and rescreening under certain circumstances, and it can even cease acceptance inspection where lot quality is consistently bad enough.

The sampling specifications apparently have nothing to do with the Government's procedures for verification inspection. So if the contractor and Government agree to the conditions under which the Government will perform its verification inspections, the triggering provisions in the sampling specifications do not apply generally.

But where there is no quality assurance agreement which limits the right of the Government to inspect during production, the Government's activity is constrained only by the general obligation to not unduly delay the contractor. Absent some demonstration that inclusion of these provisions in the contract is beneficial, agencies probably should try to avoid including verification procedures in the contract unless they are willing to sacrifice the flexibility inherent in the general right to inspect at all reasonable times and places.

CHAPTER III FOOTNOTES

[1] See Appendix A, FPR clause ¶(b); DAR clause ¶(c).

[2] See Appendix A, Inspection and Acceptance Clause ¶ (b).

[3] Metal-Tech, Inc., ASBCA 14,828, 72-2 B.C.A. ¶ 9545 (1972).

[4] Puma Chemical Co., GSBCA 5254, 81-1 B.C.A. ¶ 14,844 (1980).

[5] ASBCA 10,259, 65-2 B.C.A. ¶ 5102 (1965).

[6] Cf. Video Research Corp., ASBCA 14684, 71-2 B.C.A. ¶ 9006 (1971); Dallas Scrap Baling Corp., ASBCA 5778, 61-2 B.C.A. ¶ 3251 (1961).

[7] Radiation Technology, Inc. v. United States, 177 Ct. Cl. 227, 366 F.2d 1003 (1966).

[8] ASBCA 19,578, 75-1 B.C.A. ¶ 11,303, aff'd on reconsideration, 75-2 B.C.A. ¶ 11,527 (1975).

[9] Frank & Warren, Inc., supra note 5.

[10] ASBCA 18,612, 75-1 B.C.A. ¶ 11,347 (1975).

[11] Id. at 54,051.

[12] Id.

[13] Id.

[14] Walsky Constr. Co., ASBCA 19,875, 77-1 B.C.A. ¶ 12,388, aff'd on reconsideration, 77-2 B.C.A. ¶ 12,632 (1977); see D.R. Kincaid, Ltd., ASBCA 8615, 65-1 B.C.A. ¶ 4810 (1965).

[15] ASBCA 15,847, 72-1 B.C.A. ¶ 9401 (1972).

[16] Id.

[17] See Walsky Constr. Co., supra note 14.

[18] See Appendix C.

[19] MIL-STD-414, Sampling Procedures and Tables For Inspection By Variables For Percent Defective (11 June 1957).

[20] MIL-STD-1235B, Single and Multi-Level Continuous Sampling Procedures and Tables For Inspection By Attributes.

[21] The single-level and multi-level schemes differ in the number of sampling levels that are available for shifting to and from.

[22] Appendix C, ¶ 1.4.

[23] ¶ 2.1.1.

[24] ¶ 2.1.2.

[25] ¶ 2.1.3.

[26] ¶ 4.2.

[27] ¶ 6.

[28] In this regard see the discussion in Chapter V dealing with Government remedies for quality system failures.

[29] See, e.g., Baifield Industries, Division of A-T-O, Inc., ASBCA 13,418, 77-1 B.C.A. ¶ 12,308, at 59,416 (1976).

[30] ¶ 5.4.

[31] ¶ 7.3.

[32] ¶ 8.

[33] ¶ 8.4.

[34] ¶ 8.1; Pioneer Canvas Products Co., ASBCA 9932, 65-1 B.C.A. ¶ 4765 (1965).

[35] See Aero-Fab Corp., ASBCA 3837, 57-1 B.C.A. ¶ 1243 (1957).

[36] Kollsman Instrument Corp., ASBCA 14,849, 74-2 B.C.A. ¶ 10,837 (1974).

[37] Churchhill Chemical Corp., GSBCA 4321, 77-1 B.C.A. ¶ 12,318 (1977).

[38] RODA Enterprises, Inc., ASBCA 22,323, 81-2 B.C.A. ¶ 15,419 (1981); see Elgin National Watch Co., ASBCA 9815, 65-1 B.C.A. ¶ 4615 (1965).

[39] RODA Enterprises, Inc., supra note 38.

[40] See Baifield Industries, supra note 29, at 59,373; Pams Products, supra note 15.

[41] Pams Products, supra note 15.

[42] Puma Chemical Co., supra note 4.

[43] 219 Ct. Cl. 381, 593 F.2d 394 (1979).

[44] If the discovery of major defects were to be done randomly, as is the scheme in MIL-STD-105D, then the use of a non-representative method which was impartial could result in more frequent discovery of major defects. In that case, it would seem that the result would be different, and the Government's procedure would be held invalid.

[45] Poultry Producers Ass'n, ASBCA 9634, 65-1 B.C.A. ¶ 4807 (1965).

[46] See RODA Enterprises, Inc., supra note 38.

[47] ASBCA 9588, 65-1 B.C.A. ¶ 4822 (1965).

[48] Id. at 22,845.

[49] Id. at 22,843.

[50] Compare the cases in notes 41-42.

[51] See Carlstrom Pressed Metal, ASBCA 4940, 59-2 B.C.A. ¶ 2273 (1959); Aero-Fab Corp., supra note 35.

[52] Defense Logistics Agency Manual 8200.1, Section IV, Part IV. This manual, entitled Procurement Quality Assurance, is a joint services manual. Other services regulatory designations are Army Regulation 702-4, Air Force Regulation 74-15, and Navy NAVMATINST 4355.69A. See also DLAM 8200.2 which is used by the Defense Contract Adminsistration Service in its quality assurance activities. Verification by the General Services Administration Federal Supply Service is outlined in FSS P 2901.5, Volume 5, Supply Operations Quality Control, and FSS P 4400.1, Chapter 12. NASA publishes its guidance in NASA Handbook 5330.7, Management of Government Quality Assurance Functions For Supplier Operations, as well as NASA Handbook 5300.4 (2B), Quality Assurance Provisions for Government Agencies.

[53] See DAR 14-103; NASA PR ¶ 14.103.

[54] See, e.g., Garland Foods, Inc., ASBCA 21,571, 79-1 B.C.A. ¶ 13,877, aff'd on reconsideration, 79-2 B.C.A. ¶ 14,141 (1979).

[55] See the discussion accompanying notes 83-92 in Chapter I, pp. 23ff.

[56] See Garland Foods, Inc., supra note 54.

[57] ASBCA 21,172, 78-1 B.C.A. ¶ 13,089 (1978).

[58] Id. at 63,973.

[59] Id. at 63,972.

[60] Id. at 63,975.

[61] Id. at 63,978.

[62] See Garland Foods, Inc., supra note 54.

[63] 200 Ct. Cl. 313, 470 F.2d 556 (1972).

[64] Id. at 326.

[65] ASBCA 16,656, 73-2 B.C.A. ¶ 10,270 (1973).

[66] See in particular the discussion associated with notes 75-98 and 106-109, pp 24-33.

[67] See G.W. Galloway, supra note 65; Lumen, Inc., ASBCA 8364, 1964 B.C.A. ¶ 4436 (1964).

[68] See Piracci Constr. Co., GSBCA 3477, 74-2 B.C.A. ¶ 10,800 (1974); Cone Brothers Contracting Co., ASBCA 16,078, 72-1 B.C.A. ¶ 9444 (1972).

[69] DAR 14-305.2(a).

[70] DAR 14-305.2(b); FPR § 1-14.105-2; NASA PR ¶ 14.206-2.

[71] NASA PR ¶ 14.206-2(v).

[72] FPR § 1-14.105-2(g); NASA PR ¶ 14.206-2(vii).

[73] The proposed Federal Acquisition Regulations clarify the distinction. FAR § 46.101.

[74] DAR ¶ 14-001.10. See the definitions in MIL-STD-109B, Quality Assurance Terms and Definitions, at Appendix I.

[75] DAR ¶ 14-103(a); NASA PR ¶ 14.103(b).

[76] DAR ¶ 14-001.9.

[77] MIL-STD-109A at Appendix I.

[78] DAR ¶ 14-305.1; FPR § 1-14.105-1; NASA PR ¶ 14.206-1.

[79] DAR ¶ 14-305.1.

[80] DAR ¶ 14.305.1.

[81] See, e.g., Department of Defense Directive 4155.1, Quality Program, at ¶ C-8(d) (10 Aug 78).

[82] Id. See also the Federal Supply Service Quality Approved Manufacturers Program, FSS P 4400.1, Chapter 13; DAR ¶ 14-306(c); FPR § 1-14.205.

[83] FSS P 4400.1, Chapter 13; DLAM 8200.2, Section IV.

[84] FSS P 4400.1, Chapters 12 and 13; DLAM 8200.1, Section IV.

[85] DLAM 8200.1, Section IV, Part 4.

[86] For the alternate designations of this manual in the other DOD agencies, refer to note 52.

[87] Refer to note 52.

[88] See, e.g., DLAM 8200.2.

[89] DLAM 8200.1, Section IV, Part 4.

[90] DLAM 8200.2, ¶ 4-103b.

CHAPTER IV

THE ALLOCATION OF THE COSTS AND RESPONSIBILITIES WHEN THE GOVERNMENT INSPECTS

The previous three chapters were concerned primarily with the limits of the Government's right of inspection. In these final two chapters, the emphasis will change to an examination of the duties of each party with respect to assuring quality.

This chapter will begin with a discussion of the cost allocation provisions in the standard inspection clauses. Every visit the Government makes to the contractor's plant or site of work requires expenditure of money. There are specific rules which determine who should bear the cost of Government inspection.

Then the analysis will turn to the responsibilities for inspection which are assumed by the Government. While the standard inspection clause language appears to relieve the Government of any obligations to act for the benefit of the contractor, there are nevertheless some duties, recognized in the decisions, which are a source of potential liability. One relates to the Government's duty to clarify inspection practices and standards and to otherwise cooperate. The other duty concerns the obligation of the Government to disclose its knowledge of defective performance.

The Cost of Government Inspections

This section is limited to a discussion of Government inspection costs because generally the contractor has to pay for the inspections that it must perform.[1] Similarly, the Government bears the cost of much of its quality assurance activity,[2] but there is specific contract language which changes those general rules. Of course, there may be special contract language which allocates the costs of testing,[3] but this analysis will be concerned with the general provisions.

Costs Assumed By the Government

Pursuant to the supply contract inspection clause, the Government assumes the expense of inspection and testing done at a point other than the premises of the contractor or a subcontractor.[4]

In any inspection or test, damage caused by the Government which is beyond the extent contemplated by the parties at the time of contracting must be paid by the Government.[5] However, incidental damage which is clearly contemplated and usual, such as the chipping of mortar and grout during inspection by an experienced inspector acting in good faith, is not unreasonable and does not subject the Government to liability.[6]

In supply contracts, where sampling is prescribed by the contract, the Government is not liable for any reduction in value of samples used in connection with an inspection or test that led to a valid rejection.[7]

Costs Assumed by the Contractor

The Obligation to Provide Assistance to the Government

Both the supply and construction contract inspection clauses contain a provision which obligates the contractor to provide, without additional charge, reasonable facilities and assistance,[8] labor, and materials[9] necessary for safe and convenient Government inspection. The joint manual which controls quality assurance activity on Department of Defense contracts, DLAM 8200.1, states the obligation this way:

> . . . The standard inspection clause when included in a contract, is an agreement that the contractor without additional charge shall provide all reasonable facilities and assistance for the safety and convenience of the Government inspectors in the performance of their duties. What is reasonable will be determined on a case by case basis for the minimum essentials necessary for PQA [Procurement Quality Assurance] actions. In some situations the QAR [Quality Assurance Representative] may only need the short time use of a table or desk somewhere in the facility. In other situations he may need assigned desk space and/or inspection space. This clause requires the contractor to provide, as necessary, equipment and/or personnel to perform inspection and test required by the Government to determine product conformance and contractor compliance to contract requirements.[10]

The clause in supply contracts has been construed to require the contractor to have an inspector present at no charge to the Government during a test being witnessed by the Government.[11] It has also been applied to require, at no additional cost, the disassembly and reassembly of valves for inspection even though the Government could have inspected them during production.[12]

The clause in construction contracts has been held to allow the Government to require the contractor to supply labor and equipment to assist the Government in taking soil samples at the construction site.[13] Apparently the obligation to assist does not include the costs of unnecessarily repetitive tests which are not normally incident to the type of work involved.[14] But it is clear that the obligation to assist means more than just assisting in preserving the safety and efficiency of Government activity or in simply keeping personnel and equipment out of the Government's way.[15]

The limit of the obligation was apparently breached in J.W. Bateson Co., although the issue was not squarely faced.[16] There the contracting officer sent the contractor an order to test the calibration of breakers in switchboards. The contractor assistance provision was different from that in the current clause, but analagous. When the contractor filed its claim for the costs of the test, the contracting officer couched the denial in terms of the contractor obligation to furnish all necessary facilities, labor, and material for examination of the switchboards. The Board found the change compensable, concluding that an order to conduct tests not required by the contract was "outside the scope of it." Considering the fact that the contractor's obligation is stated in terms of "assistance," it seems sensible that it refers to helping during Government examination. Ordering the contractor to perform tests not specified in the contract, as in Bateson, or the use of special inspection devices not contemplated at award, are beyond its intent.[17]

Government Reinspection Costs

In the standard construction Inspection and Acceptance clause, the contractor may be charged with "any additional cost of inspection or test when material or workmanship is not ready at the time specified by the Contractor for inspection or test or when reinspection or retest is necessitated by prior rejection."[18] This clause has been construed along with a contractor notice provision to permit the Government to charge the contractor for costs incurred in preparing for a second final inspection because the project was not "fully completed" as the contractor represented would be the case.[19] Considering the nature of the defects in tnat case, the rule is probably more accurately stated in terms of substantial completion, rather than full completion.[20]

A supply contract similarly allows the Government to charge the contractor for additional costs of Government inspection and test when supplies are not ready at the time the inspection and test is requested by the contractor, or when reinspection and retest is necessitated by prior rejection.[21] Where the Government relies on a rejection as justification for assessing the costs of reinspection, it must prove that a formal rejection took place.[22] Suspension of testing so the contractor can cure known deficiencies will not support assessment of reinspection charges.[23] The permissible charges of reinspection costs have been construed to include the two way transportation costs t and from the contractor's plant.[24]

The Defense Acquisition Regulations have a procedure specified for reinspection cost charging.[25] The regulation specifies some discretionary considerations in deciding whether to charge the contractor the costs. These include the frequency of contractor delays, reinspection or retests under other contracts as well as the current one; the reason for the delay, reinspection, or retest; and the expense of recovering the additional costs. The clause says that charges for such delay, reinspection, or retest normally should not be assessed when such delay, reinspection, or retest occurs only occasionally, or results from causes beyond the contractor's control, or when the expense of recovery outweighs the costs to be recovered.

Government Inspection of Construction Work Found Defective

Should it be considered necessary or advisable by the Government to examine work already completed, by removing it or tearing it out, the contractor is obligated to defray all of the expenses of the inspection if the work is found to be defective.[26] It appears that the requirement that work be torn out or removed is a condition rather strictly applied before the Government can assess costs under this clause.[27] Routine laboratory testing costs, even if work is found not in compliance with contract requirements, apparently is beyond the contractual intent.[28]

Government Responsibilities

This is not the first instance when Government responsibilities have been discussed. Implicit in most of the substantive rules discussed thus far is an element of responsibility. If one turns the rules around, the Government is responsible for all kinds of things. It is responsible for not unreasonably delaying the inspection. It is responsible for conducting inspections and tests in compliance with contract requirements, or reasonably if there are no prescribed procedures. What distinguishes this part of the analysis is the shifting from emphasis on the specifics of the inspection activity to the broader question of just what activity is required.

In the last chapter, the problem was introduced with verification testing. For the most part, verification testing is a process reserved to the control of the Government. The Government generally only assumes contractual responsibilities for conducting the inspections in certain ways when there is an agreement. Of course, the presence of an agreement between the parties obligating the Government to inspect or test for the benefit of the contractor changes the whole picture.

But usually the Government attempts to make it abundantly clear to the contractor that it has the responsibility to control the quality of the end product so that the contract requirements are met. The standard inspection clauses are quite clear in providing that inspections and tests by the

Government does not relieve the contractor from any responsibility regarding defects or other failures to meet the contract requirements which may be discovered prior to acceptance.[29] The procurement regulations similarly emphasize that the contractor is responsible for controlling quality.[30]

Even though these provisions emphasize the contractor's ultimate responsibility, the Government inspectors do have "responsibilities" for quality assurance, though these are not contractual in origin. The procurement regulations generally state that the Government will determine the type and extent of Government quality assurance actions required, which can include inspection of supplies and services, review of the contractor's inspection system, maintenance of Government records of actions taken, verification inspections and other surveillance, review of quality data including that submitted by the contractor, and otherwise evaluating contractor performance and monitoring the contractor's use of quality assurance resources after award.[31] Generally, inspection shall be conducted in all cases prior to acceptance,[32] although Certificates of Conformance may be considered as a basis for acceptance where the supplier's reputation or past performance is reliable and there is assurance that that supplies would be replaced without contest if defective.[33]

However, these responsibilities have not been raised to the level of a contractual duty. So they do not provide

any basis for arguing that the Government has somehow breached the contract by not inspecting or providing quality assurance activity that might benefit the contractor. To the contrary, the decisions are consistent in holding otherwise.

The Government Duty to Inspect

The case law is very consistent in saying that the Government has no duty to inspect; inspection is for its own benefit. The failure of the Government to inspect does not relieve the contractor of its responsibilities under the contract.[34] Just because material is to "be subject to inspection and tests . . . without expense to the Contractor" does not impose upon the Government the duty to conduct tests.[35] Inspectors are not at a job for the convenience of the contractor, but for the benefit of the Government.[36] The primary duty to insure that work performed under the contract complies with the contract requirements rests on the contractor. Even specifications which state that assembly "shall be performed in the presence of a Government inspector" have similarly been interpreted to simply give the Government the right, and not the duty, to be present.[37]

But what one finds is that an analysis of practical issues is not amenable to simply deciding whether the Govern- had a duty to inspect. While it appears that the safest conclusion one can draw is that there is no such duty, there are cases which suggest the opposite in certain contexts.

For example, the cases dealing with the finality of acceptance lead to results which suggest that the Government must conduct reasonable inspections. Where the Government seeks to rely on the latent defect exception to escape the finality of acceptance, it must prove that the defect is not one discoverable by a reasonable inspection.[38] So in a way, the Government assumes a duty to conduct inspections if it wants any post-acceptance protection against latent defects; the absence of an inspection takes away one way the Government has of proving what a reasonable inspection should discover.[39]

Similarly, although there is no general Government duty of inspection, there are instances in which Government refusals to inspect have been held improper.[40] Generally, the Government may not wrongly refuse to inspect work upon its completion, or substantial completion in the case of construction contracts.[41] But these cases do not imply any duty to inspect. What they are really saying is that the Government may not impede the contractor by suspending inspection activity when the parties agreed that contractor progress was dependent on Government inspection.[42] And in the case of final acceptance, the Government does not have to inspect if it does not wish, but it has to do something within a reasonable time. It is common though for the suspension of Government performance of the contract in these cases to be characterized as refusals to inspect, when they should be properly be called refusals to reject or accept.[43]

A detailed analysis of those probems with acceptance and rejection by the Government is beyond the scope of this paper. Neither is really concerned with resolving just who has the responsibility for assuring that work complies with contract requirements. However, there are two other contexts, which will now be discussed, which are more closely related to the allocation of that responsibility. In one, the contractor claims a constructive change for costs incurred because the Government fails to cooperate in establishing the quality requirements of the contract. In the other, the contractor claims that the Government is estopped from insisting on contract requirements which it knew or had reason to know were unknowingly being overlooked by the contractor.

The Government Duty of Cooperation

The duty of cooperation was introduced in Chapter I in the context of contractor claims for interference and hindrance.[44] Larco-Industrial Painting Corp.[45] represented a departure from the general rule that the Government has no duty to furnish a list of defects, the "punch list", to the contractor.[46] The case held that the Government has a duty to disclose minor defects to a contractor who cannot be expected to cure them, because of their minor nature, without identification by the Government. That case, however, involved a specific request by the contractor for disclosure, and the work was apparently quite satisfactory except for some very minor, common problems.

Generally, where performance requirements are clear, but the test method is unspecified, the Government is under no duty to specify the test it will use to determine compliance.[47] But the Government does have a duty to cooperate with the contractor during administration of a contract in the establishment of standards of performance where inspection practices are controversial and need clarification; failure to do so will subject the Government to liability for having constructively changed the contract.[48]

The case which highlighted the rule in terms of complex production contracts was Baifield Industries, Division of A-T-O, Inc.[49] In that case the contractor was producing metal ammunition cartridges. Ballistic testing was the ultimate determinant of acceptability, but the cartridges were to be free from nicks, dents, scratches, holes, voids, and pits. The Government had success with other contractors producing the cartridges, but over the course of one and a half years, Baifield had problems setting up a production process. It at one point asked the Government to specify objective standards for examination of the cartridges; it initially declined. The Government finally did establish standards, after a series of interim agreements between the parties which did not resolve the dispute. The contractor made a number of claims for constructive change relief, arguing that the Government knew all along what the objective standards would be, that the Government was using unreasonable inspection and testing methods, and that the Government was performing its inspection

at places during production that were not authorized by the contract.[50] After the Board had sorted through all of these claims, it found the Government liable for not specifying the objective performance criteria for about one year.

In answer to the contractor's assertion that the Government knew all along what the standards for the work were, the the Board said:

> The appellant's position that the Government knew what the standards for the contract would be throughout the entire contract term is incorrect The establishment of standards is a joint function between the Government and the contractor in which the contractor, with the Government concurrence, assumes certain risks when it proceeds to manufacture and ship cases which imperfections that could result in the failure of ballistic tests, the Government's ultimate acceptance criteria.[51]

In consideration of the contractor's argument that the Government had a duty to cooperate, the Board said:

> . . . We agree with the appellant that one of the duties of the Government in connection with the adminimstration of this contract was to cooperate with the appellant in the establishment of standards for metal defects. However, appellant was an experienced manufacturer with an extensive background in various forms of metal working. The appellant knew, or should have known, of the necessity for standards and, had it so desired, could have established its own standards for its own use.[52]

But the Board went on to say:

> The fact that the appellant could have established its own standards for its quality assurance purposes does not eliminate a need for standards to be used by both parties as a basis of determining what the Government would and would not accept. We conclude that the position taken by the Government key inspector . . . that standards should not be developed until the appellant's process was

> proved, was incorrect. While it is true that standards developed early in a production program might necessitate changes or additions as the program progressed, this is a common practice. . .
>
> The Government should have initiated action for the establishment of standards. . . if for no other reason than to assure that Government inspectors were being reasonable and consistent in their inspections of the cases submitted by the appellant. Even if the Government had established standards on a unilateral basis, it would have been beneficial to the appellant since appellant would have had a clear and permanent reference with regard to what the Government considered was acceptable or unacceptable.[53]

The Board considered other allegations by the contractor that the Government failed to cooperate and found against the contractor however. Evidence the Board found persuasive included rapid response by the Government to requests for assistance, absence of contemporaneous complaints by the contractor, and assistance by the Government even where not requested.[54]

Several things are important to remember about Baifield. The contract involved production of items whose acceptability was ultimately measured in terms of performance; the establishment of standards referred to by the board was necessary in order to implement some sort of an economical production line. The production was complicated enough to be characterized as a cooperative effort at the establishment of standards. There was a practice of routine interface between the Government and the contractor personnel. Considering all of these circumstances, the Board concluded that the Government should have furnished evaluative standards.

The Board in Baifield did not find any improper rejections based on unreasonable inspections, but one is left with the impression that the Board thought these disputes ones that are to be expected in the course of these kinds of contracts. The Baifield result seems sensible in that it recognizes that real disagreements will arise during performance about the methods of inspections and enforcement of quality requirements of the contract. Where the contractor requests assistance in defining the Government's standards for inspection in order to allow economical production, the Government must cooperate, just as it must when the contractor is subjected to conflicting and inconsistent inspections and asks clarification.[55]

Government Observation of Defective Performance

This part of the analysis will explore the Government responsibilities when it observes contractor performance which is not in compliance with the contract. A few words are in order, however, about the scope of this analysis.

First, there will be no exhaustive analysis of an inspector's authority to order changes to contract requirements. When the inspector does have the authority, and enters an agreement with the contractor which changes a requirement, the Government is precluded from later enforcing the original standard.[56] But apart from the presense of express authority, some decisions occasionally enforce the agreement or the order of an inspector based on a finding of implied authority, with imputation of knowledge to the contracting officer, who knewor

should have known of the inspector's actions.[57] There is need for detailed analysis of these decisions, because the real rationale is often hidden; whether autnority is implied or the decisions proceed under a ratification theory is often not clear because language is used which sounds like both theories are being applied at once. The ratification language appears to be used to decide whether the contractor is under an obligation to protest or bring the inspector activity to the attention of higher authority. Where the inspector is the one designated to deal almost exclusively with the contractor, and the inspector is involved with the contracting officer in negotiations of the contract, knowledge of the unauthorized directions of inspectors has been imputed to the contracting officer.[58] Also, the decisions appear to recognize a residuum of implied authority to make contract "interpretations" where the inspector has the authority to inspect and reject defective work.[59]

The second qualification to the scope of this analysis is that there are other practical problems with inspector observation of defective performance without objection. Government inspection and approval of work, which is later followed by rejection, pose a proof problem. Approvals have been treated as a prima facie case of contract compliance and complicate the Government's proof that rejection was justified.[60] Also, in cases where contract requirements are ambiguous, inspector approvals may be considered a practical construction of contract language and given weight during interpretation.[61]

Leaving those problems behind, this discussion will consider Government responsibilities when it discovers that contractor performance is defective. There is some discussion of inspector authority in this context, as well as imputation of knowledge, but the treatment of the issues appears different. For purposes of this analysis, one can assume that there is no binding agreement which limits the Government's right to insist on a contractor requirement. Also, one can assume that the issue does not involve imputing inspector knowledge to the contracting officer for the purpose of ratification of agreements or escaping the absence of inspector authority under the changes clause to order changes.[62]

Estoppel Generally

Once one assumes that the inspector is not clothed with authority to change contract requirements by agreement, there is similarly a problem with holding that the Government has waived a contract requirement. The decisions appear to confuse the two doctrines,[63] but waiver in a strict sense refers to the voluntary relinquishment of a known right.[64] The problem with application of the doctrine to the Government is the aspect of "authority" once again. Where an inspector does not have the authority to change the contract requirements, there does not seem to be much room to hold that the Government in fact waived a contract requirement. In general, waiver can only be done by a person clothed with authority,[65] subject to some of the limited exeptions just mentioned, e.g., where there has been ratification.[66]

It appears that, even when decisions are loosely using the word "waiver" to define the rationale for a result favoring the contractor in these cases, the courts and boards are really applying the equitable doctrine of estoppel.[67] Even in the lead case in this area, Gresham & Co. v. United States,[68] the distinction between the two was blurred. Yet estoppel appeared to be the rationale for the decision.

In Gresham, the contractor was required to supply dishwashers which were supposed to have an automatic detergent dispenser. The contractor had been supplying dishwashers on 21 other contracts, and all of them had before been accepted, although they did not have the dispensers. The contract was unambiguous about the requirement, and although there had been discussions between the Government inspectors and contractor about failure of the dishwashers to comply, there nevertheless were no rejections based on that requirement. The contractor bid on the current contracts expecting that the requirement would continue to be waived.

On the current contracts, the contractor had submitted technical manuals which showed the nonconformities, and the manuals were approved by the contracting officer. In addition, preproduction models were approved although they had no dishwasher detergent dispensers. Finally, after production had begun on the current contracts, the contracting officer became aware of the problem and ordered that the contractor comply with the requirements. The contractor sought the cost of including the dispenser as a constructive change.

In granting the contractor relief, the court said, "[w]e think . . . that plaintiff was led by defendant's acts reasonably to believe that even though the specification had been written to require automatic detergent dispensers, enforcement of the requirement had been suspended. . ."[69] Later in the opinion, the court stated, "[w]e think the reasonable belief that the specification requirement was dead or at least suspended, arose during administration of the twenty-one, prior to the award of the earliest of the fifteen [contracts] in dispute."[70]

Concerning the necessity of showing authority of some agent charged with waiving the requirement, the court said:

> . . . [t]he waiver of a contract provision requires a decision by a responsible officer assigned the function of overseeing the contract performance, not just any Federal employee or officer whose work happens to be connected with the contract . . . Assuming arguendo that the QAR [Quality Assurance Representative] lacked the necessary authority, we think only one finding is possible: that the contracting officer knew or should have known of the situation, and that the authority was in his hands. If he did not know, he ought to have known, and knowledge is imputed to him.[71]

The court had noted that the inspectors were required by the agency to report these kinds of defects, which apparently played a role in the decision by making it so easy for knowledge to be imputed to the contracting officer.

The decision is not crystal clear about just what the rationale was for allowing recovery. The opinion also cited contract interpretation rules, although the court found the dispenser requirement unambiguous.[72] While the

term "waiver" was used in the opinion in several places, it was mixed in with estoppel language. It seems that estoppel was the rationale, however, because the "reasonable belief" of the contractor does not appear very relevant if one is looking at Government conduct to decide whether it voluntarily gave up a known right through the actions of unauthorized agents.

The court hints at the elements for an estoppel, although there are clearer articulations. It has been said that in order to establish an estoppel it is necessary for the contractor to show that "the party against whom an equitable estoppel is set up acquiesced in the transaction in such a manner as to change the relationship of the parties and make its repudiation of the proceedings contrary to equity and good conscience."[73] It is not necessary that the party against whom an estoppel is urged has made a representation of any kind,[74] so long as there is a duty to speak.[75] The common list of elements of estoppel generally include the following: (1) a false representation or concealment of a material fact; (2) knowledge on the part of the person to be estopped; (3) an absence of knowledge on the part of the party injured under circumstances where that party cannot be charged with knowing the facts; (4) an intent on the part of the party to be estopped to have the other party rely, or action has been taken which gives the injured party a reasonable belief that reliance is intended; and (5) there has been detrimental reliance by the party seeking to raise the estoppel.[76]

The Government Duty to Speak

There is a Government duty to notify the contractor within a reasonable time when it knows work is defective. One Court of Claims decision has noted in dicta that "[o]f course the Government is under a duty to inform the contractor as early as possible of any failure to comply which it knows about . . ."[77] One board has made the direct statement that the Government has a duty to "timely" inform the contractor of defects in performance.[78]

Gresham did not address this problem, because there was more than Government silence involved. The Government had engaged in affirmative activity which induced the contractor to believe that contract requirements were suspended. The court in Gresham thought the Government's approval of drawings and preproduction samples, and particularly the prior course of acceptances of nonconforming supplies, important.[79]

The only way to reconcile the cases which find Government liability through silence is to assume there is a duty to speak. For example, in William F. Klingensmith, Inc.,[80] the construction contractor was pouring concrete pillars. The Government was testing the pours, although the contract did not require the Government to do so for the contractor's benefit. The contractor knew, however, that the Government was doing the testing. After one pour, the Government discovered that the concrete was defective but delayed in ordering rework for three weeks. The contractor appealed the subsequent order to rework the concrete, and the Board sustained the claim

as far as entitlement, although it found no increased costs. The Board found that the contractor was clearly responsible for controlling the quality of its work, but it stated its rationale this way:

> We conclude that where the Government has information concerning the nonconformity of the contractor's product, it has a duty to reject the product within a reasonable time. If the length of the delay prevents the contractor from intelligently deciding whether or not the Government's rejection is correct, or prevents re-work or repair, or causes the contractor unnecessary work or expense, then it may be unreasonable.[81]

The Armed Services Board of Contract Appeals has used the same analysis in holding the Government liable for waiting almost three months to order a contractor to remove and replace defective roofing which the Government knew was being used.[82] The contractor in that case understandably incurred increased costs because the nature of the job made correction of the defective work more difficult as the construction progressed.

The analysis also has application in supply contracts. In Hydrospace Electronics & Instrument Corp.[83] the contractor was supplying transponders under performance specifications. After award, the contractor began making some technical design changes, unaware that they were violating contract requirements. The Government was discussing other performance deficiencies with the contractor, but it did not tell the contractor about several defects for nine months, even though it had early knowledge of the deficiencies through

monthly reports being submitted by the contractor.

The Board granted the contractor an equitable adjustment for having had to scrap its original design and accomplish redesign when the Government finally disclosed the defects. The Board said:

> . . . The evidence is quite clear that the Government decided to do nothing and to await the final submittal when it had determined it would reject the use of aluminum housing.
>
> We do not agree with the Government position that monthly reports are merely a way to learn that a contractor is still working on a contract. They serve another purpose, namely, to keep the Government informed of just what the contractor is doing. This does not mean that the Government is charged with knowledge of every detail appearing in a monthly report. However, as indicated in our findings, the Government was aware that appellant was deviating from the contract requirement for stainless steel in a manner that was determined to be patently unacceptable. In our opinion, the Government, under these circumstances, had a duty to inform appellant of its erroneous course of action in a timely manner and the appellant is entitled to recovery for the consequences of the Government's failure to do so.[84]

The Board went on to conclude that two months would have been a reasonable time in which to evaluate the effect of the defect. It appears that the Government is given at least some time to evaluate the nature of the defect and its effect on performance before notifying the contractor.

There are decisions, of course, which deny contractor claims based on an inspector's observation of defective work without objection. However, it appears that the distinguishing fact is not whether there is any duty to disclose, but whether the Government knew, not only what the characteristics of the work were, but that they were not in compliance with the contract.

A Government Agent Must Know That Work Is Defective

As an introduction to this part of the analysis, it may be helpful if the conclusion is stated right away. It appears that the distinguishing feature in these cases is whether the Government becomes aware not only that work is performed in a certain way, but also that the work does not comply with contract requirements.

The general provision inspection clauses are uniform in stating that the inspection and test by the Government does not relieve the contractor from any responsibilities regarding defects or other failures to meet the contract requirements which may be discovered prior to acceptance.[85] Accordingly, the general rule appears to be that Government inspections, and even inspector approvals of work, do not estop the Government from later enforcing contract requirements,[86] in the absence of special contract provisions which manifest an intent that approvals will constitute final acceptance of increments of work.[87] But what the clauses, and the decisions, do not say is that inspector knowledge of defects will not estop the Government. There is a distinction.

The fact that Government inspectors are conducting inspections does not mean that they can observe every facet of performance. It also does not mean that they can be congnizant of every technical detail that is in a contract document. The decisions seem to realize that inspection, or even approval, does not necessarily imply that the Government is aware of defective work.

For example, one case holds that an inspector's being at a job is not accompanied by a duty to immediately catch improper actions and call them to the contractor's attention.[88] Even if the inspector could have been better informed about the contract requirements, the contractor can not recover unless it can prove the inspector had knowledge, not only of the way work was performed, but also that it was nonconforming.[89] "Unwitting approvals" by inspectors through inadvertence or ignorance of contract requirements have similarly been held insufficient to allow contractor recovery.[90] One contract even had a provision which stated that "[a]ll inspection operations performed by the contractor will be subject to Government verification"; neither Government approval of contractor manufacturing operations or the right of surveillance were sufficient to charge the Government with any responsibility for defective performance.[91]

What these cases seem to say is the diligence of the inspector in discovering defects in performance is a matter between the inspector and the Government. Until the inspector has actual knowledge of a deficiency, there will be no estoppel of the Government.[92]

One case which does not fit nicely into this analysis is Norair Engineering Corp.[93] It involved a construction contract for construction of a laboratory. The specifications called for painting of the exterior and interior of the building, with metal surfaces being given a specified primer coat.

The subcontractor doing the exterior painting did not apply the primer coat. When the paint peeled, the Government ordered repainting. The contractor claimed an equitable adjustment which was denied by the contracting officer. The contractor appealed, and the Board granted relief.

The Board noted very little or no discussion between the Government inspectors and employees of the painting subcontractor concerning the application of primer to the exterior surfaces of the building. There were discussions about other painting problems, and some methods of performance not strictly in compliance with the contract were allowed on interior painted surfaces. The contractor employees apparently thought the deviations applied to exterior painting as well. But there was no express approval of deviations from exterior painting requirements. In upholding the claim the Board found that Government personnel responsible for the work surveillance were present when most of the exterior painting had been done, had personally observed the spray painting and deviations from tinting requirements, and could have seen from the color of paint that the primer coat was not applied. Where the Government had desired strict compliance with contract requirements in the past, it had not hesitated to take corrective action. The Board found that the "Government was or should have been aware that a primer was not being applied to the exterior of the building."[94] The rationale of the Board was rather sketchy, but the opinion says:

> . . . the Contracting Officer, through his representative, was aware that no primer was being applied to the exterior. Moreover, the deletion of the primer coat cannot be considered more material to the performance of this contract than a number of other deviations from the specifications, which the Government concedes were made without formal change orders. We therefore hold that the conduct of the Government personnel, and their knowledge of an [sic] acquiescence in the Appellant's conduct, in the light of all the circumstances, amounted to a constructive change or waiver of the primer coat, etc., with respect to the exterior of the building.[95]

If the Board really applied the "should have been aware" test to determine whether the Government had knowledge of the defective performance, the approach seems different from the more recent tolerance shown inspectors who probably cannot expect to know all of the details of a contractor's performance. However, it appears that the decision did actually find that the Government knew of the deficiency. In that case, the Board may really have meant to say that, based on all of the evidence, there was no other finding possible than actual knowledge. There is an intimation that the Government perhaps was willing to live with the defect as it had done with some others in the course of performance, and changed its mind when the paint began peeling.

The Significance of Imputation of Inspector Knowledge

One of the common elements of estoppel is knowledge by the party to be estopped of the material fact. The cases do seem to require knowledge of the Government as an entity and

at a level where authorized contracting actions are taken. Gresham discussed the authority of inspectors and the imputation of their knowledge to the contracting officer. However, it had little trouble imputing it. Apparently, in this context, any knowledge gained by an agent acting within the scope of his official duties, where there is a duty to report such knowledge to higher levels, is sufficient.[96] The regulations or manuals which guide Government quality assurance personnel are replete with references to these kinds of duties. The Federal Supply Service has a pamphlet which states that the quality assurance specialist shall be responsible for reporting potential or actual contractor nonperformance, including delinquencies, to the administrative contracting officer.[97] Department of Defense quality assurance personnel have similar guidance.[98]

The imputation of knowledge analysis in this instance seems much more relaxed than where the contractor is relying on an inspector ordered change for entitlement. In that case the contractor must generally prove that the inspector action was within that residuum of authority for contract interpretation,[99] or that circumstances were such that the inspector was the one being relied on to issue such orders.[100] This different analysis is probably the result of specific contract language which puts the contractor on notice that inspectors do not have the authority to change contract requirements.[101]

Of course, where an inspector is silent, those considerations are not relevant. Where an inspector approves work, however, they may be.

Proof That Government Action or Inaction Reasonably Induced Detrimental Reliance

Where all of these conditions so far discussed have been satisfied, and the Government does not disclose its knowledge of defective performance, there does not appear to be any great impediment to contractor recovery if it suffers needless cost because the Government failed to timely notify it of the defective performance, so long as the contractor can prove the additional element of estoppel— that it should not be charged with knowledge of the fact.

No Contractor Knowledge of Defects

Throughout this chapter, there has been reference to the contractor responsibility to insure that work conforms to contract requirements. That is the fundamental contractual duty that the contractor undertakes and is stated rather clearly in the standard contract clauses. Inspection and testing by the Government does not relieve the contractor of that obligation.[102]

Carried to its ultimate logical extreme, this duty would imply that the contractor should always know of defects in its performance. Yet, the fact that the cases grant relief in some of these cases suggests that the contractor is not held to this high a standard where the Government fails to disclose its knowledge of defective performance. At the same time, there would appear to be limits on just how deficient a contractor could be in discharge of its performance and still be entitled to erect an estoppel in equity against the Government.

It appears that there is a rule which is similar to the "last clear chance" doctrine in torts. The contractor's estoppel claim will fail if the defective performance could have been discovered after the Government gained knowledge had the contractor been attentive to the demands of good workmanship.[103] This means that the contractor can not shut its eyes to work that has been examined by the Government, although the contractor can rely on the assumption that the Government will disclose defects which it discovers and of which the contractor is unaware despite its diligence.

When the Contractor Is on Notice that Contract Requirements Are in Question

The analysis returns now to Gresham. In that case, the contract requirements were unambiguous, and the contractor was aware that its performance did not comply with the plain terms. It appears that the contractor has a greater burden of proving reasonable reliance under these facts. In that case the rule was stated as a requirement that the contractor prove it was led reasonably by the Government's acts to believe that the enforcement of the contract requirement had been suspended. This rule appears consistent with the more stringent analysis found when inspectors order unauthorized changes to contracts.[104] These cases appear to evaluate the contractor reliance from the perspective of a duty to protest or notify higher officials. The contractor must apparently prove that the Government manifested an intent of those with authority to waive its contractual rights.[105]

This distinction in the analysis is probably explained by the nature of the "fact" which is the subject of the estoppel. Where the Government is aware of defective performance but remains silent, the existence of the defect is the fact which it withholds from the contractor. But where the contractor relies on the assent of an inspector who is without authority to change the contract, the fact the Government collectively knows is that the inspector is without authority to waive contract requirements. The Gresham rule, and a subsequent application of it,[106] have relied on other activity of the Government, not just inspector approvals, in the determination of whether the contractor belief of waiver was reasonable. The apparent approval of drawings which show the defective work, similar approval of preproduction models, and the prior acceptances—ostensibly by persons who do have the requisite authority— of identical supplies, all are other activities which tend to support a reasonable belief that a contract requirement has been waived.

Yet this more stringent burden is justified by the fact that the contractor is generally expected to protest to higher authorities and otherwise not rely on an inspector's interpretation.[107] It appears that the Government will only be estopped to enforce a requirement which was overlooked by an inspector with the contractor's knowledge if the contractor can show actual authority of the inspector or that the Government "countenanced" the inspector's action.[108]

The result is an expansion of the inquiry when the contractor is relying on inspector approvals as a basis for conducting the work in a certain way. If the inspector actually knew that the work was defective, and the contractor does not, the reliance inquiry is very brief. But where the contractor as well is aware that there is some question about the scope of the contractual requirements, it has to prove that the totality of the Government actions led it reasonably to believe that persons with authority had waived the contract requirement. It doesn't appear that mere inspector approvals are enough. The Gresham result was based in large part on prior acceptances.

Conclusions

The Government has no duty to inspect for the benefit of the contractor. The contractor remains responsible for producing work that conforms to contract requirements. But the Government does assume some other duties in connection with its right to inspect which operate to assist the contractor in meeting these responsibilities.

First, the Government must cooperate in the establishment of inspection standards which will enable the contractor to efficiently perform. There is a recognition that the contractor will encounter practical obstacles in trying to provide precisely what the Government has contracted for. The implied duty of cooperation is one way the Government has been obligated to inform the contractor of minor defects during the course of its inspection, as well as to participate in the establishment of

objective criteria which it and the contractor can use during inspection and which are necessary to enable efficient production.

The Government must also disclose its knowledge of defective performance in a timely manner. Yet, it remains protected from unauthorized activity of inspectors when the contractor relies on inspector examinations of work with the knowledge that contract requirements may be in question. In any event, it appears that the Government is not estopped by observation of defective performance unless it actually has knowledge, through the observation of an agent acting in the scope of his duties, that the work does not comply with the contract. Unwitting approvals by inspectors are not enough.

CHAPTER IV FOOTNOTES

[1] Cf. Szemco, Inc., ASBCA 9892, 1964 B.C.A. ¶ 4503 (1964), aff'd on reconsideration, 65-1 B.C.A. ¶ 4535 (1965).

[2] Cf. GSA PR, 41 C.F.R. § 5-14.150-2(b)(1982).

[3] See, e.g., Pathman Constr. Co., ASBCA 11,801, 68-2 B.C.A. ¶ 7272 (1968); Peter R. Brown Co., ASBCA 11,896, 67-1 B.C.A. ¶ 6372 (1967).

[4] See Appendix A. DAR ¶ 7-103.5(d); FPR § 1-7-103.5(c).

[5] See Replac Corp., ASBCA 7275, 1962 B.C.A. ¶ 3527 (1962). The rationale for the result may be that the Government "impliedly accepted" the supplies. See Frosty Morn Meats, Inc., ASBCA 4221, 58-1 B.C.A. ¶ 1746 (1958).

[6] K & M Constr., ENGBCA 3060, 72-1 B.C.A. ¶ 9195 (1971).

[7] See note 4.

[8] Id. for supply contracts.

[9] DAR ¶ 7-602.11(d), used in the construction contract clause.

[10] DLAM 8200.1, AR 702-4, NAVMATINST 4355.69A, AFR 74-15, MCO P 4855.4A, Procurement Quality Assurance, ¶ 4-111(i) (30 Aug 76).

[11] Russell R. Gannon Co. v. United States, 189 Ct. Cl. 328, 417 F.2d 1356 (1969).

[12] U.S. Igniter Corp., ASBCA 2784, 56-2 B.C.A. ¶ 1076, at 2627 (1956).

[13] Tecon Green Constr. Co. v. United States, 188 Ct. Cl. 15, 411 F.2d 1262 (1969); see Wilkins Co., FAACAP 66-13, 65-2 B.C.A. ¶ 5242 (1965).

[14] Cf. AAI Corp., ASBCA 14,277, 74-1 B.C.A. ¶10,493 (1973).

[15] Tecon Green, supra note 13.

[16] GSBCA 2434, 68-2 B.C.A. ¶ 7333 (1968).

[17] See Corbetta Constr. Co., ASBCA 5045, 60-1 B.C.A. ¶ 2613 (1960).

[18] See note 9. The clause is reproduced in Appendix A.

[19] Okland Constr. Co., GSBCA 3557, 72-2 B.C.A. ¶ 9675 (1972).

[20] See B.D. Click, GSBCA 2890, 70-1 B.C.A. ¶ 8286 (1970), aff'd on reconsideration, 72-1 B.C.A. ¶ 9221 (1972).

[21] See note 4.

[22] Vare Industries, ASBCA 10,097, 67-2 B.C.A. ¶ 6653 (1967).

[23] Id.

[24] See Minnesota Mining & Mfg. Co., GSBCA 4054, 75-1 B.C.A. ¶ 11,065 (1975).

[25] DAR ¶ 14-403(e).

[26] See Appendix A. DAR 7-602.11(e).

[27] See J.W. Bateson Co., supra note 16; see also S.S. Silberblatt, Inc., PSBCA 243, 74-2 B.C.A. ¶ 10,770 (1974).

[28] See J.W. Bateson Co., supra note 16.

[29] DAR ¶ 7-103.5(e)(supply); FPR § 1-7-103.5(d)(supply); DAR ¶ 7-602.11(a)(construction).

[30] DAR ¶ 14-102; FPR § 1-14.104(a).

[31] See, e.g., DAR ¶ 14-103.

[32] See, e.g., FSS P 4400.1, Chapter 12, Part 5. See also FPR § 1-14.101(a); NASA PR ¶ 14.202(a).

[33] DAR ¶ 14-306(c); FPR § 1-14.205.

[34] See, e.g., Penguin Industries, Inc. v. United States, 209 Ct. Cl. 121, 530 F.2d 934 (1976); Globe Engineering Co., ASBCA 23,934, 83-1 B.C.A. ¶ 16,370 (1973); See also Kaminer Constr. Corp. v. United States, 203 Ct. Cl. 182, 194 488 F.2d 980 (1973).

[35] Kaminer Constr. Corp., supra note 34.

[36] Globe Engineering Co., supra note 34.

[37] Kenneth Reed Constr. Corp. v. United States, 201 Ct. Cl. 282, 475 F.2d 583 (1973).

[38] See, e.g., Massman Constr. Co., ENGBCA 3443, 81-2 B.C.A. ¶ 15,212 (1981); Solid State Electronics Corp., ASBCA 23,041, 80-2 B.C.A. ¶ 14,702 (1980).

[39] Id.

[40] See, e.g., Viz Manufacturing Co., ASBCA 17,787, 78-2 B.C.A. ¶ 13,469 (1978), aff'd on reconsideration, 79-2 B.C.A. ¶ 13,929 (1979); Central Air Repair, Inc., ASBCA 9245, 1964 B.C.A. ¶ 4156 (1964).

[41] Cf. Martell Constr. Co., ASBCA 23,679, 80-1 B.C.A. ¶ 14,429 (1980); Fidelity Constr. Co., DOTCAB 75-19, 77-2 B.C.A. ¶ 12,831 (1977).

[42] Cf. Electro Plastic Fabrics, Inc., ASBCA 14,762, 71-2 B.C.A. ¶ 8996 (1971).

[43] See Martell Constr. Co., supra note 41.

[44] See note 104 and the discussion.

[45] ASBCA 14,647, 73-2 B.C.A. ¶ 10,073 (1973).

[46] See J.D. Steele, Inc., GSBCA 1416, 65-2 B.C.A. ¶ 5154 (1965); Sovereign Constr. Co., GSBCA 913, 1964 B.C.A. ¶ 4468 (1964).

[47] Christian Precision Mfg. Co., ASBCA 7847, 1962 B.C.A. ¶ 3533 (1962).

[48] Baifield Industries, Division of A-T-O, Inc., ASBCA 13,418, 77-1 B.C.A. ¶ 12,308, at 59,403 (1976); see U.S. Hoffman Machinery Corp., ASBCA 10,906, 68-1 B.C.A. ¶ 7027 (1968).

[49] Baifield Industries, supra note 48.

[50] Id. at 59,398.

[51] Id. at 59,398.

[52] Id. at 59,398.

[53] Id. at 59,399.

[54] Id. at 59,403.

[55] See U.S. Hoffman Machinery Corp., supra note 48; see also Puma Chemical Co., GSBCA 5254, 81-1 B.C.A. ¶ 14,844 (1980).

[56] See Northbridge Electronics, Inc. v. United States, 175 Ct. Cl. 426 (1966).

[57] See Carl J. Bonidie, Inc., ASBCA 25,769, 82-2 B.C.A. ¶ 15,818 (1982); Randall H. Sharpe, ASBCA 22,800, 79-2 B.C.A. ¶ 13,869 (1979); Lox Equipment Co., ASBCA 8985, 1964 B.C.A. ¶ 4463 (1964); Southwestern Sheet Metal Work, Inc., ASBCA 22,748, 79-1 B.C.A. ¶ 13,744 (1979); see also WRB Corp. infra note 107.

[58] Carl J. Bonidie, Inc., supra note 57. See Randall H. Sharpe, supra note 57.

[59] See Urban Pathfinders, Inc., ASBCA 23,134, 79-1 B.C.A. ¶ 13,709 (1979).

[60] See Ridge Instrument Co., Inc., ASBCA 22,277, 78-2 B.C.A. ¶ 13,351 (1978).

[61] Gresham & Co. v. United States, 200 Ct. Cl. 97, 470 F.2d 542 (1972); see Max M. Goldhaber, ASBCA 8277, 65-2 B.C.A. ¶ 5083 (1965).

[62] See DAR ¶ 7-602.43.

[63] See Maizel Laboratories, Inc., ASBCA 8597, 1963 B.C.A. ¶ 3898 (1963).

[64] Id.

[65] See Lowell Monument Co., VACAB 1191, 77-1 B.C.A. ¶ 12,439, at 60,214 (1977).

[66] See note 57.

[67] For a good discussion of estoppel in general, see United States v. Georgia-Pacific Co., 421 F.2d 92 (9th Cir. 1970).

[68] 200 Ct. Cl. 97, 470 F.2d 542 (1972).

[69] Id. at 117.

[70] Id. at 121.

[71] Id. at 120.

[72] Id. at 117.

[73] Stevens Mfg. Co. v. United States, 80 Ct. Cl. 183, 192 (1934).

[74] See Emeco Industries, Inc., 202 Ct. Cl. 1006,1015, 485 F.2d 652 (1973).

[75] Lundblad v. United States, 98 Ct. Cl. 397 (1943).

[76] See Georgia-Pacific, supra note 67.

[77] Ardelt-Horn Constr. Co. v. United States, 207 Ct. Cl. 995, reported in full at 21 C.C.F. 84,096 (1975).

[78] Bromley Contracting Co., HUDBCA 75-8, 77-1 B.C.A. ¶ 12,232 (1977). See Hydrospace Electronics & Instrument Corp., ASBCA 17,922, 74-2 B.C.A. ¶ 10,682 (1974).

[79] Gresham, supra note 68, at 121.

[80] GSBCA 5451, 83-1 B.C.A. ¶ 16,201 (1982).

[81] Id. at 80,491.

[82] Brand S. Roofing, ASBCA 24,688, 82-1 B.C.A. ¶ 15,513 (1981).

[83] ASBCA 17,922, 74-2 B.C.A. ¶ 10,682 (1974).

[84] Id. at 50,806.

[85] See note 29.

[86] See Globe Engineering Co., ASBCA 23,934, 83-1 B.C.A. ¶ 16,370 (1983); Frederick P. Warrick Co., ASBCA 9644, 65-2 B.C.A. ¶ 5169 (1965).

[87] See, e.g., G. A. Karnavas Painting Co., NASA BCA 28, 1963 B.C.A. ¶ 3633 (1963).

[88] See Globe Engineering, supra note 86.

[89] See Community Science Technology Corp., ASBCA 20244, 77-1 B.C.A. ¶ 12,352 (1977); Penn Constr. Co., ASBCA 10781, 66-2 B.C.A. ¶ 5800 (1966). See also Noah Lewis, VACAB 1349, 81-2 B.C.A. ¶ 15,209 (1981).

[90] Mercury Constr. Corp., ASBCA 23156, 80-2 B.C.A. ¶ 14,668, at 72,340 (1980).

[91] Berwick Forge & Fabricating Corp., ASBCA 15,088, 73-1 B.C.A. ¶ 9882 (1973); see Ardelt-Horn Constr. Co., supra note 77.

[92] See Manufacturer's Hanover Trust Co. v. United States, 218 Ct. Cl. 563, 590 F.2d 893 (1976).

[93] NASA BCA 75, 67-2 B.C.A. ¶ 6396 (1967).

[94] Id. at 29,635.

[95] Id. at 29,636.

[96] See United States v. Hanna Nickel Smelting Co., 253 F. Supp. 784, 793 (D. Ore. 1966), aff'd on other grounds, 400 F.2d 444 (9th Cir. 1968).

97 FSS P 2901.5, Chapter 9, ¶ 8b.

98 DLAM 8200.1, ¶ 4-507.

99 See, e.g., Urban Pathfinders, supra note 59.

100 See WRB Corp., infra note 107. See also the cases cited in note 57.

101 DAR 7-602.43.

102 See note 29.

103 Forsberg & Gregory, Inc., ASBCA 18457, 75-1 B.C.A. ¶ 11,293 (1975).

104 See, e. g., Southwestern Sheet Metal, supra note 57.

105 See Herley Industries, Inc., ASBCA 23,704, 81-1 B.C.A. ¶ 15,155 (1981).

106 Id.

107 See WRB Corp. v. United States, 183 Ct. Cl. 409, 419 (1968).

108 Id. at 424.

CHAPTER V

CONTRACTOR RESPONSIBILITIES FOR QUALITY CONTROL

The past chapters emphasized the Government responsibilities and potential liability flowing from its inspection and testing. Contractor responsibilities were mentioned incidentally and then only in the broadest terms. For example, the last chapter ended with a recognition that the contractor does still have an obligation to control the quality of the product; the Government has no general duty to inspect for the benefit of the contractor.

In this chapter, this focus shifts again, this time to the contractor. The discussion will evaluate the specific obligations that the contractor has in controlling the quality of the product. They break down into two broad categories, specific testing and inspection system requirements. Each will be described and evaluated in the context of Government remedies for failure of the contractor to comply.

Contractor Testing

There are simply too many kinds of tests to permit any generalizations about the contractor's responsibility with respect to them. However, the broad question which is of interest to this analysis is when the contractor is obligated to test. Of course, the question is important because if a test

is considered a contractor's obligation, the cost of the test is considered included in the contract price,[1] unless the Government has agreed to bear its cost.[2]

Generally

When the contractor is to be responsible for inspection and test of products before offering them to the Government, that responsibility must be expressly set forth in the contract specifications or drawing or in a special contract clause.[3]

In K & M Construction[4] this rule was illustrated. In the construction contract in that case, the Government required the performance of a "functional flow test" on all sewer lines which were installed. The Government conceded that there was no provision in the contract which specifically called for the test but contended that it was ordinary procedure in the industry for the contractor to perform it. The tests showed no problems with the sewer. The Board held that the contract had been changed, reasoning that in the absence of a contract provision specifically requiring the test, the Government had the burden of proving that the test was required by custom and useage in the industry. The Board also concluded, when the Government failed to carry this burden of proof, that the reaonableness of the requirement is not important; the mere fact that a requirement goes beyond the contract requirements is the important consideration.

Apparently the same rule applies in supply contracts. Although they include a requirement that the contractor maintain an inspection system acceptable to the Government, that

imposes no independent obligation on the contractor to conduct specific tests not set forth in the contract.[5] The standard provisions, however, have been considered during the process of interpretation to decide whether the parties intended a specific test in the contract to be performed by the contractor, and the inspection system obligation has been considered also as evidence of the parties' intent to allow the Government to direct tests, where there were other contract provisions providing for that right.[6] Also, failures of that system may give the Government certain rights to direct inspection;[7] that will be discussed later in this chapter.

But the rule still appears to be that the contract must clearly specify that the contractor is to perform the test. The Department of Defense uses a Responsibility for Inspection clause,[8] and the General Services Administration has a similar provision in its Quality Control System Requirements standard.[9]

If the specifications give the Government the right to specify the number and location of tests to be conducted by the contractor, the order apparently will be noncompensable so long as it is reasonable. In Mel Williamson, Inc.[10] the contracting officer, pursuant to such a provision, ordered 100% testing of fire detection systems. The Board considered the critical nature of the supplies and found the order reasonable. Needlessly repetitive tests probably are not.[11]

The Department of Defense clause mentioned above has been cited as a reason for finding the contractor responsible for specific test, so it bears a closer look.

The DOD "Responsibility for Inspection" Clause

This clause is not a part of the general provisions, but it can be included in the contract where deemed appropriate.[12] The clause says:

> Notwithstanding the requirements for any Government inspection and test contained in specifications applicable to this contract, except where specialized inspections or tests are specified for performance solely by the Government, the Contractor shall perform or have performed the inspections and tests required to substantiate that the supplies and services provided under the contract conform to the drawings, specifications and contract requirements listed herein, including if applicable the technical requirements for the manufacturers' part number specified herein.[13]

This provision has been construed to allow the Government to order tests not specified by the contract. In RFI Shield-Rooms a contractor was required to supply rectifiers. The contract had no express language requiring the performance of a 'full-load" test, but the Government ordered one performed. The Board held the contractor responsible for assuming the costs of the test, finding the clause dispositive.

As the Board put it, the clause required the contractor to perform personally or hire done "any test or inspection which is needed to demonstrate that his product complies with the contract terms. That may be a 'full-load' test or a visual inspection or any other test or inspection or combination thereof so long as it or they are required to demonstrate contract compliance."[14] The "full-load" test in this contract was apparently the only test that could have demonstrated compliance.

The Board also considered the contractor's allegation that the test was unnecessary, but it concluded that the visual examinations of components by the contractor did not assess the technical acceptability of the completed rectifier.

That decision must be contrasted to Varo, Inc. v. United States, where the court was faced with a similar issue under a supply contract having an earlier version of the Responsibility for Inspection clause. That clause stated that "[u]nless otherwise specified in the contract or purchase order, the supplier is responsible for the performance of all inspection requirements as specified herein."[15] The court held that this version of the clause did not resolve the ambiguity about who should bear the cost of tests. The court construed the clause in favor of the contractor's reasonable interpretation.

There are limits on the scope of demonstration testing that the Government can order. Where a supply contract specifies technical testing requirements for components and an "operating demonstration" for the end product, this does not require the contractor to bear the cost of a full-blown performance test which incorporates each of the individual testing requirements contemporaneously.[16] Further, the Government cannot order unnecessarily duplicative inspections or tests, or it will be held to have changed the contract requirements.[17]

Changes to Testing Requirements

Once a test is determined to be within the scope of the contractor's obligation, it becomes an element of work. If

the Government orders a change to a test procedure used by the contractor, the increase in cost is compensable as a change,[18] even if the additional test was a better means of determining whether the product complies with contract requirements.[19] But voluntary additional tests initiated by a contractor after rejection or in order to meet the contract requirements are not compensable, because they lack the requisite "order" by the Government.[20]

Similarly, if the Government and contractor agree on a method of testing by the contractor as a measure of contract compliance, because there have been performance difficulties, Government directions to conduct a more costly test are compensable.[21]

Where the contract gives the contractor an option to perform tests by alternative methods, a Government direction to use a specific one will entitle the contractor to an equitable adjustment for cost increases which are caused by the order.[22]

An exception to these general rules defining the extent of contractor testing obligation was established by Astro Dynamics, Inc..[23] In that case, the Government insisted on performance of an unspecified test of safety valves by the contractor before allowing it to conduct further liquid nitrogen tests in a Government facility. The contractor claimed entitlement to the costs of the testing, but it was denied. The Board stated that "the test requested by the Government was reasonable under the circumstances and was

within a reasonable interpretation of the safety requirements . . . The fact that the Appellant at his own plant customarily tested the system without using such procedures is not persuasive. We think that the Government at its own facility, where it had responsibility for the safety of personnel and equipment, was justified in holding Appellant to the stricter standard. The test was not a complicated one . . . Under these circumstances we believe the test was within reasonable safety precautions which Appellant was required to follow."[24]

This case does not represent a complete departure from the basic framework of the analysis. In all of these decisions, the key consideration is the reasonable expectation of the parties to the contract. But Astro Dynamics does appear to depart from the rule which requires clear contract language when the contractor is to be charged with the responsibility and cost of doing the test.[25] The rule of reasonableness which the case applies has generally not even been used where the contractor is under an obligation to maintain an inspection system acceptable to the Government,[26] although that provision has been construed with other specific testing specifications to place responsibility for simple tests on the contractor.[27]

The Government has a right to expect the contractor to test where the contract requires it to. The Government remedies for failure of the contractor to meet its responsibilities for testing and other quality system obligations will be discussed at the end of this chapter.

Other Contractor Quality Control Responsibilities

There have been more decisions during the past several years dealing with contractor claims arising out of Government surveillance activity. It appears that agencies are putting more and more emphasis on contractor quality control and Government reliance on contractor quality data in making the acceptance/rejection decision. In the Department of Defense, for example, there is a policy which encourages the use of certificates of conformance when commercial items are purchased to satisfy military needs.[28] Reliance on contractor quality control is even creeping into the construction contract area, as will be seen.

This increased reliance on the contractor's inspection system has not escaped criticism. In 1979, the Comptroller General published criticism[29] of the General Services Administration Quality Approved Manufacturers Program,[30] which allows certain reliable manufacturers to ship supplies without prior Government inspection and provides for periodic surveillance of those contractors' plant operations. The program allows the contractor to certify that its product complies with contract requirements, and generally requires that the manufacturer have an acceptable performance history, a documented quality control program, and that control is exercised over the quality of incoming component materials, as well as the manufacturing processes.

The Comptroller General found that there was inadequate source inspection by Government inspectors and that the

program could not be relied on to assure that products conformed to the contract. It recommended, among other things, that more independent testing of items be done at the destination, on a sampling basis, even when the supplier is qualified under the QAMP. The report also found evidence of possible collusion between suppliers and inspectors when source inspection was performed and saw reduced source inspection as a way to reduce that possibility.

Similarly, in 1981 the Comptroller General published[31] a report recommending that the U.S. Army Corps of Engineers contractor inspection system requirement be eliminated on federal water projects. The report found substantial savings in not requiring the contractor to maintain a system that apparently was not working very well anyway. The report concluded that the Corps inspectors did not consider the contractor inspections reliable, did not attempt to enforce the contractor inspection provisions of the contract, and did rather complete inspections anyway. While the Corps had expected quality to improve and personnel requirements to decrease, neither had been the case. The report estimated that the marginal increase in costs due to the inspection system requirement was about one percent of construction contract costs.

The wisdom of these provisions is, of course, not the concern of this analysis. What is important is they do exist and are a potential source of liability of the contractor, if the Government does choose to enforce the provision.

Much of the discussion so far has touched some of the contractor responsibilities for quality. The inspection and test by the Government is done to determine whether the contractor has fulfilled the most fundamental responsibility, to furnish supplies and sevices which conform to contract requirements. The contract may also require the contractor to conduct specific tests, and in the case of the Department of Defense, the Responsibility for Inspection clause is designed to accomplish clear allocation to the contractor of testing responsibility.[32] So the discussion now turns to the scope of contractor obligations and Government rights in the contractor inspection system provisions.

The Standard Provisions

Until the Defense Acquisition Regulations were amended in 1982, the supply contract inspection system requirement was the same among the agencies. It said:

> The contractor shall provide and maintain an inspection system acceptable to the Government covering the supplies hereunder. Records of all inspection work by the Contractor shall be kept complete and available to the Government during the performance of this contract and for such longer period as may be specified elsewhere in this contract.[33]

The clause used in Department of Defense contracts was amended to expand the scope of that provision. The new clause says:

> The contractor shall provide and maintain an inspection system acceptable to the Government covering the supplies hereunder and shall tender to the Government for acceptance, only supplies that have been inspected in accordance with said

> inspection system and have been found by the Contractor to be in conformity with contract requirements.[34]

The clause then goes on to clarify the record keeping requirements of the contractor.

The Department of Defense is also the only agency which prescribes the use of a contractor inspection system clause for construction contracts.[35] It says:

> The Contractor shall (i) maintain an adequate inspection system and perform such inspections as will assure that the work performed under the contract conforms to contract requirements, and (ii) maintain and make available to the Government adequate records of such inspections.

All of the agencies have more detailed quality control provisions available for incorporation into contracts when necessary. They will be discussed later. What is of interest at this point in the discussion is the scope of the obligations that are included in the terms "acceptable" and "adequate" in these provisions. The requirement for an inspection system has been in the supply contract clause for decades, and in DOD construction contracts since 1961; yet there are very few cases which define the obligation to any degree of precision.[36]

What appears to be clear is that the standard provisions do not carry any requirement that the contractor perform any specific testing before offering the work to the Government unless the requirements for the tests are contained elsewhere in the contract.[37] But the fact that the clause is in the contract implies that it has some meaning; interpretations which leave language meaningless are disfavored.[38]

The case which is closest to affirmatively finding content in the standard inspection system requirement is Spencer-Safford Loadcraft, Inc..[39] In that case the contractor was supplying trailers. The only requirement for any kind of inspection system was that in the standard provisions. The specifications also had testing requirements which the contractor had to meet. After delivery of about thirty trailers, in which there were numerous deficiencies, the Government mailed a letter to the contractor directing some organizational changes, training of inspectors, proper equipping of personnel doing inspections, furnishing of facilities, etc. The contractor was claiming that the Government changed the contract.

Before the Board, the Government maintained that the provisions of the contract required as a minimum that the contractor maintain an inspection system which employed an adequate mumber of qualified inspection personnel, had proper inspection equipment such as gauges and measuring equipment, controlled the drawings and specifications and changes thereto, and controlled rejected material.[40] The list of contractor duties also included maintenance of defect standards for inspection personnel, some method of calibration of inspection equipment, and adequate records to record and control all of these functions.

The Board denied the contractor's request for relief, noting that there was no question that the initial units which were delivered were defective. The Board concluded that "an inspection system producing the desired result was defined by

the Government and a request was made to adopt such a system. We believe the record before us discloses no more."[41] It is important to note that the requests made by the Government were very generalized; the contractor was left considerable discretion as to the details.

The upper limit of what the Government can expect the contractor to provide in the way of an inspection system should be set based on the reasonable expectations of the parties when they entered the contract.[42] One important consideration appears to be the extent to which the Government evaluated the inspection system during the pre-award process.[43] The joint service handbook used in the Department of Defense also provides for discussions between the contractor and Government quality personnel about the quality requirements in the contract.[44] Such discussions, and the understanding reached, just might be a contemporaneous interpretation of the parties that could be entitled to great weight in deciding the scope of the obligation.[45]

Another relevant consideration probably is agency policy with respect to these standard provisions.[46] At least, the intent of the Government expressed in its regulations and manuals may be relevant to assess what it had in mind when it used the provision. In the Defense Acquisition Regulations, the guidance is brief. The regulation admits that the clause is not further defined by specification but prescribes its use when, for reasons of practicability or because of the nature of the supplies, it is not considered necessary to describe

further what constitutes an acceptable inspection system.[47] The examples given include purchase of commercial items or items which serve a function that is not materially related to military operations. The guidance which is in the regulations of NASA and the General Services Administration is similarly brief. It says that the contractor's inspection system should be such as to provide reasonable assurance that the supplies subject to inspection will conform to contract requirements and should include any quality control procedures necessary to this end.[48]

These policies appear to imply a recognition that the inspection system obligation does not mean that the contractor will detect all nonconformities before offering products to the Government. In the Federal Supply Service Pamphlet which discusses the acceptability of a contractor's inspection system under the general provisions, the pamphlet says:

> The contractor's inspection or quality control system will be considered acceptable when it provides reasonable assurance that the supplies offered for inspection and acceptance conform to all technical requirements of the contract, purchase order, and governing specifications.[49]

This pamphlet also appears to recognize the general nature of the obligation. The regulation briefly discusses the record keeping requirement and then says:

> The general requirements . . . above become specific when:
>
> > (1) The contract or governing specification requires the contractor to perform inspection and tests and to keep complete records of such work.[50]

The specification which clearly specifies these kinds of requirements will be discussed later.

The joint service manual which covers quality assurance activity on Department of Defense supply contracts has similar guidance to quality assurance representatives who are evaluating contractor quality control where the standard provision may be the only definition of the obligation. The manual says:

> (1) In general terms, an inspection system acceptable to the Government should produce evidence of control over those functions that are directly related to the product being procured and provide for:
>
> (a) Government inspection of supplies/ services.
>
> (b) Identification and control of defective/ rejected supplies.
>
> (c) Sufficient inspection and records to assure compliance to contract requirements.
>
> (2) The acceptability of a contractor's system will be determined on a contract by contract basis and will consider product quality history, complexity, application and technical description of the item, special contract provisions, effectiveness of manufacturing processes, and whether the supplies are in stock or must be produced for the subject procurements.
>
> (3) The QAR [quality assurance representative] should not expect or require more from the contractor than is required by contract. The contractor is expected to maintain an effective and economical inspection system that will assure the acceptability of supplies and services under the contract, but not to the extent of a quality program or inspection system defined by a military specification. In many cases inspection of the end item alone will provide the necessary evidence that the product conforms to contract requirements.[51]

It seems reasonable that the scope of the contractor's obligation under the clause would depend on the complexity of the procurement. Where a procurement is simple, even a general direction by the Government that the contractor maintain a calibration system and recalibrate inspection equipment may be outside the scope of requirements. Spencer-Safford Loadcraft upheld such a direction where the contract required the contractor to perform specified tests involving the use of such equipment.[52]

Whether the Government can demand that each item produced be separately inspected is not clear. Probably, at least the initial method that the contractor chooses to implement the inspection system obligation remains within its discretion. One board decision has been critical of Government changes to contractor inspection systems before production had even begun.[53] Spencer-Safford Loadcraft permitted the Government to require 100% checking of supplies before submission to the Government, but an important part of the Board's rationale was the fact that substantial deficiencies were discovered in most of the first supplies delivered to the Government.[54] On balance, the Government probably cannot interfere with a contractor's plan to use some kind of sampling inspection until substantial production problems arise. This, of course, assumes that there is no sampling specification in the contract which specifies these procedures. Finally, although the Government can apparently insist that some inspection activity take place, it may not require specific tests not otherwise

required by the contract.[55]

As has been mentioned, in the Department of Defense there is a general contractor inspection system obligation imposed in some construction contracts. There are few cases which address these issues under that clause, although there is no reason to think that the analysis would change. The clause does specifically require the contractor to use inspections which will assure conformance with contract requirements. Yet, that provision probably is not clear enough to impose any specific testing obligations on the contractor if they are not otherwise specified.[56] Also, the regulatory policies which have been discussed apply generally to supply and service contracts, although the DAP states that the quality assurance policies there apply equally to construction contracts.[57] It would seem that agency pronouncements about general inspection systems would be as useful to resolution of construction issues as well.

One final consideration in determining the content of these general provisions may be the specific quality control specifications which are available for incorporation in the contract. The joint service manual quoted before reminded quality assurance representatives that they should not demand requirements to the extent of quality programs or contractor inspection systems which are defined by military specification.[58] The existence of such published standards has been cited in other contexts as a limitation of what the Government can expect as an industry practice;[59] it may be useful here also.

Special Contractor Quality Control Provisions

Department of Defense Supply Contracts

The standard inspection clause is supplemented by two kinds of quality control requirements. One specification, which requires establishment of a contractor inspection system, is used when technical requirements are such as to require control of quality by in-process as well as final end product inspection, including control of such elements of the manufacturing process as measuring and testing equipment, drawings and changes, inspection, documentation, and records of inspection.[60] The specifics of the system are set out in MIL-I-45208A, which has been reproduced in Appendix D.

A more stringent requirement is defined by MIL-Q-9858A, Quality Program Requirements, which is reproduced in Appendix E. This specification is used when the technical requirements of the contract are such as to require control of work operations, in-process controls, and inspection, as well as attention to other factors (e.g., organization, planning, work instructions, documentation control, advanced metrology).[61]

The Defense Acquisition Regulations generally reserve use of the first specification for either complex, critical, or peculiar items. The Quality Program requirement is used for items which are both complex and critical.[62] Neither is generally used for procurement of commercial items acquired

under a commercial item description.[63]

A complex item is defined as one having quality characteristics, not wholly visible in the end item, for which contract conformance must progressively be established through precise measurements, tests and controls accomplished during purchasing, manufacturing, assembly, and functional operations either as an individual item or in conjunction with other items. A critical application of an item is one in which the failure of the item could injure personnel or jeopardize a military mission. Critical items may be either peculiar, meaning they have only one application, or common, meaning they have multiple applications.[64]

MIL-I-45208A[65]
Inspection System Requirements

The specification establishes the basic contractor responsibility to provide and maintain an inspection system which will assure that all supplies and services submitted to the Government for acceptance conform to contract requirements whether manufactured or processed by the contractor, or procured from subcontractors or vendors. The specification also has a clause, much like the Responsibility for Inspection clause, which requires the contractor to "perform or have performed the inspections and tests required to substantiate product conformance to drawing, specifications and contract requirements" and to "perform or have performed all inspections and tests otherwise required by the contract."

The specification requires the contractor to maintain a documented inspection system and reserves to the Government the right to review it and furnish written notice of its acceptability or non-acceptability during the life of the contract. "The inspection system shall be subject to disapproval if changes thereto would result in nonconforming product." That appears to be the standard against which any proposed change to the inspection system is evaluated.

The contractor is required to prescribe clear, concise, and complete instructions for inspection and testing. It must also maintain records which indicate the nature and number of observations made, the number and type of deficiencies found, the quantities approved and rejected, and the nature of corrective action taken.

The specification also requires calibration of testing equipment. The contractor must establish a system for identifying the inspection status of supplies, such as by stamping, tagging, or other control devices. The contractor must also establish a procedure for examination, testing, and identification and protection of Government furnished material.

The contractor must also establish an effective system for controlling nonconforming material, including procedures for identification, segregation, and disposition of reworked or repaired supplies. All nonconforming supplies must be positively identified to prevent use, shipment, and intermingling with conforming supplies. The contractor must also

establish procedures for inspecting subcontracted or purchased supplies to assure their conformance to contract requirements.

The specification reserves to the Government the right to evaluate and verify the inspection system "to determine its effectiveness in supporting the quality requirements established in the detail specification, drawings and contract and as prescribed herein."

MIL-Q-9858A[66]
Quality Program Requirements

The emphasis in this specification is not on the specific testing and inspection provisions of the contract so much as total control of work operations and manufacturing processes. The requirements are more stringent than those in MIL-I-45208A.

The Quality Program must likewise be in writing. It must assure adequate quality throughout all areas of contract performance, including design, development, fabrication, processing, assembly, inspection, test, maintenance, packaging, shipping, storage, and site installation. It requires clear identification of the authority and responsibility of those in charge of contractor quality control. The program must provide for prevention and ready detection of discrepancies and for timely and positive corrective action.

The Quality Program must provide for regular review by management of the status and adequacy of the program. It also must provide for an initial quality review during the early stages of performance of all quality requirements. The

specification also requires the contractor to develop clear and complete work instructions which assure that criteria for performance of work by employees are clear.

The specification goes on to require procedures for evaluation of changes to the contract, such as design changes, for evaluation of engineering adequacy and compliance with contract requirements. There is a requirement for calibration of test equipment, as well as detailed procedures for the control of subcontractor and purchased material quality. The specification also prescribes production control requirements.

The program must "assure that there is a system for final inspection and test of completed products." This provision probably eliminates any question about who is responsible for testing supplies under this specification. The paragraph contemplates simulation testing necessary to determine suitability considering the products end use and function.

The specification specifies more detailed procedures for controls the contractor is expected to place on subcontracted work, as well as the controls necessary to insure segregation of nonconforming and conforming work.

Department of Defense Construction Contracts

The Contractor Inspection System clause is used on construction contracts exceeding $25,000.[67] Two agencies within the Department have supplemented the clause with additional Contractor Quality Control Provisions.[68]

The Navy Contractor Quality Control provisions require an "organization" and written system which are both used to perform inspections and tests of all items of work. A quality control representative is required to be appointed; he is required to remain at the work during performance. The specification provides for a preliminary joint review of quality provisions so a mutual understanding of the details of the system can be reached. The system must also provide for periodic reporting by the contractor of quality control activities.

The Navy also supplements these provisions with others depending on the size of the construction project. These are put in the technical specifications section of the contract and futher define contractor responsibilities. Among these provisions, for use in all construction contracts where Contractor Quality Control is required is a provision which requires the contractor to perform "all job testing required under this contract" except as otherwise specified in the contract.[69] That provision appears to have the same legal effect as the Responsibility for Inspection clause used in supply contracts, shifting the responsibility clearly to the contractor for performing specified tests.[70] Another provision in these supplemental provisions, used on contracts under $500,000, deletes the general requirement that the contractor quality control representative not be subordinate to the job superintendent or project manager, which is included in the supplemental general provisions.[71]

The U.S. Army Corps of Engineers has a Contractor Quality Control specification which is very similar to that used by the Navy. The complete text of the specification is reproduced in Appendix H. It provides for a written quality control plan which must be approved by the Government prior to the beginning of construction. The plan must identify the personnel, procedures, instructions, records, and forms used, and must include a description of the quality management organization, the procedures for processing shop drawings and certificates, the quality control procedures to be performed by the contractor and subcontractors, and the controls on testing procedures. The specification differs from the Navy's in that the quality control system manager does not have to be independent from the construction supervisor, although he must have the authority to act on all quality control matters.

The plan must provide for adequate review and approval of shop drawings, samples, certificates, and other submittals. The contractor must take action to ensure that only materials and equipment which comply with contract requirements are purchased and delivered to the jobsite or used in offsite fabrication. The system must provide for control of work at preparatory stages of performance as well as during and after performance. The specification also has a provision which requires the contractor to "perform tests specified or required to verify that control measures are adequate to provide a product which conforms to contract requirements."

The specification more specifically identifies the reporting requirements of the contractor and the required content of records. There is a provision for a "completion review" of quality requirements at the completion of work. The Government reserves the right in the specification to withhold payment for defective or deficient features until they are satisfactorily corrected. However, apparently the defects referred to are only "work not properly completed or not conforming to plans and specifications."

Federal Agency Supply Contracts

There is only one standard quality control system specification generally used in civilian agency procurements. FED STD 368A, Quality Control System Requirements, is used when considered necessary, as when complex items are being purchased or when control of manufacturing processes are considered necessary.[72] The specification is attached in Appendix F and is very similar to the MIL-STD 45208A.

The specification requires a written description of the system which must remain current and available to the Government. The plan must include an organization chart and description of personnel responsibilities and authority, identification of inspection stations and methods, description of test procedures and sampling techniques, and procedures for segregation of lots and the handling of defective items. The specification requires the contractor to "perform all examinations and tests to substantiate conformance to specifications . . . before offering to the Government for

acceptance."

NASA Supply Contracts

NASA uses a two-tier quality program similar to that used by the Department of Defense. There is an inspection system provision for use in contracts where aeronautical and space system materials, parts, components, and services are procured.[73] Although that provision requires the submission of a written plan, a requirement for formal approval is discretionary with NASA installations.[74] The more detailed Quality Program is similar to that used in the Department of Defense in concept; it is used in the procurement of aeronautical and space systems; major flight subsystems and complex assemblies; support equipment used in launching, operating, or maintaining flight vehicles; and test and checkout equipment which directly interface with them.[75] The NASA publications have provisions which, like the others already discussed, shift the responsibility for testing to the contractor.[76]

Government Remedies For Quality System Failures

Where there are specific requirements in the specifications, the Government can order the contractor to perform the work required. As has been discussed, the Navy Quality Control Program requires the contractor to organizationally separate the quality control representative from the construction superintendent. The Government can order the contractor to comply with that requirement, even though there may be evidence

that the Quality Control Program as a whole increases costs of the Government unnecessarily because it is unworkable.[77] The failure of the contractor to perform testing required by the contract has been considered a valid basis for a default termination;[78] one would expect the Government to likewise insist that the contractor perform those kinds of requirements. It also appears that the failure of the contractor to perform these specific requirements would justify price reductions. Government reduction of contract payment because the contractor failed to separate the quality control organization from the production organization has been upheld where it was a contract requirement.[79] Also, a board has at least suggested in dicta that the failure to prepare a written quality control plan would justify a reduction in contract price based on the labor savings to the contractor.[80]

On the other hand, some of the promises that the contractor makes in these provisions may not be substantial enough to warrant default terminations. The failure to furnish reports or written procedures, where the underlying activity was being performed by the contractor, has been held to be an insufficient ground for rejection and default termination,[81] as well as an insufficient ground to justify withholding of Government inspection.[82]

The problem with these inspection system requirements is they generally lack a very clear definition about just what the contractor is expected to do, as well as the consequences

of the inspection system failures. To the extent that the failure would manifest itself through deficiencies in the end product, the Government could avail itself of the normal remedies in the supply contract inspection clause or the Inspection and Acceptance clause in construction contracts. Yet, apparently the Government is interested in exercising what rights it may have to correct the deficiency in the inspection system and forcing the contractor to take corrective action.[83] In contrast to exercise of rights based on the failure of work to comply with technical specifications, there is considerably more opportunity for subjectivity when the Government is asserting inspection system failures as a basis for action.

The general inspection system obligation does not require the submission of a written inspection system plan, but where one is required, such as in MIL-Q-9858A, after performance deficiencies the Government can require revision of the existing plan so that the plan is adequate to assure that the end items would meet contract requirements.[84] While there is a chance for subjectivity by Government personnel, their determinations of acceptability of inspection systems probably need only be reasonable and in good faith.[85]

It appears more difficult for the Government to justify direct interference with the contractor's size of its quality control organization; it probably can only justify a direction that the contractor add personnel if it can prove that the change was <u>necessary</u> to insure that the contractor's quality

control obligations would be met.[86] There is a general contract provision which allows the Government to order the removal of an employee deemed incompetent, careless, or otherwise objectional,[87] but this limited right probably does not give much right to direct personnel changes otherwise.

Where the Government has formally approved a contractor's inspection system, as may be the case under MIL-I-45208A, it must prove some need before ordering changes. Where such a plan was based on reasonable advice and guidance, a decision has held the Government liable for constructive change where it ordered revisions beyond general quality guidelines before production had even begun.[88] The Government does not have the unqualified right to order changes to the system at any time or without reason.[89] Apparently, quality history unrelated to the current contract is an inadequate reason for ordering these changes.[90]

Where the Government can prove a substantial failure of the contractor's obligation to maintain an acceptable inspection system, the Government has more remedial rights. The definition of substantial failure is not clearly defined, but it has been found where over fifty percent of the delivered supplies were defective.[91] The Government still may not order tests not required by the contract,[92] but it may order the contractor to tighten the inspection system practices so item-by-item inspection is done instead of spot checking.[93] Where, however, the parties have agreed to the conditions under which the contractor may be required to tighten inspection, the rule

is otherwise.[94] For example, MIL-STD-105D specifies the conditions under which sampling is shifted from reduced to tightened inspection.[95]

The failure of an inspection system may be serious enough to warrant the suspension of inspection by the Government, even where only the standard inspection system provision is included in the contract. In National Painting Co.[96] the contractor had been awarded a fixed price contract for plumbing, carpentry, painting, and electrical work on eight buildings. The contract contained the Contractor Inspection System clause used in Department of Defense construction contracts. The Government refused to inspect further after noting several deficiencies when it began inspection. The resulting delay led to assessment of liquidated damages, and the contractor appealed. The Board upheld the Government's action, saying:

> Refusing to inspect further after finding five deficiencies may not be reasonable in the context of a large job with scattered deficiencies. In this case, however, deficiencies were numerous, and no proof was offered that the refusal to inspect was any more than a refusal to inspect before the job was ready for inspection.

This is another context in which specific language may affect the remedy. In contracts using MIL-STD-105D, the specification conditions Government suspension of inspection on continuation of tightened inspection for ten consecutive lots.[97] Absent such contractual authorization or substantial failure of the inspection system, it appears that the Government may not withhold inspections simply because performance problems

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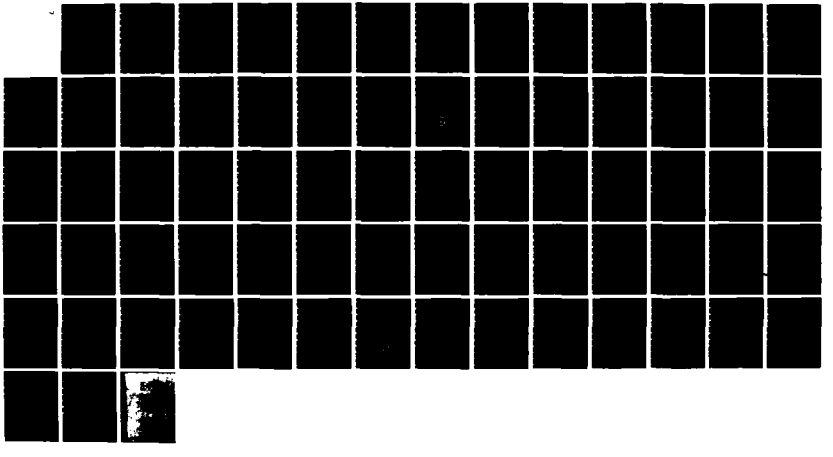
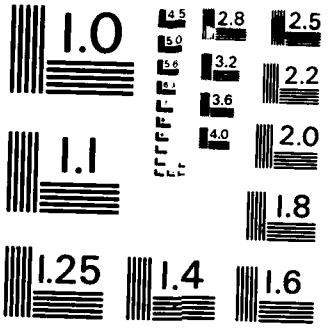




are encountered.[98] Substantial failures of inspection systems mean deficiencies which have some impact on the quality of the end product,[99] and it is apparently of no consequence that "in the operation of the system a few units slipped by."[100]

It has been said that deficiencies in an inspection system are merged with product quality deficiencies where the propriety of rejection is concerned.[101] Probably, there is no practical way to define an inspection system failure that would be a basis for rejection independent of specific failures of the product to conform. Yet, rejection of an entire lot of supplies has been upheld, based on the inspection system obligation, where inspection of a reasonable number of items disclosed such a large number of defects as demonstrated that the inspection system had failed to adequately screen out defective units.[102] The Government is entitled to decline to inspect items where no contractually required inspections have been performed and where the inspection system has failed.[103] The implication of such a rule is that the Government can order the contractor to rescreen the rejected items as satisfaction of its obligation to maintain an acceptable inspection system.[104] Of course, where MIL-STD-105D is part of the contract, it has provisions which determine the conditions under which the Government can order rescreening.[105]

Conclusion

It is this area, quality control responsibilities, that most needs further contractual definition. As the Government increases its reliance on the contractor's quality control systems as a way of assuring product quality, it seems that deficiencies in the inspection system and other quality control responsibilities will be subject to more attention. Even the specifications which purport to define the contractor's responsibilities are laced with general responsibilities which sound more like management theory than definitive performance requirements. But especially in the case of the standard inspection system requirement, there appears to be substantial potential for the Government to justify remedial action on its failure. That provision appears to be getting cited more frequently in recent years to justify cessation of Government inspection and other instances when Government activity can hinder a contractor.

The standard contract clauses do apprise the contractor of some expected remedial action, but they are directed more toward deficiencies in the quality of the product or service than toward problems with quality control. It would seem sensible for the Government to at least define generally what is meant by an "acceptable" or "adequate" inspection system. For example, the contract could include some of the policy statements which are in the agency handbooks, such as that of the Department of Defense which was cited earlier. Next, the clause should explain the effect of the Government's

evaluation of the contractor's quality control program before award. Then, if the Government wishes to reserve the right to declare the quality control system unacceptable, it should say so in the contract. The present clause, which is basically adopted in the proposed Federal Acquisition Regulations, leaves that problem unclear.

Next, the clause should have remedial provisions. The Government is apparently interested in directing modifications to quality control procedures when it deems them advisable; that could be included in the contract. Further, the Government could reserve the right to stop performance upon failure of the system until there were adequate assurances that the deficiencies were corrected. Similarly, the Government could reserve its right to suspend its own inspection activity. Finally, if the Government does intend to take deficiency deductions for problems with a quality control program, it might be useful to reach some kind of agreement about what the various elements of the programs are worth.

Throughout this paper, the analysis has been linked where possible to the parties expectations when the contract was entered. The results of some of these decisions appear to find more content in the inspection system requirement than was probably ever contemplated.

CHAPTER V FOOTNOTES

[1] Cf. Szemco, Inc., ASBCA 9892, 1964 B.C.A. ¶ 4503 (1964), aff'd on reconsideration, 65-1 B.C.A. ¶ 4535 (1965).

[2] See Pathman Constr. Co., ASBCA 11,801, 68-2 B.C.A. ¶ 7272 (1968).

[3] Cone Brothers Contracting Co., ASBCA 16,078, 72-1 B.C.A. ¶ 9444 (1972).

[4] ENGBCA 3115, 73-2 B.C.A. ¶ 10,034 (1973).

[5] See Hardeman-Monier-Hutcherson, ASBCA 11,869, 67-2 B.C.A. ¶ 6522 (1967).

[6] See Hudson Precision Optical, ASBCA 16,825, 72-2 B.C.A. ¶ 9750 (1972); Land Rubber Corp., ASBCA 7928, 65-1 B.C.A. ¶ 4614 (1965).

[7] See Spencer-Safford Loadcraft, Inc., ASBCA 6735, 1962 B.C.A. ¶ 3315 (1962).

[8] DAR ¶ 7-103.24.

[9] FED. STD. 368A, Quality Control System Requirements (10 Dec 79).

[10] ASBCA 22,983, 80-2 B.C.A. ¶ 14,631 (1980).

[11] AAI Corp., ASBCA 14,277, 74-1 B.C.A. ¶ 10,493 (1973); see Illman Jones, ASBCA 11,195, 66-2 B.C.A. ¶ 5827 (1966).

[12] DAR ¶ 14-101.1.

[13] DAR ¶ 7-103.24.

[14] ASBCA 19,005, 77-1 B.C.A. ¶ 12,237, at 58,939 (1976).

[15] 212 Ct. Cl. 432, 548 F.2d 953 (1977).

[16] C.W. Regan, Inc., NASA BCA 48, 66-1 B.C.A. ¶ 5683 (1966).

[17] Cf. AAI Corp., supra note 11.

[18] See Systems & Computer Information, Inc., ASBCA 18,458, 78-1 B.C.A. ¶ 12,946 (1977).

[19] Id.

[20] See Guenther Systems, Inc., ASBCA 14,247, 73-1 B.C.A. ¶ 9827 (1972); Harbison & Mahoney, ENGBCA 2820, 68-2 B.C.A. ¶ 7212 (1968).

[21] Pyramid Builders, ASBCA 25,197, 81-1 B.C.A. ¶ 14,901 (1981).

[22] See Roscoe Engineering & Associates, ASBCA 4820, 61-1 B.C.A. ¶ 2919 (1961); see also H. Hertzberg and Son, Inc., GSBCA 4144, 76-2 B.C.A. ¶ 12,011 (1976).

[23] NASA BCA 1067-38, 74-1 B.C.A. ¶ 10,634 (1974), aff'd on reconsideration, 75-2 B.C.A. ¶ 11,479 (1975).

[24] Id. at 50,487.

[25] See notes 3 and 4.

[26] See Joseph Pickard's Sons Co., ASBCA 13,585, 73-1 B.C.A. ¶ 10,026 (1973), aff'd, 209 Ct. Cl. 643 (1976).

[27] See Land Rubber Corp., supra note 6; Spencer-Safford Loadcraft, Inc., supra note 7.

[28] Department of Defense Directive 4155.1, Quality Program, ¶ C-8(d) (10 Aug 78).

[29] U.S. General Accounting Office Report, GSA Needs To Strengthen Its Inspection And Testing To Make Sure The Government Gets The Quality It Pays For, PSAD-79-102 (September 21, 1979).

[30] FSS P 4400.1, Chapter 13.

[31] Comptroller General Report To The Congress Of The United States, Eliminating Contractor Inspections Of Federal Water Projects Could Save Millions, CED-81-146 (September 29, 1981).

[32] See RFI Shield-Rooms, supra note 14. See DAR ¶ 14-101.1.

[33] FPR § 1-7-103.5(e).

[34] Defense Acquisition Circular 76-40, DAR ¶ 7-103.5(a), published in 48 Fed. Reg. No. 17 (1983).

[35] DAR ¶ 7-602.10.

[36] For an early version of the supply contract clause, see Winder Aircraft Corp. v. United States, 188 Ct. Cl. 799, 809 412 F.2d 1270 (1969). The Inspection clause was the 1949 Edition and included the inspection system obligation.

[37] See Joseph Pickard's Sons Co., supra note 26.

[38] United Pacific Insurance Co. v. United States, 204 Ct. Cl. 686, 497 F.2d 1402 (1974).

[39] ASBCA 6735, 1962 B.C.A. ¶ 3315 (1962).

[40] Id. at 17,097.

[41] Id. at 17,097.

[42] See Corbetta Constr. Co. v. United States, 198 Ct. Cl. 712,723, 461 F.2d 1330 (1972).

[43] See Joseph Pickard's Sons, supra note 26.

[44] DLAM 8200.1, ¶ 3-105.

[45] Cf. Kraus v. United States, 177 Ct. Cl. 108, 366 F.2d 975 (1966).

[46] Cf. Piracci Constr. Co., GSBCA 3477, 74-2 B.C.A. ¶ 10,800 (1974); Cone Brothers Contracting Co., ASBCA 16,078, 72-1 B.C.A. ¶ 9444 (1972).

[47] DAR ¶ 14-101.2.

[48] FPR § 1-14.104; NASA PR ¶ 14.202(a).

[49] FSS P 4400.1, Chapter 12, Part 3, ¶ 7.

[50] Id.

[51] DLAM 8200.1, ¶ 4-111.

[52] Spencer-Safford, supra note 7 at 17,093.

[53] See Joseph Pickard's Sons Co., supra note 26.

[54] Spencer-Safford, supra note 7 at 17,098.

[55] See Joseph Pickard's Sons Co., supra note 26; Cone Brothers Contracting Co., supra note 3; Land Rubber, supra note 6 at 22,036.

[56] See Cone Brothers, supra note 3; Mel Williamson, infra note 101.

[57] DAR ¶ 14-504(b).

[58] See note 51.

[59] See Reliance Enterprises, Inc., ASBCA 25,618, 83-1 B.C.A. ¶ 16,167 (1982).

[60] DAR ¶ 14-101.3.

[61] DAR ¶ 14-101.4.

[62] DAR ¶ 14-101.5(b).

[63] Id. DAR ¶ 14-101.5(a)(i)(E).

[64] DAR ¶ 14-101.5(a)(iii),(iv).

[65] See Appendix D.

[66] See Appendix E.

[67] DAR ¶ 7-602.10.

[68] See Appendices G and H.

[69] Department of the Navy, NAVFAC P-445, NAVFAC Construction Quality Control Manual (Jan 74) at ¶ 4.1.1 of Chapter 4.

[70] See notes 13-17.

[71] NAVFAC P-445, supra note 69 at ¶ 2.2 of Chapter 4.

[72] FPR § 1-14.104(b).

[73] NASA PR ¶ 14.102(b). NASA Handbook 5300.4(1C), Inspection System Provisions For Aeronautical And Space System Materials Parts, Components And Services (Jul 71).

[74] NASA PR 14.101(h).

[75] NASA PR 14.102(a). NASA Handbook 5300.4(1B), Quality Program Provisions For Aeronautical And Space System Contractors (Apr 69).

[76] See, e.g., NASA Handbook 5300.4(1B), ¶ 1B700.

[77] Santa Fe Engineers, Inc., ASBCA 22,225, 81-1 B.C.A. ¶ 14,976 (1981). Accord, Robert McMullan & Son, Inc., ASBCA 20,593, 76-1 B.C.A. ¶ 11,758 (1976).

[78] See AAR Corp., ASBCA 16,311, 74-1 B.C.A. ¶ 10,607 (1974); Giller Tool, Division of Thorsen Tool Co., GSBCA 3567, 72-2 B.C.A. ¶ 9526 (1972).

[79] M & H Constr. Co., ASBCA 21,528, 79-1 B.C.A. ¶ 13,688 (1979).

[80] See Viz Mfg. Co., ASBCA 17,787, 78-2 B.C.A. ¶ 13,469 (1978), at 65,870, aff'd on reconsideration, 79-2 B.C.A. ¶ 13,929 (1979).

[81] Cf. Fitzhenry-Guphill Co., ASBCA 1885, 56-2 B.C.A. ¶ 1007 (1956).

[82] See Viz Mfg. Co., supra note 80 at 65,862.

[83] Id.

[84] Id.

[85] Cf. Pioneer Canvas Products Co., ASBCA 9932, 65-1 B.C.A. ¶ 4765 (1965).

[86] See Big 4 Mechanical Contractors, Inc., ASBCA 20.897, 77-2 B.C.A. ¶ 12,716, at 61,777 (1977).

[87] DAR ¶ 7-602.9.

[88] See Joseph Pickard's Sons Co., supra note 26.

[89] Lehigh Chemical Co., ASBCA 8427, 1963 B.C.A. ¶ 3749, at 18,707, aff'd on reconsideration, 1963 B.C.A. ¶ 3822 (1963).

[90] See Orion Electronic Corp., ASBCA 18,495, 75-1 B.C.A. ¶ 11,193 (1975).

[91] See Marshall Electronics Co., ASBCA 14,565, 71-1 B.C.A. ¶ 8843 (1971); see also Herlo Corp., ASBCA 18,612, 75-1 B.C.A. ¶ 11,347 (1975).

[92] See Joseph Pickard's Sons Co., supra note 26

[93] See Spencer-Safford Loadcraft, supra note 7.

[94] See Garland Foods, Inc., ASBCA 21,571, 79-1 B.C.A. ¶ 13,877, aff'd on reconsideration, 79-2 B.C.A. ¶ 14,141 (1979).

[95] See Appendix C, ¶ 8.

[96] ASBCA 9715, 65-2 B.C.A. ¶ 4925 (1965).

[97] See Appendix C, ¶ 8.4.

[98] See Viz Mfg. Co., supra note 80 at 65,869.

[99] Id.

[100] See Orion Electronic Corp., ASBCA 18495, 75-1 B.C.A. ¶ 11,193, at 53,302 (1975); see also Central Air Repair, Inc., ASBCA 9245, 1964 B.C.A. ¶ 4156 (1964).

[101] Mel Williamson, Inc., ASBCA 22,983, 80-2 B.C.A. ¶ 14,631 (1980).

[102] Herlo Corp., supra note 91.

[103] See National Painting Co., supra note 96.

[104] See Herlo, supra note 91.

[105] See Appendix C, ¶ 6.4.

APPENDIX A

CURRENT INSPECTION CLAUSES IN FIXED PRICE SUPPLY, CONSTRUCTION, SERVICE CONTRACTS

Supply

INSPECTION (1958 MAY) (FPR §1-7.102-5; NASA PR ¶ 7-105-4)

(a) All supplies (which term throughout this clause includes without limitation raw materials, components, intermediate assemblies, and end products) shall be subject to inspection and test by the Government, to the extent practicable at all times and places including the period of manufacture, and in any event prior to acceptance.

(b) In case any supplies or lots of supplies are defective in material or workmanship or otherwise not in conformity with the requirements of this contract, the Government shall have the right either to reject them (with or without instructions as to their disposition) or to require their correction. Supplies or lots of supplies which have been rejected or required to be corrected shall be removed or, if permitted or required by the Contracting Officer, corrected in place by and at the expense of the Contractor promptly after notice, and shall not thereafter be tendered for acceptance unless the former rejection or requirement of correction is disclosed. If the Contractor fails promptly to remove such supplies or lots of supplies which are required to be removed or promptly to replace or correct such supplies or lots of supplies, the Government either (i) may by contract or otherwise replace or correct such supplies and charge to the Contractor the cost occasioned the Government thereby; or (ii) may terminate this contract for default as provided in the clause of this contract entitled "Default." Unless the Contractor corrects or replaces such supplies within the delivery schedule, the Contracting Officer may require the delivery of such supplies at a reduction in price which is equitable under the circumstances. Failure to agree to such reduction of price shall be a dispute concerning a question of fact within the meaning of the clause of this contract entitled "Disputes".

(c) If any inspection or test is made by the Government on the premises of the Contractor or a subcontractor, the Contractor without additional charge shall provide all reasonable facilities and assistance for the safety and convenience of the Government inspectors in the performance of their duties. If Government inspection or test is made at a point other than the premises of the Contractor or a subcontractor, it shall be at the expense of the Government except as otherwise provided in this contract; *provided*, that in case of rejection the Government shall not be liable for any reduction in value of samples used in connection with such inspection or test. All inspections and tests by the Government shall be performed in such a manner as not to unduly delay the work. The Government reserves the right to charge to the Contractor any additional cost of Government inspection and test when supplies are not ready at the time such inspection and test is requested by the Contractor or when reinspection or retest is necessitated by prior rejection. Acceptance or rejection of the supplies shall be made as promptly as practicable after delivery, except as otherwise provided in this contract; but failure to inspect and accept or reject supplies shall neither relieve the Contractor from responsibility for such supplies as are not in accordance with the contract requirements nor impose liability on the Government therefor.

(d) The inspection and test by the Government of any supplies or lots thereof does not relieve the Contractor from any responsibility regarding defects or other failures to meet the contract requirements which may be discovered prior to acceptance. Except as otherwise provided in this contract, acceptance shall be conclusive except as regards latent defects, fraud, or such gross mistakes as amount to fraud.

(e) The Contractor shall provide and maintain an inspection system acceptable to the Government covering the supplies hereunder. Records of all inspection work by the Contractor shall be kept complete and available to the Government during the performance of this contract and for such longer period as may be specified elsewhere in this contract.

(End of clause)

Supply

DAR ¶ 7-103.5

(Nov. 82 Rev.)

INSPECTION (1982 NOV)

(a) The Contractor shall provide and maintain an inspection system acceptable to the Government covering the supplies hereunder and shall tender to the Government, for acceptance, only supplies that have been inspected in accordance with said inspection system and have been found by the Contractor to be in conformity with contract requirements. As part of such system, the Contractor shall prepare records evidencing all inspections made pursuant thereto and the outcome thereof. Such records shall be kept complete and available to the Government during the performance of this contract and for such longer period as may be specified elsewhere in this contract. The Government may perform such reviews and evaluations as are reasonably necessary to ascertain compliance with this paragraph. These reviews and evaluations shall be conducted in a manner that will not unduly delay the contract work. The right of review, whether exercised or not, does not relieve the Contractor of the obligations under the contract.

(b) All supplies (which term throughout this clause includes without limitation raw materials, components, intermediate assemblies, and end products) shall be subject to inspection and test by the Government, to the extent practicable at all times and places including the period of manufacture, and in any event prior to acceptance. However, the Government assumes no contract obligation to perform any inspection and test for the benefit of the Contractor unless specifically set forth elsewhere in this contract.

(c) In case any supplies or lots of supplies are defective in material or workmanship or otherwise not in conformity with the requirements of this contract, the Government shall have the right either to reject them (with or without instructions as to their disposition) or to require their correction. Supplies or lots of supplies which have been rejected or required to be corrected shall be removed or, if permitted or required by the Contracting Officer, corrected in place by and at the expense of the Contractor promptly after notice, and shall not thereafter be tendered for acceptance unless the former rejection or requirement of correction is disclosed. If the Contractor fails promptly to remove such supplies or lots of supplies which are required to be removed or promptly to replace or correct such supplies or lots of supplies, the Government either (i) may by contract or otherwise replace or correct such supplies and charge to the Contractor the cost occasioned the Government thereby; or (ii) may terminate this contract for default as provided in the clause of this contract entitled "Default." Unless the Contractor corrects or replaces such supplies within the delivery schedule, the Contracting Officer may require the delivery of such supplies at a reduction in price which is equitable under the circumstances. Failure to agree to such reduction of price shall be a dispute concerning a question of fact within the meaning of the clause of this contract entitled "Disputes".

(d) If any inspection or test is made by the Government on the premises of the Contractor or a subcontractor, the Contractor without additional charge shall provide all reasonable facilities and assistance for the safety and convenience of the Government inspectors in the performance of their duties. If Government inspection or test is made at a point other than the premises of the Contractor or a subcontractor, it shall be at the expense of the Government except as otherwise provided in this contract; *provided*, that in case of rejection the Government shall not be liable for any reduction in value of samples used in connection with such inspection or test. All inspections and tests by the Government shall be performed in such a manner as not to unduly delay the work. The Government reserves the right to charge to the Contractor any additional cost of Government inspection and test when supplies are not ready at the time such inspection and test is requested by the Contractor or when reinspection or retest is necessitated by prior rejection. Acceptance or rejection of the supplies shall be made as promptly as practicable after delivery, except as otherwise provided in this contract, but failure to inspect and accept or reject supplies shall neither relieve the Contractor from responsibility for such supplies as are not in accordance with the contract requirements nor impose liability on the Government therefor.

(e) The inspection and test by the Government of any supplies or lots of supplies does not relieve the Contractor from any responsibility regarding defects or other failures to meet the contract requirements which may be discovered prior to acceptance. Unless otherwise provided in this contract, acceptance shall be conclusive except as regards (1) latent defects, (2) fraud, or (3) such gross mistakes as amount to fraud.

(f) If acceptance is not conclusive for any of the reasons in paragraph (e) hereof, the Government, in addition to any other rights and remedies provided by law, or under other provisions of this contract, shall have the right to require the Contractor (1) at no increase in contract price, to correct or replace the defective or nonconforming supplies at the original point of delivery or at the Contractor's plant at the Contracting Officer's election, and in accordance with a reasonable delivery schedule as may be agreed upon between the Contractor and the Contracting Officer; *Provided*, That the Contracting Officer may require a reduction in contract price if the Contractor fails to meet such delivery schedule, or (2) within a reasonable time after receipt by the Contractor of notice of defects or nonconformance, to repay such portion of the contract as is equitable under the circumstances if the Contracting Officer elects not to require correction or replacement. When supplies are returned to the Contractor, the Contractor shall bear the transportation cost from the original point of delivery to the Contractor's plant and return to the original point when that point is not the Contractor's plant. If the Contractor fails to perform or act as required in (1) or (2) above and does not cure such failure within a period of ten (10) days (or such longer period as the Contracting Officer may authorize in writing) after receipt of notice from the Contracting Officer specifying such failure, the Government shall have the right by contract or otherwise to replace or correct such supplies and charge to the Contractor the cost occasioned the Government thereby.

(End of clause)

Construction

7-602.11 *Inspection and Acceptance.* (Standard Form 23-A; DAR ¶ 7-602.11; FPR § 1-7.602-11)

INSPECTION AND ACCEPTANCE (1976 OCT)

(a) All work (which term includes but is not restricted to materials, workmanship, and manufacture and fabrication of components) shall be subject to inspection and test by the Government at all reasonable times and at all places prior to acceptance. Any such inspection and test is for the sole benefit of the Government and shall not relieve the Contractor of the responsibility of providing quality control measures to assure that the work strictly complies with the contract requirements. No inspection or test by the Government shall be construed as constituting or implying acceptance. Inspection or test shall not relieve the Contractor of responsibility for damage to or loss of the material prior to acceptance, nor in any way affect the continuing rights of the Government after acceptance of the completed work under the terms of paragraph (f) of this clause, except as hereinabove provided.

(b) The Contractor shall, without charge, replace any material or correct any workmanship found by the Government not to conform to the contract requirements, unless in the public interest the Government consents to accept such material or workmanship with an appropriate adjustment in contract price. The Contractor shall promptly segregate and remove rejected material from the premises.

(c) If the Contractor does not promptly replace rejected material or correct rejected workmanship, the Government (1) may, by contract or otherwise, replace such material or correct such workmanship and charge the cost thereof to the Contractor, or (2) may terminate the Contractor's right to proceed in accordance with the clause of this contract entitled "*Termination for Default — Damages for Delay — Time Extensions.*"

(d) The Contractor shall furnish promptly, without additional charge, all facilities, labor, and material reasonably needed for performing such safe and convenient inspection and test as may be required by the Contracting Officer. All inspection and test by the Government shall be performed in such manner as not unnecessarily to delay the work. Special, full size, and performance tests shall be performed as described in this contract. The Government reserves the right to charge to the Contractor any additional cost of inspection or test when material or workmanship is not ready at the time specified by the Contractor for inspection or test or when reinspection or retest is necessitated by prior rejection.

(e) Should it be considered necessary or advisable by the Government at any time before acceptance of the entire work to make an examination of work already completed, by removing or tearing out same, the Contractor shall, on request, promptly furnish all necessary facilities, labor and material. If such work is found to be defective or nonconforming in any material respect, due to the fault of the Contractor or his subcontractors, he shall defray all the expenses of such examination and of satisfactory reconstruction. If, however, such work is found to meet the requirements of the contract, an equitable adjustment shall be made in the contract price to compensate the Contractor for the additional services involved in such examination and reconstruction and, if completion of the work has been delayed thereby, he shall, in addition, be granted a suitable extension of time.

(f) Unless otherwise provided in this contract, acceptance by the Government shall be made as promptly as practicable after completion and inspection of all work required by this contract, or that portion of the work that the Contracting Officer determines can be accepted separately. Acceptance shall be final and conclusive except as regards latent defects, fraud, or such gross mistakes as may amount to fraud or as regards the Government's rights under any warranty or guarantee.

(End of clause)

Services

INSPECTION OF SERVICES (1971 NOV) (DAR ¶ 7-1902.4)

(a) All services (which term throughout this clause includes services performed, material furnished or utilized in the performance of services, and workmanship in the performance of services) shall be subject to inspection and test by the Government, to the extent practicable at all times and places during the term of the contract. All inspections by the Government shall be made in such a manner as not to unduly delay the work.

(b) If any services performed hereunder are not in conformity with the requirements of this contract, the Government shall have the right to require the Contractor to perform the services again in conformity with the requirements of the contract, at no additional increase in total contract amount. When the services to be performed are of such a nature that the defect cannot be corrected by reperformance of the services, the Government shall have the right to (i) require the Contractor to immediately take all necessary steps to ensure future performance of the services in conformity with the requirements of the contract; and (ii) reduce the contract price to reflect the reduced value of the services performed. In the event the Contractor fails promptly to perform the services again or to take necessary steps to insure future performance of the services in conformity with the requirements of the contract, the Government shall have the right to either (i) by contract or otherwise have the services performed in conformity with the contract requirements and charge to the Contractor any cost occasioned to the Government that is directly related to the performance of such services; or (ii) terminate this contract for default as provided in the clause of this contract entitled "Default."

(c) The Contractor shall provide and maintain an inspection system acceptable to the Government covering the services to be performed hereunder. Records of all inspection work by the Contractor shall be kept complete and available to the Government during the term of this contract and for such longer period as may be specified elsewhere in this contract.

(End of clause)

APPENDIX B

PROPOSED FEDERAL ACQUISITION REGULATION INSPECTION CLAUSES

52.246-2 Inspection of Supplies—Fixed-Price.

As prescribed in 46.302-1, insert the following clause in all fixed-price supply contracts (and service contracts involving the furnishing of supplies) expected to exceed $10,000 and, when considered to be in the Government's interest, in contracts of lesser value.

INSPECTION OF SUPPLIES—FIXED-PRICE
(DATE)

(a) The Contractor shall provide and maintain an inspection system acceptable to the Government covering supplies under this contract. Records of all inspection work by the Contractor shall be kept complete and made available to the Government during contract performance and for as long afterwards as the contract requires.

(b) The Government may inspect and test all supplies called for by the contract, to the extent practicable at all places and times, including the period of manufacture, and in any event prior to acceptance. The Government shall perform inspections and tests in a manner that will not unduly delay the work. "Supplies," as used in this clause, includes but is not limited to raw materials, components, intermediate assemblies, end products, and lots of supplies.

(c) If the Government performs inspection or test on the premises of the Contractor or a subcontractor, the Contractor shall provide and shall require subcontractors to provide, without additional charge, all reasonable facilities and assistance for the safe and convenient performance of these duties. Except as otherwise provided in the contract, the Government shall bear the expense of Government inspections or tests made at other than the Contractor's or subcontractor's premises; provided, that in case of rejection, the Government shall not be liable for any reduction in the value of inspection or test samples.

(d) (1) When supplies are not ready at the time specified by the Contractor for inspection or test, the Government may charge to the Contractor the additional cost of inspection or test.

(2) The Government may also charge the Contractor for any additional cost of inspection or test when prior rejection makes reinspection or retest necessary.

(e) The Government has the right either to reject or to require correction of nonconforming supplies. Supplies are nonconforming when they are defective in material or workmanship or are otherwise not in conformity with contract requirements. The Government may reject nonconforming supplies with or without disposition instructions.

(f) The Contractor shall remove supplies rejected or required to be corrected. However, the Contracting Officer may require or permit correction in place, promptly after notice, by and at the expense of the Contractor. The Contractor shall not tender for acceptance corrected or rejected supplies without disclosing the former rejection or requirement for correction.

(g) If the Contractor fails to promptly remove, replace, or correct rejected supplies that are required to be removed or to be replaced or corrected, the Government may either (1) by contract or otherwise, remove, replace, or correct the supplies and charge the cost to the Contractor or (2) terminate the contract for default. Unless the Contractor corrects or replaces the supplies within the delivery schedule, the Contracting Officer may require their delivery and make an equitable price reduction. Failure to agree to a price reduction shall be a dispute.

(h) (1) If this contract provides for the performance of Government quality assurance at source, and if requested by the Government, the Contractor shall furnish advance notification of the time (i) when contractor inspection or tests will be performed in accordance with provisions of the contract and (ii) when the supplies will be ready for Government inspection.

(2) The Government request shall specify the period and method of the advance notification and the Government representative to whom it shall be furnished. Requests shall not require more than 2 workdays of advance notification if the Government representative is in residence in the Contractor's plant, nor more than 7 workdays in other instances.

(i) The Government shall accept or reject supplies as promptly as practicable after delivery, unless otherwise provided in the contract. Government failure to inspect and accept or reject the supplies shall not relieve the Contractor from responsibility, nor impose liability on the Government, for nonconforming supplies.

(j) Inspection and test by the Government do not relieve the Contractor of responsibility for defects or other failures to meet contract requirements discovered before acceptance. Acceptance shall be conclusive, except for latent defects, fraud, gross mistakes amounting to fraud, or as otherwise provided in the contract.

(End of clause)

52.246-12 Inspection of Construction.

As prescribed in 46.304, insert the following clause in all fixed-price construction contracts expected to exceed $10,000 and, when considered to be in the Government's interest, in contracts of lesser value:

INSPECTION OF CONSTRUCTION (DATE)

(a) The Contractor shall maintain an adequate inspection system and perform such inspections as will assure that the work called for by this contract conforms to contract requirements. The Contractor shall maintain adequate inspection records and make them available to the Government. All work shall be conducted under the general direction of the Contracting Officer and is subject to Government inspection and test at all places and at all reasonable times before acceptance to insure strict compliance with the terms of the contract. "Work" includes, but is not limited to, materials, workmanship, and manufacture and fabrication of components.

(b) Government inspections and tests are for the sole benefit of the Government and do not—

(1) Relieve the Contractor of responsibility for providing adequate quality control measures;

(2) Relieve the Contractor of responsibility for damage to or loss of the material before acceptance;

(3) Constitute or imply acceptance; or

(4) Affect the continuing rights of the Government after acceptance of the completed work under paragraph (h) below.

(c) The presence or absence of a Government inspector does not relieve the Contractor from any contract requirement, nor is the inspector authorized to change any provision of the specifications without the Contracting Officer's written authorization.

(d) The Contractor shall promptly furnish, without additional charge, all facilities, labor, and material reasonably needed for performing such safe and convenient inspections and tests as may be required by the Contracting Officer. The Government may charge to the Contractor any additional cost of inspection or test when work is not ready at the time specified by the Contractor for inspection or test, or when prior rejection makes reinspection or retest necessary. The Government shall perform all inspections and tests in a manner that will not unnecessarily delay the work. Special, full size, and performance tests shall be performed as described in the contract.

(e) The Contractor shall, without charge, replace or correct work found by the Government not to conform to contract requirements, unless in the public interest the Government consents to accept the work with an appropriate adjustment in contract price. The Contractor shall promptly segregate and remove rejected material from the premises.

(f) If the Contractor does not promptly replace or correct rejected work, the Government may (1) by contract or otherwise, replace or correct the work and charge the cost to the Contractor or (2) terminate for default the Contractor's right to proceed.

(g) If, before acceptance of the entire work, the Government decides to examine already completed work by removing it or tearing it out, the Contractor, on request, shall promptly furnish all necessary facilities, labor, and material. If the work is found to be defective or nonconforming in any material respect due to the fault of the Contractor or its subcontractors, the Contractor shall defray the expenses of the examination and of satisfactory reconstruction. However, if the work is found to meet contract requirements, the Contracting Officer shall make an equitable adjustment for the additional services involved in the examination and reconstruction, including, if completion of the work was thereby delayed, an extension of time.

(h) Unless otherwise provided in the contract, the Government shall accept, as promptly as practicable after completion and inspection, all work required by the contract or that portion of the work the Contracting Officer determines can be accepted separately. Acceptance shall be final and conclusive except for latent defects, fraud, gross mistakes amounting to fraud, or the Government's rights under any warranty or guarantee.

(End of clause)

52.246-4 Inspection of Services—Fixed-Price.

As prescribed in 46.302-3, insert the following clause in fixed-price service contracts expected to exceed $10,000 and, when considered to be in the Government's interest, in contracts of lesser value. Service contracts involving the furnishing of supplies shall include both this clause and the clause at 52.246-2, Inspection of Supplies—Fixed-Price:

INSPECTION OF SERVICES—FIXED-PRICE
(DATE)

(a) The Contractor shall provide and maintain an inspection system acceptable to the Government covering the services under this contract. Records of all inspection work by the Contractor shall be kept complete and made available to the Government during contract performance and for as long afterwards as the contract requires.

(b) The Government may inspect and test all services called for by the contract, to the extent practicable at all times and places during the term of the contract. The Government shall perform inspections and tests in a manner that will not unduly delay the work. "Services," as used in this clause, includes services performed, workmanship, and material furnished or utilized in the performance of services.

(c) If any of the services do not conform with contract requirements, the Government may require the Contractor to perform the services again in conformity with contract requirements, at no increase in contract amount. When the deficiency in services cannot be corrected by reperformance, the Government may (1) require the Contractor to take necessary action to ensure that future performance conforms to contract requirements and (2) reduce the contract price to reflect the reduced value of the services performed.

(d) If the Contractor fails to promptly perform the services again or to take the necessary action to ensure future performance in conformity with contract requirements, the Government may (1) by contract or otherwise, perform the services and charge to the Contractor any cost incurred by the Government that is directly related to the performance of such service or (2) terminate the contract for default.

(End of clause)

APPENDIX C

MIL-STD-105D
29 April 1963

SUPERSEDING
MIL-STD-105C
18 July 1961

MILITARY STANDARD

SAMPLING PROCEDURES AND TABLES FOR INSPECTION BY ATTRIBUTES

(SELECTED PORTIONS)

CONTENTS

TABLES

SAMPLING PROCEDURES AND TABLES FOR INSPECTION BY ATTRIBUTES

1. SCOPE

1.1 PURPOSE. This publication establishes sampling plans and procedures for inspection by attributes. When specified by the responsible authority, this publication shall be referenced in the specification, contract, inspection instructions, or other documents and the provisions set forth herein shall govern. The "responsible authority" shall be designated in one of the above documents.

1.2 APPLICATION. Sampling plans designated in this publication are applicable, but not limited, to inspection of the following:

a. End items.

b. Components and raw materials.

c. Operations.

d. Materials in process.

e. Supplies in storage.

f. Maintenance operations.

g. Data or records.

h. Administrative procedures.

These plans are intended primarily to be used for a continuing series of lots or batches. The plans may also be used for the inspection of isolated lots or batches, but, in this latter case, the user is cautioned to consult the operating characteristic curves to find a plan which will yield the desired protection (see 11.6).

1.3 INSPECTION. Inspection is the process of measuring, examining, testing, or otherwise comparing the unit of product (see 1.5) with the requirements.

1.4 INSPECTION BY ATTRIBUTES. Inspection by attributes is inspection whereby either the unit of product is classified simply as defective or nondefective, or the number of defects in the unit of product is counted, with respect to a given requirement or set of requirements.

1.5 UNIT OF PRODUCT. The unit of product is the thing inspected in order to determine its classification as defective or nondefective or to count the number of defects. It may be a single article, a pair, a set, a length, an area, an operation, a volume, a component of an end product, or the end product itself. The unit of product may or may not be the same as the unit of purchase, supply, production, or shipment.

2. CLASSIFICATION OF DEFECTS AND DEFECTIVES

2.1 METHOD OF CLASSIFYING DEFECTS. A classification of defects is the enumeration of possible defects of the unit of product classified according to their seriousness. A defect is any nonconformance of the unit of product with specified requirements. Defects will normally be grouped into one or more of the following classes; however, defects may be grouped into other classes, or into subclasses within these classes.

2.1.1 CRITICAL DEFECT. A critical defect is a defect that judgment and experience indicate is likely to result in hazardous or unsafe conditions for individuals using, maintaining, or depending upon the product; or a defect that judgment and experience indicate is likely to prevent performance of the tactical function of a major end item such as a ship, aircraft, tank, missile or space vehicle. NOTE: For a special provision relating to critical defects, see 6.3.

2.1.2 MAJOR DEFECT. A major defect is a defect, other than critical, that is likely to result in failure, or to reduce materially the usability of the unit of product for its intended purpose.

2.1.3 MINOR DEFECT. A minor defect is a defect that is not likely to reduce materially the usability of the unit of product for its intended purpose, or is a departure from established standards having little bearing on the effective use or operation of the unit.

2.2 METHOD OF CLASSIFYING DEFECTIVES. A defective is a unit of product which contains one or more defects. Defectives will usually be classified as follows:

2.2.1 CRITICAL DEFECTIVE. A critical defective contains one or more critical defects and may also contain major and or minor defects. NOTE: For a special provision relating to critical defectives, see 6.3.

2.2.2 MAJOR DEFECTIVE. A major defective contains one or more major defects, and may also contain minor defects but contains no critical defect.

2.2.3 MINOR DEFECTIVE. A minor defective contains one or more minor defects but contains no critical or major defect.

3. PERCENT DEFECTIVE AND DEFECTS PER HUNDRED UNITS

3.1 EXPRESSION OF NONCONFORMANCE. The extent of nonconformance of product shall be expressed either in terms of percent defective or in terms of defects per hundred units.

3.2 PERCENT DEFECTIVE. The percent defective of any given quantity of units of product is one hundred times the number of defective units of product contained therein divided by the total number of units of product, i.e.:

$$\text{Percent defective} = \frac{\text{Number of defectives}}{\text{Number of units inspected}} \times 100$$

3.3 DEFECTS PER HUNDRED UNITS. The number of defects per hundred units of any given quantity of units of product is one hundred times the number of defects contained therein (one or more defects being possible in any unit of product) divided by the total number of units of product, i.e.:

$$\text{Defects per hundred units} = \frac{\text{Number of defects}}{\text{Number of units inspected}} \times 100$$

4. ACCEPTABLE QUALITY LEVEL (AQL)

4.1 USE. The AQL, together with the Sample Size Code Letter, is used for indexing the sampling plans provided herein.

4.2 DEFINITION. The AQL is the maximum percent defective (or the maximum number of defects per hundred units) that, for purposes of sampling inspection, can be considered satisfactory as a process average (see 11.2).

4.3 NOTE ON THE MEANING OF AQL. When a consumer designates some specific value of AQL for a certain defect or group of defects, he indicates to the supplier that his (the consumer's) acceptance sampling plan will accept the great majority of the lots or batches that the supplier submits, provided the process average level of percent defective (or defects per hundred units) in these lots or batches be no greater than the designated value of AQL. Thus, the AQL is a designated value of percent defective (or defects per hundred units) that the consumer indicates will be accepted most of the time by the acceptance sampling procedure to be used. The sampling plans provided herein are so arranged that the probability of acceptance at the designated AQL value depends upon the sample size, being generally higher for large samples than for small ones, for a given AQL. The AQL alone does not describe the protection to the consumer for individual lots or batches but more directly relates to what might be expected from a series of lots or batches, provided the steps indicated in this publication are taken. It is necessary to refer to the operating characteristic curve of the plan, to determine what protection the consumer will have.

4.4 LIMITATION. The designation of an AQL shall not imply that the supplier has the right to supply knowingly any defective unit of product.

4.5 SPECIFYING AQLs. The AQL to be used will be designated in the contract or by the responsible authority. Different AQLs may be designated for groups of defects considered collectively, or for individual defects. An AQL for a group of defects may be designated in addition to AQLs for individual defects, or subgroups, within that group. AQL values of 10.0 or less may be expressed either in percent defective or in defects per hundred units; those over 10.0 shall be expressed in defects per hundred units only.

4.6 PREFERRED AQLs. The values of AQLs given in these tables are known as preferred AQLs. If, for any product, an AQL be designated other than a preferred AQL, these tables are not applicable.

5. SUBMISSION OF PRODUCT

5.1 LOT OR BATCH. The term lot or batch shall mean "inspection lot" or "inspection batch," i.e., a collection of units of product from which a sample is to be drawn and inspected to determine conformance with the acceptability criteria, and may differ from a collection of units designated as a lot or batch for other purposes (e.g., production, shipment, etc.).

5.2 FORMATION OF LOTS OR BATCHES. The product shall be assembled into identifiable lots, sublots, batches, or in such other manner as may be prescribed (see 5.4). Each lot or batch shall, as far as is practicable,

5. SUBMISSION OF PRODUCT (Continued)

consist of units of product of a single type, grade, class, size, and composition, manufactured under essentially the same conditions, and at essentially the same time.

5.3 LOT OR BATCH SIZE. The lot or batch size is the number of units of product in a lot or batch.

5.4 PRESENTATION OF LOTS OR BATCHES. The formation of the lots or batches, lot or batch size, and the manner in which each lot or batch is to be presented and identified by the supplier shall be designated or approved by the responsible authority. As necessary, the supplier shall provide adequate and suitable storage space for each lot or batch, equipment needed for proper identification and presentation, and personnel for all handling of product required for drawing of samples.

6. ACCEPTANCE AND REJECTION

6.1 ACCEPTABILITY OF LOTS OR BATCHES. Acceptability of a lot or batch will be determined by the use of a sampling plan or plans associated with the designated AQL or AQLs.

6.2 DEFECTIVE UNITS. The right is reserved to reject any unit of product found defective during inspection whether that unit of product forms part of a sample or not, and whether the lot or batch as a whole is accepted or rejected. Rejected units may be repaired or corrected and resubmitted for inspection with the approval of, and in the manner specified by, the responsible authority.

6.3 SPECIAL RESERVATION FOR CRITICAL DEFECTS. The supplier may be required at the discretion of the responsible authority to inspect every unit of the lot or batch for critical defects. The right is reserved to inspect every unit submitted by the supplier for critical defects, and to reject the lot or batch immediately, when a critical defect is found. The right is reserved also to sample, for critical defects, every lot or batch submitted by the supplier and to reject any lot or batch if a sample drawn therefrom is found to contain one or more critical defects.

6.4 RESUBMITTED LOTS OR BATCHES. Lots or batches found unacceptable shall be resubmitted for reinspection only after all units are re-examined or retested and all defective units are removed or defects corrected. The responsible authority shall determine whether normal or tightened inspection shall be used, and whether reinspection shall include all types or classes of defects or for the particular types or classes of defects which caused initial rejection.

7. DRAWING OF SAMPLES

7.1 SAMPLE. A sample consists of one or more units of product drawn from a lot or batch, the units of the sample being selected at random without regard to their quality. The number of units of product in the sample is the sample size.

7.2 REPRESENTATIVE SAMPLING. When appropriate, the number of units in the sample shall be selected in proportion to the size of sublots or subbatches, or parts of the lot or batch, identified by some rational criterion.

7. DRAWING OF SAMPLES (Continued)

When representative sampling is used, the units from each part of the lot or batch shall be selected at random.

7.3 TIME OF SAMPLING. Samples may be drawn after all the units comprising the lot or batch have been assembled, or samples may be drawn during assembly of the lot or batch.

7.4 DOUBLE OR MULTIPLE SAMPLING. When double or multiple sampling is to be used, each sample shall be selected over the entire lot or batch.

8. NORMAL, TIGHTENED AND REDUCED INSPECTION

8.1 INITIATION OF INSPECTION. Normal inspection will be used at the start of inspection unless otherwise directed by the responsible authority.

8.2 CONTINUATION OF INSPECTION. Normal, tightened or reduced inspection shall continue unchanged for each class of defects or defectives on successive lots or batchs except where the switching procedures given below require change. The switching procedures given below require a change. The switching procedures shall be applied to each class of defects or defectives, independently.

8.3 SWITCHING PROCEDURES.

8.3.1 NORMAL TO TIGHTENED. When normal inspection is in effect, tightened inspection shall be instituted when 2 out of 5 consecutive lots or batches have been rejected on original inspection (i.e., ignoring resubmitted lots or batches for this procedure).

8.3.2 TIGHTENED TO NORMAL. When tightened inspection is in effect, normal inspection shall be instituted when 5 consecutive lots or batches have been considered acceptable on original inspection.

8.3.3 NORMAL TO REDUCED. When normal inspection is in effect, reduced inspection shall be instituted providing that all of the following conditions are satisfied:

a. The preceding 10 lots or batches (or more, as indicated by the note to Table VIII) have been on normal inspection and none has been rejected on original inspection; and

b. The total number of defectives (or defects) in the samples from the preceding 10 lots or batches (or such other number as was used for condition "a" above) is equal to or less than the applicable number given in Table VIII. If double or multiple sampling is in use, all samples inspected should be included, not "first" samples only; and

c. Production is at a steady rate; and

d. Reduced inspection is considered desirable by the responsible authority.

8.3.4 REDUCED TO NORMAL. When reduced inspection is in effect, normal inspection shall be instituted if any of the following occur on original inspection:

a. A lot or batch is rejected; or

b. A lot or batch is considered acceptable under the procedures of 10.1.4; or

c. Production becomes irregular or delayed; or

d. Other conditions warrant that normal inspection shall be instituted.

8.4 DISCONTINUATION OF INSPECTION. In the event that 10 consecutive lots or batches remain on tightened inspection (or such other number as may be designated by the responsible authority), inspection under the provisions of this document should be discontinued pending action to improve the quality of submitted material.

9. SAMPLING PLANS

9.1 SAMPLING PLAN. A sampling plan indicates the number of units of product from each lot or batch which are to be inspected (sample size or series of sample sizes) and the criteria for determining the acceptability of the lot or batch (acceptance and rejection numbers).

9.2 INSPECTION LEVEL. The inspection level determines the relationship between the lot or batch size and the sample size. The inspection level to be used for any particular requirement will be prescribed by the responsible authority. Three inspection levels: I, II, and III, are given in Table I for general use. Unless otherwise specified, Inspection Level II will be used. However, Inspection Level I may be specified when less discrimination is needed, or Level III may be specified for greater discrimination. Four additional special levels: S–1, S–2, S–3 and S–4, are given in the same table and may be used where relatively small sample sizes are necessary and large sampling risks can or must be tolerated.

NOTE: In the designation of inspection levels S–1 to S–4, care must be exercised to avoid AQLs inconsistent with these inspection levels.

9.3 CODE LETTERS. Sample sizes are designated by code letters. Table I shall be used to find the applicable code letter for the particular lot or batch size and the prescribed inspection level.

9.4 SAMPLING PLANS. The AQL and the code letter shall be used to obtain the sampling plan from Tables II, III or IV. When no sampling plan is available for a given combination of AQL and code letter, the tables direct the user to a different letter. The sample size to be used is given by the new code letter not by the original letter. If this procedure leads to different sample sizes for different classes of defects, the code letter corresponding to the largest sample size derived may be used for all classes of defects when designated or approved by the responsible authority. As an alternative to a single sampling plan with an acceptance number of 0, the plan with an acceptance number of 1 with its correspondingly larger sample size for a designated AQL (where available), may be used when designated or approved by the responsible authority.

9.5 *TYPES OF SAMPLING PLANS.* Three types of sampling plans: Single, Double and Multiple, are given in Tables II, III and IV, respectively. When several types of plans are available for a given AQL and code letter, any one may be used. A decision as to type of plan, either single, double, or multiple, when available for a given AQL and code letter, will usually be based upon the comparison between the administrative difficulty and the average sample sizes of the available plans. The average sample size of multiple plans is less than for double (except in the case corresponding to single acceptance number 1) and both of these are always less than a single sample size. Usually the administrative difficulty for single sampling and the cost per unit of the sample are less than for double or multiple.

10. DETERMINATION OF ACCEPTABILITY

10.1 PERCENT DEFECTIVE INSPECTION. To determine acceptability of a lot or batch under percent defective inspection, the applicable sampling plan shall be used in accordance with 10.1.1, 10.1.2, 10.1.3, 10.1.4, and 10.1.5.

10.1.1 SINGLE SAMPLING PLAN. The number of sample units inspected shall be equal to the sample size given by the plan. If the number of defectives found in the sample is equal to or less than the acceptance number, the lot or batch shall be considered acceptable. If the number of defectives is equal to or greater than the rejection number, the lot or batch shall be rejected.

10.1.2 DOUBLE SAMPLING PLAN. The number of sample units inspected shall be equal to the first sample size given by the plan. If the number of defectives found in the first sample is equal to or less than the first acceptance number, the lot or batch shall be considered acceptable. If the number of defectives found in the first sample is equal to or greater than the first rejection number, the lot or batch shall be rejected. If the number of defectives found in the first sample is between the first acceptance and rejection numbers, a second sample of the size given by the plan shall be inspected. The number of defectives found in the first and second samples shall be accumulated. If the cumulative number of defectives is equal to or less than the second acceptance number, the lot or batch shall be considered acceptable. If the cumulative number of defectives is equal to or greater than the second rejection number, the lot or batch shall be rejected.

10.1.3 MULTIPLE SAMPLE PLAN. Under multiple sampling, the procedure shall be similar to that specified in 10.1.2, except that the number of successive samples required to reach a decision may be more than two.

10.1.4 SPECIAL PROCEDURE FOR REDUCED INSPECTION. Under reduced inspection, the sampling procedure may terminate without either acceptance or rejection criteria having been met. In these circumstances the lot or batch will be considered acceptable, but normal inspection will be reinstated starting with the next lot or batch (see 8.3.4 (b)).

10.2 DEFECTS PER HUNDRED UNITS INSPECTION. To determine the acceptability of a lot or batch under Defects per Hundred Units inspection, the procedure specified for Percent Defective inspection above shall be used, except that the word "defects" shall be substituted for "defectives."

11. SUPPLEMENTARY INFORMATION

11.1 OPERATING CHARACTERISTIC CURVES. The operating characteristic curves for normal inspection, shown in Table X (pages 30–62), indicate the percentage of lots or batches which may be expected to be accepted under the various sampling plans for a given process quality. The curves shown are for single sampling; curves for double and multiple sampling are matched as closely as practicable. The O. C. curves shown for AQLs greater than 10.0 are based on the Poisson distribution and are applicable for defects per hundred units inspection; those for AQLs of 10.0 or less and sample sizes of 80 or less are based on the binomial distribution and are applicable for percent defective

11. SUPPLEMENTARY INFORMATION (Continued)

tive inspection; those for AQLs of 10.0 or less and sample sizes larger then 80 are based on the Poisson distribution and are applicable either for defects per hundred units inspection, or for percent defective inspection (the Poisson distribution being an adequate approximation to the binomial distribution under these conditions). Tabulated values, corresponding to selected values of probabilities of acceptance (P_a, in percent) are given for each of the curves shown, and, in addition, for tightened inspection, and for defects per hundred units for AQLs of 10.0 or less and sample sizes of 80 or less.

11.2 PROCESS AVERAGE. The process average is the average percent defective or average number of defects per hundred units (whichever is applicable) of product submitted by the supplier for original inspection. Original inspection is the first inspection of a particular quantity of product as distinguished from the inspection of product which has been resubmitted after prior rejection.

11.3 AVERAGE OUTGOING QUALITY (AOQ). The AOQ is the average quality of outgoing product including all accepted lots or batches, plus all rejected lots or batches after the rejected lots or batches have been effectively 100 percent inspected and all defectives replaced by nondefectives.

11.4 AVERAGE OUTGOING QUALITY LIMIT (AOQL). The AOQL is the maximum of the AOQs for all possible incoming qualities for a given acceptance sampling plan. AOQL values are given in Table V-A for each of the single sampling plans for normal inspection and in Table V-B for each of the single sampling plans for tightened inspection.

11.5 AVERAGE SAMPLE SIZE CURVES. Average sample size curves for double and multiple sampling are in Table IX. These show the average sample sizes which may be expected to occur under the various sampling plans for a given process quality. The curves assume no curtailment of inspection and are approximate to the extent that they are based upon the Poisson distribution, and that the sample sizes for double and multiple sampling are assumed to be 0.631n and 0.25n respectively, where n is the equivalent single sample size.

11.6 LIMITING QUALITY PROTECTION. The sampling plans and associated procedures given in this publication were designed for use where the units of product are produced in a continuing series of lots or batches over a period of time. However, if the lot or batch is of an isolated nature, it is desirable to limit the selection of sampling plans to those, associated with a designated AQL value, that provide not less than a specified limiting quality protection. Sampling plans for this purpose can be selected by choosing a Limiting Quality (LQ) and a consumer's risk to be associated with it. Tables VI and VII give values of LQ for the commonly used consumer's risks of 10 percent and 5 percent respectively. If a different value of consumer's risk is required, the O.C. curves and their tabulated values may be used. The concept of LQ may also be useful in specifying the AQL and Inspection Levels for a series of lots or batches, thus fixing minimum sample size where there is some reason for avoiding (with more than a given consumer's risk) more than a limiting proportion of defectives (or defects) in any single lot or batch.

TABLE I — Sample size code letters

(See 9.2 and 9.3)

Lot or batch size	Special inspection levels				General inspection levels		
	S-1	S-2	S-3	S-4	I	II	III
2 to 8	A	A	A	A	A	A	B
9 to 15	A	A	A	A	A	B	C
16 to 25	A	A	B	B	B	C	D
26 to 50	A	B	B	C	C	D	E
51 to 90	B	B	C	C	C	E	F
91 to 150	B	B	C	D	D	F	G
151 to 280	B	C	D	E	E	G	H
281 to 500	B	C	D	E	F	H	J
501 to 1200	C	C	E	F	G	J	K
1201 to 3200	C	D	E	G	H	K	L
3201 to 10000	C	D	F	G	J	L	M
10001 to 35000	C	D	F	H	K	M	N
35001 to 150000	D	E	G	J	L	N	P
150001 to 500000	D	E	G	J	M	P	Q
500001 and over	D	E	H	K	N	Q	R

TABLE II-A — Single sampling plans for normal inspection (Master table)

(See 9.4 and 9.5)

Sample size code letter	Sample size	Acceptable Quality Levels (normal inspection)																																					
		0.010		0.015		0.025		0.040		0.065		0.10		0.15		0.25		0.40		0.65		1.0		1.5		2.5		4.0		6.5		10		15		25		40		65		100		150		250		400		650		1000	
		Ac	Re	Ac	Re	Ac	Re	Ac	Re	Ac	Re	Ac	Re	Ac	Re	Ac	Re	Ac	Re	Ac	Re	Ac	Re	Ac	Re	Ac	Re	Ac	Re	Ac	Re	Ac	Re	Ac	Re	Ac	Re	Ac	Re	Ac	Re	Ac	Re	Ac	Re	Ac	Re	Ac	Re	Ac	Re
A	2																																	1	2	2	3	3	4	5	6	7	8	10	11	14	15	21	22	30	31
B	3																											0	1					1	2	2	3	3	4	5	6	7	8	10	11	14	15	21	22	30	31	44	45
C	5																											0	1					1	2	2	3	3	4	5	6	7	8	10	11	14	15	21	22	30	31	44	45		
D	8																							0	1					1	2	2	3	3	4	5	6	7	8	10	11	14	15	21	22	30	31	44	45				
E	13																							0	1					1	2	2	3	3	4	5	6	7	8	10	11	14	15	21	22								
F	20																							0	1					1	2	2	3	3	4	5	6	7	8	10	11	14	15	21	22								
G	32																							0	1					1	2	2	3	3	4	5	6	7	8	10	11	14	15	21	22								
H	50																							0	1					1	2	2	3	3	4	5	6	7	8	10	11	14	15	21	22								
J	80																							0	1					1	2	2	3	3	4	5	6	7	8	10	11	14	15	21	22								
K	125																							0	1					1	2	2	3	3	4	5	6	7	8	10	11	14	15	21	22								
L	200																							0	1					1	2	2	3	3	4	5	6	7	8	10	11	14	15	21	22								
M	315																							0	1					1	2	2	3	3	4	5	6	7	8	10	11	14	15	21	22								
N	500																							0	1					1	2	2	3	3	4	5	6	7	8	10	11	14	15	21	22								
P	800																							0	1					1	2	2	3	3	4	5	6	7	8	10	11	14	15	21	22								
Q	1250																							0	1					1	2	2	3	3	4	5	6	7	8	10	11	14	15	21	22								
R	2000																							0	1					1	2	2	3	3	4	5	6	7	8	10	11	14	15	21	22								

⇩ = Use first sampling plan below arrow. If sample size equals or exceeds lot or batch size, do 100 percent inspection.

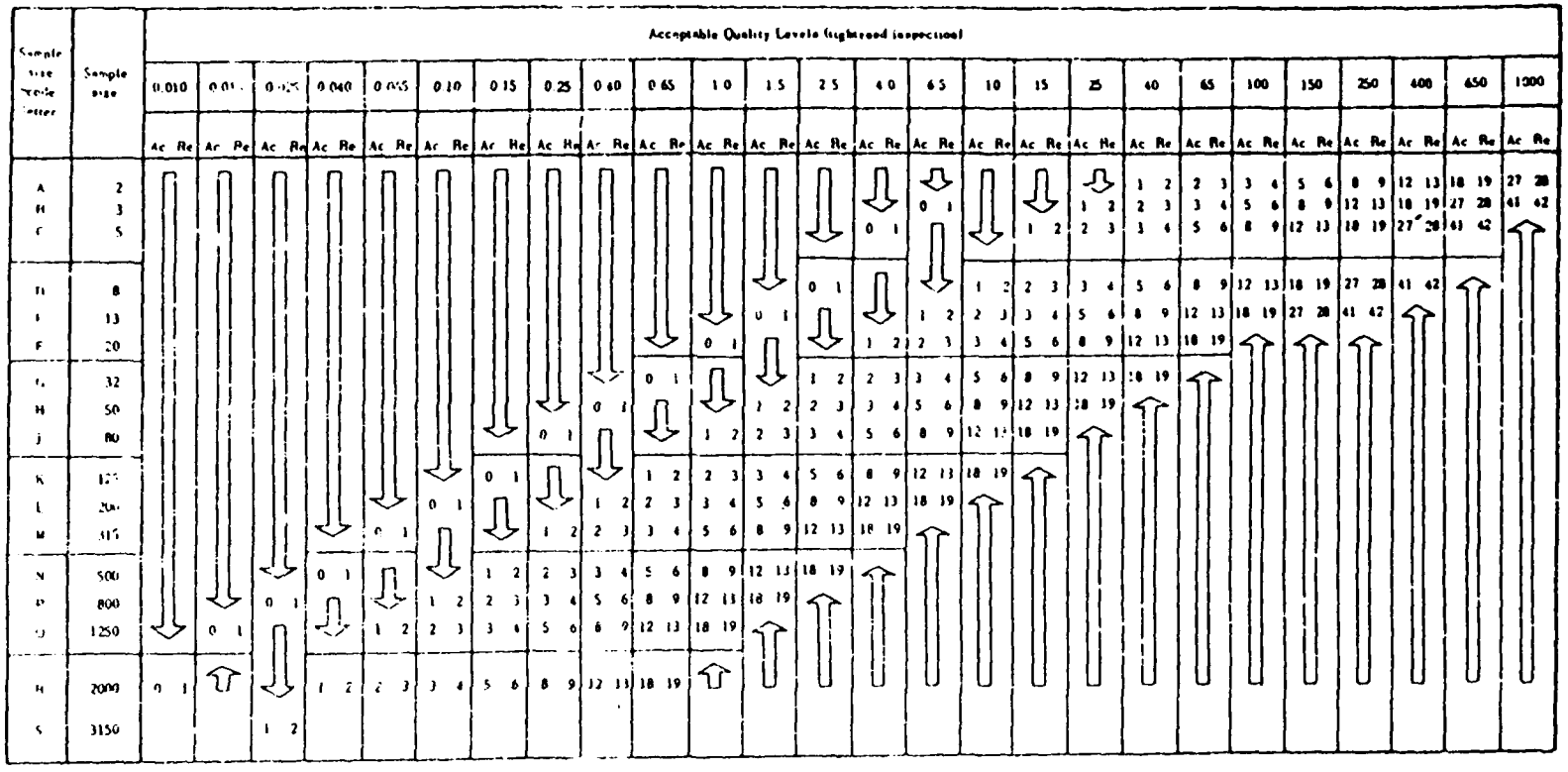
⇧ = Use first sampling plan above arrow.

Ac = Acceptance number.

Re = Rejection number.

TABLE II-B — Single sampling plans for tightened inspection (Master table)

(See 9.4 and 9.5)



⇩ = Use first sampling plan below arrow. If sample size equals or exceeds lot or batch size, do 100 percent inspection.

⇧ = Use first sampling plan above arrow.

Ac = Acceptance number

Re = Rejection number

TABLE II-C—Single sampling plans for reduced inspection (Master table)

(See 9.4 and 9.5)

Sample size code letter	Sample size	Acceptable Quality Levels (reduced inspection)†																																					
		0.010		0.015		0.025		0.040		0.065		0.10		0.15		0.25		0.40		0.65		1.0		1.5		2.5		4.0		6.5		10		15		25		40		65		100		150		250		400		650		1000	
		Ac	Re	Ac	Re	Ac	Re	Ac	Re	Ac	Re	Ac	Re	Ac	Re	Ac	Re	Ac	Re	Ac	Re	Ac	Re	Ac	Re	Ac	Re	Ac	Re	Ac	Re	Ac	Re	Ac	Re	Ac	Re	Ac	Re	Ac	Re	Ac	Re	Ac	Re	Ac	Re	Ac	Re	Ac	Re
A	2																											0	1					1	2	2	3	3	4	5	6	7	8	10	11	14	15	21	22	30	31
B	2																											0	1					0	2	1	3	2	4	3	5	5	6	7	8	10	11	14	15	21	22	30	31
C	2																											0	1					0	2	1	3	1	4	2	5	3	6	5	8	7	10	10	13	14	17	21	24		
D	3																							0	1					0	2	1	3	1	4	2	5	3	6	5	8	7	10	10	13	14	17	21	24				
E	5																					0	1					0	2	1	3	1	4	2	5	3	6	5	8	7	10	10	13	14	17	21	24				
F	8																					0	1					0	2	1	3	1	4	2	5	3	6	5	8	7	10	10	13								
G	13																	0	1					0	2	1	3	1	4	2	5	3	6	5	8	7	10	10	13												
H	20															0	1					0	2	1	3	1	4	2	5	3	6	5	8	7	10	10	13														
J	32													0	1							0	2	1	3	1	4	2	5	3	6	5	8	7	10	10	13														
K	50											0	1					0	2	1	3	1	4	2	5	3	6	5	8	7	10	10	13																		
L	80									0	1			0	2			1	3	1	4	2	5	3	6	5	8	7	10	10	13																				
M	125							0	1			0	2	1	3	1	4	2	5	3	6	5	8	7	10	10	13																								
N	200					0	1			0	2	1	3	1	4	2	5	3	6	5	8	7	10	10	13																								
P	315			0	1			0	2	1	3	1	4	2	5	3	6	5	8	7	10	10	13																								
Q	500	0	1			0	2	1	3	1	4	2	5	3	6	5	8	7	10	10	13																								
R	800			0	2	1	3	1	4	2	5	3	6	5	8	7	10	10	13																												

⇩ = Use first sampling plan below arrow. If sample size equals or exceeds lot or batch size, do 100 percent inspection.
⇧ = Use first sampling plan above arrow.
Ac = Acceptance number.
Re = Rejection number.
† = If the acceptance number has been exceeded, but the rejection number has not been reached, accept the lot, but reinstate normal inspection (see 10.1.4).

MIL–I–45208A
16 DECEMBER 1963
SUPERSEDING
MIL–I–45208 (ARMY)
12 OCTOBER 1961
NPD (NAVEXOS P–1034)
APPENDIX A (In Part)
26 FEBRUARY 1960

MILITARY SPECIFICATION

INSPECTION SYSTEM REQUIREMENTS

This specification has been approved by the Department of Defense and is mandatory for use by the Departments of the Army, the Navy, the Air Force and the Defense Supply Agency.

1. SCOPE

1.1 Scope. This specification establishes requirements for contractors' inspection systems. These requirements pertain to the inspections and tests necessary to substantiate product conformance to drawings, specifications and contract requirements and to all inspections and tests required by the contract. These requirements are in addition to those inspections and tests set forth in applicable specifications and other contractual documents.

1.2 Applicability.

1.2.1 *Applicability.* This specification shall apply to all suppliers or services when referenced in the item specification, contract or order.

1.2.2 *Relation to Other Contract Requirements.* The inspection system requirements set forth in this specification shall be satisfied in addition to all detail requirements contained in the statement of work or in other parts of the contract. The contractor is responsible for compliance with all provisions of the contract and for furnishing specified articles which meet all requirements of the contract. To the extent of any inconsistency between the contract schedule or its general provisions and this specification the contract schedule and the general provisions shall control.

1.2.3 *Options.* This specification contains fewer requirements than specification MIL–Q–9858, Quality Program Requirements. The contractor may use, at his option, the requirements of MIL–Q–9858, in whole or in part, whenever this specification is specified, provided no increase in price or fee is involved. This option permits one uniform system in the event the contractor is already complying with MIL–Q–9858.

2. APPLICABLE DOCUMENTS

2.1 The following documents of the issue in effect on date of invitations for bids form a part of this specification to the extent specified herein.

SPECIFICATIONS

MILITARY

MIL–Q–9858	Quality Program Requirements
MIL–C–45662	Calibration System Requirements

2.2 Amendments and Revisions. Whenever this specification is amended or revised subsequent to its contractually effective date, the contractor may follow or authorize his subcontractors to follow the amended or revised document provided no increase in price or fee is required. The contractor shall not be required to follow the amended or revised document except as a change in contract. If the contractor elects to follow the amended or revised document, he shall notify the Contracting Officer in writing of this election. When the contractor elects to follow the provisions of an amendment or revision, he must follow them in full.

* U.S. GOVERNMENT PRINTING OFFICE: 1981—703-023/3235

2.3 Ordering Government Documents. Copies of specifications, standards and drawings required by contractors in connection with specific procurements may be obtained from the procuring agency or as otherwise directed by the Contracting Officer.

3. REQUIREMENTS

3.1 Contractor Responsibilities. The contractor shall provide and maintain an inspection system which will assure that all supplies and services submitted to the Government for acceptance conform to contract requirements whether manufactured or processed by the contractor, or procured from subcontractors or vendors. The contractor shall perform or have performed the inspections and tests required to substantiate product conformance to drawing, specifications and contract requirements and shall also perform or have performed all inspections and tests otherwise required by the contract. The contractor's inspection system shall be documented and shall be available for review by the Government Representative prior to the initiation of production and throughout the life of the contract. The Government at its option may furnish written notice of the acceptability or non-acceptability of the inspection system. The contractor shall notify the Government Representative in writing of any change to his inspection system. The inspection system shall be subject to disapproval if changes thereto would result in nonconforming product.

3.2 Documentation, Records and Corrective Action.

3.2.1 *Inspection and Testing Documentation.* Inspection and testing shall be prescribed by clear, complete and current instructions. The instructions shall assure inspection and test of materials, work in process and completed articles as required by the item specification and the contract. In addition, criteria for approval and rejection of product shall be included.

3.2.2 *Records.* The contractor shall maintain adequate records of all inspections and tests. The records shall indicate the nature and number of observations made, the number and type of deficiencies found, the quantities approved and rejected and the nature of corrective action taken as appropriate.

3.2.3 *Corrective Action.* The contractor shall take prompt action to correct assignable conditions which have resulted or could result in the submission to the Government of supplies and services which do not conform to (1) the quality assurance provisions of the item specification, (2) inspections and tests required by the contract, and (3) other inspections and tests required to substantiate product conformance.

3.2.4 *Drawings and Changes.* The contractor's inspection system shall provide for procedures which will assure that the latest applicable drawings, specifications and instructions required by the contract, as well as authorized changes thereto, are used for fabrication, inspection and testing.

3.3 Measuring and Test Equipment. The contractor shall provide and maintain gages and other measuring and testing devices necessary to assure that supplies conform to th technical requirements. In order to assure continued accuracy, these devices shall be calibrated at established intervals against certified standards which have known valid relationships to national standards. If production tooling, such as jigs, fixtures, templates, and patterns is used as a media of inspection, such devices shall also be proved for accuracy at established intervals. Calibration of inspection equipment shall be in accordance with MIL-C-45662. When required, the contractor's measuring and testing equipment shall be made available for use by the Government Representative to determine conformance of product with contract requirements. In addition, if conditions warrant, contractor's personnel shall be made available for operation of such devices and for verification of their accuracy and condition.

3.4 Process Controls. Process control procedures shall be an integral part of the inspection system when such inspections are a part of the specification or the contract.

3.5 Indication of Inspection Status. The

contractor shall maintain a positive system for identifying the inspection status of supplies. Identification may be accomplished by means of stamps, tags, routing cards, move tickets, tote box cards or other control devices. Such controls shall be of a design distinctly different from Government inspection identification.

3.6 **Government-furnished Material.** When material is furnished by the Government, the contractor's procedures shall include as a minimum the following:

(a) Examination upon receipt, consistent with practicability, to detect damage in transit;
(b) Inspection for completeness and proper type;
(c) Periodic inspection and precautions to assure adequate storage conditions and to guard against damage from handling and deterioration during storage;
(d) Functional testing, either prior to or after installation, or both, as required by contract to determine satisfactory operation;
(e) Identification and protection from improper use or disposition; and
(f) Verification of quantity.

3.6.1 *Damaged Government-furnished Material.* The contractor shall report to the Government Representative any Government-furnished material found damaged, malfunctioning or otherwise unsuitable for use. In the event of damage or malfunction during or after installation, the contractor shall determine and record probable cause and necessity for withholding material from use.

3.7 **Nonconforming Material.** The contractor shall establish and maintain an effective and positive system for controlling nonconforming material, including procedures for the identification, segregation, presentation and disposition of reworked or repaired supplies. Repair of nonconforming supplies shall be in accordance with documented procedures acceptable to the Government. The acceptance of nonconforming supplies is the prerogative of and shall be as prescribed by the Government. All nonconforming supplies shall be positively identified to prevent use, shipment and intermingling with conforming supplies. Holding areas, mutually agreeable to the contractor and the Government Representative, shall be provided by the contractor.

3.8 **Qualified Products.** The inclusion of a product on the Qualified Products List only signifies that at one time the manufacturer made a product which met specification requirements. It does not relieve the contractor of his responsibility for furnishing supplies that meet all specification requirements or for performing specified inspections and tests for such material.

3.9 **Sampling Inspection.** Sampling inspection procedures used by the contractor to determine quality conformance of supplies shall be as stated in the contract or shall be subject to approval by the Government.

3.10 **Inspection Provisions.** Alternative inspection procedures and inspection equipment may be used by the contractor when such procedures and equipment provide, as a minimum, the quality assurance required in the contractual documents. Prior to applying such alternative inspection procdures and inspection equipment, the contractor shall describe them in a written proposal and shall demonstrate for the approval of the Government Representative that their effectiveness is equal to or better than the contractual quality assurance procedure. In cases of dispute as to whether certain procedures of the contractor's inspection system provide equal assurance, the procedures of this specification, the item specification and other contractual documents shall apply.

3.11 **Government Inspection at Subcontractor or Vendor Facilities.** The Government reserves the right to inspect at source supplies or services not manufactured or performed within the contractor's facility. Government inspection shall not constitute acceptance; nor shall it in any way replace contractor inspection or otherwise relieve the contractor of his responsibility to furnish an acceptable end item. When inspection at subcontractors'

plants is performed by the Government, such inspection shall not be used by contractors as evidence of effective inspection by such subcontractors. The purpose of this inspection is to assist the Government Representative at the contractor's facility to determine the conformance of supplies or services with contract requirements. Such inspection can only be requested by or under authorization of the Government Representative.

3.11.1 *Government Inspection Requirements.* When Government inspection is required, the contractor shall add to his purchasing document the following statement:

> "Government inspection is required prior to shipment from your plant. Upon receipt of this order, promptly notify the Government Representative who normally services your plant so that appropriate planning for Government inspection can be accomplished."

3.11.2 *Purchasing Documents.* When, under authorization of the Government Representative, copies of the purchasing document are to be furnished directly by the subcontractor or vendor to the Government Representative at his facility rather than through Government channels, the contractor shall add to his purchasing document a statement substantially as follows:

> "On receipt of this order, promptly furnish a copy to the Government Representative who normally services your plant or, if none, to the nearest Army, Navy, Air Force, or Defense Supply Agency inspection office. In the event the representative or office cannot be located, our purchasing agent should be notified immediately."

3.11.3 *Referenced Data.* All documents and referenced data for purchases applying to a Government contract shall be available for review by the Government Representative to determine compliance with the requirements for the control of such purchases. Copies of purchasing documents required for Government inspection purposes shall be furnished in accordance with the instructions of the Government Representative.

3.12 Receiving Inspection. Subcontracted or purchased supplies shall be subjected to inspection after receipt, as necessary, to assure conformance to contract requirements. The contractor shall report to the Government Representative any nonconformance found on Government source-inspected supplies and shall require his supplier to coordinate with his Government Representative on corrective action.

3.13 Government Evaluation. The contractor's inspection system and supplies generated by the system shall be subject to evaluation and verification inspection by the Government Representative to determine its effectiveness in supporting the quality requirements established in the detail specification, drawing and contract and as prescribed herein.

4. QUALITY ASSURANCE PROVISIONS

This section is not applicable to this specification.

5. PREPARATION FOR DELIVERY

This section is not applicable to this specification.

6. NOTES

6.1 Intended Use. This specification will apply to the procurement of supplies and services specified by the military procurement agencies.

6.2 Order Data. Procurement documents should specify the title, number and date of this specification.

Custodians:
Army—Munitions Command
Navy—Office of Naval Material
Air Force—Hq USAF
DSA—Hq DSA

Preparing activity:
Army—Munitions Command

MIL-Q-9858A
16 DECEMBER 1963
SUPERSEDING
MIL-Q-9858
9 APRIL 1959

MILITARY SPECIFICATION

QUALITY PROGRAM REQUIREMENTS

This specification has been approved by the Department of Defense and is mandatory for use by the Departments of the Army, the Navy, the Air Force and the Defense Supply Agency.

1. SCOPE

1.1 Applicability. This specification shall apply to all supplies (including equipments, sub-systems and systems) or services when referenced in the item specification, contract or order.

1.2 Contractual Intent. This specification requires the establishment of a quality program by the contractor to assure compliance with the requirements of the contract. The program and procedures used to implement this specification shall be developed by the contractor. The quality program, including procedures, processes and product shall be documented and shall be subject to review by the Government Representative. The quality program is subject to the disapproval of the Government Representative whenever the contractor's procedures do not accomplish their objectives. The Government, at its option, may furnish written notice of the acceptability of the contractor's quality program.

1.3 Summary. An effective and economical quality program, planned and developed in consonance with the contractor's other administrative and technical programs, is required by this specification. Design of the program shall be based upon consideration of the technical and manufacturing aspects of production and related engineering design and materials. The program shall assure adequate quality throughout all areas of contract performance; for example, design, development, fabrication, processing, assembly, inspection, test, maintenance, packaging, shipping, storage and site installation.

All supplies and services under the contract, whether manufactured or performed within the contractor's plant or at any other source, shall be controlled at all points necessary to assure conformance to contractual requirements. The program shall provide for the prevention and ready detection of discrepancies and for timely and positive corrective action. The contractor shall make objective evidence of quality conformance readily available to the Government Representative. Instructions and records for quality must be controlled.

The authority and responsibility of those in charge of the design, production, testing, and inspection of quality shall be clearly stated. The program shall facilitate determinations of the effects of quality deficiencies and quality costs on price. Facilities and standards such as drawings, engineering changes, measuring equipment and the like which are necessary for the creation of the required quality shall be effectively managed. The program shall include an effective control of purchased materials and subcontracted work. Manufacturing, fabrication and assembly work conducted within the contractor's plant shall be controlled completely The quality program shall also include effective execution of responsibilities shared jointly with the Government or related to Government functions, such as control of Government property and Government source inspection.

1.4 Relation to Other Contract Requirements. This specification and any procedure or document executed in implementation there-

of, shall be in addition to and not in derogation of other contract requirements. The quality program requirements set forth in this specification shall be satisfied in addition to all detail requirements contained in the statement of work or in other parts of the contract. The contractor is responsible for compliance with all provisions of the contract and for furnishing specified supplies and services which meet all the requirements of the contract. If any inconsistency exists between the contract schedule or its general provisions and this specification, the contract schedule and the general provisions shall control. The contractor's quality program shall be planned and used in a manner to support reliability effectively.

1.5 Relation to MIL-I-45208. This specification contains requirements in excess of those in specification MIL-I-45208, Inspection System Requirements, inasmuch as total conformance to contract requirements is obtained best by controlling work operations, manufacturing processes as well as inspections and tests.

2. SUPERSEDING, SUPPLEMENTATION AND ORDERING

2.1 Applicable Documents. The following documents of the issue in effect on date of the solicitation form a part of this specification to the extent specified herein.

SPECIFICATIONS

MILITARY

MIL-I-45208 —Inspection System Requirements
MIL-C-45662 —Calibration System Requirements

2.2 Amendments and Revisions. Whenever this specification is amended or revised subsequent to its contractually effective date, the contractor may follow or authorize his subcontractors to follow the amended or revised document provided no increase in price or fee is required. The contractor shall not be required to follow the amended or revised document except as a change in contract. If the contractor elects to follow the amended or revised document, he shall notify the Contracting Officer in writing of this election. When the contractor elects to follow the provisions of an amendment or revision, he must follow them in full.

2.3 Ordering Government Documents. Copies of specifications, standards and drawings required by contractors in connection with specific procurements may be obtained from the procuring agency, or as otherwise directed by the Contracting Officer.

3. QUALITY PROGRAM MANAGEMENT

3.1 Organization. Effective management for quality shall be clearly prescribed by the contractor. Personnel performing quality functions shall have sufficient, well-defined responsibility, authority and the organizational freedom to identify and evaluate quality problems and to initiate, recommend or provide solutions. Management regularly shall review the status and adequacy of the quality program. The term "quality program requirements" as used herein identifies the collective requirements of this specification. It does not mean that the fulfillment of the requirements of this specification is the responsibility of any single contractor's organization, function or person.

3.2 Initial Quality Planning. The contractor, during the earliest practical phase of contract performance, shall conduct a complete review of the requirements of the contract to identify and make timely provision for the special controls, processes, test equipments, fixtures, tooling and skills required for assuring product quality. This initial planning will recognize the need and provide for research, when necessary, to update inspection and testing techniques, instrumentation and correlation of inspection and test results with manufacturing methods and processes. This planning will also provide appropriate review and action to assure compatibility of manufacturing, inspection, testing and documentation.

3.3 Work Instructions. The quality program shall assure that all work affecting

quality (including such things as purchasing, handling, machining, assembling, fabricating, processing, inspection, testing, modification, installation, and any other treatment of product, facilities, standards or equipment from the ordering of materials to dispatch of shipments) shall be prescribed in clear and complete documented instructions of a type appropriate to the circumstances. Such instructions shall provide the criteria for performing the work functions and they shall be compatible with acceptance criteria for workmanship. The instructions are intended also to serve for supervising, inspecting and managing work. The preparation and maintenance of and compliance with work instructions shall be monitored as a function of the quality program.

3.4 **Records.** The contractor shall maintain and use any records or data essential to the economical and effective operation of his quality program. These records shall be available for review by the Government Representative and copies of individual records shall be furnished him upon request. Records are considered one of the principal forms of objective evidence of quality. The quality program shall assure that records are complete and reliable. Inspection and testing records shall, as a minimum, indicate the nature of the observations together with the number of observations made and the number and type of deficiencies found. Also, records for monitoring work performance and for inspection and testing shall indicate the acceptability of work or products and the action taken in connection with deficiencies. The quality program shall provide for the analysis and use of records as a basis for management action.

3.5 **Corrective Action.** The quality program shall detect promptly and correct assignable conditions adverse to quality. Design, purchasing, manufacturing, testing or other operations which could result in or have resulted in defective supplies, services, facilities, technical data, standards or other elements of contract performance which could create excessive losses or costs must be identified and changed as a result of the quality program. Corrective action will extend to the performance of all suppliers and vendors and will be responsive to data and product forwarded from users. Corrective action shall include as a minimum:

(a) Analysis of data and examination of product scrapped or reworked to determine extent and causes;

(b) Analysis of trends in processes or performance of work to prevent nonconforming product; and

(c) Introduction of required improvements and corrections, an initial review of the adequacy of such measures and monitoring of the effectiveness of corrective action taken.

3.6 **Costs Related to Quality.** The contractor shall maintain and use quality cost data as a management element of the quality program. These data shall serve the purpose of identifying the cost of both the prevention and correction of nonconforming supplies (e. g., labor and material involved in material spoilage caused by defective work, correction of defective work and for quality control exercised by the contractor at subcontractor's or vendor's facilities). The specific quality cost data to be maintained and used will be determined by the contractor. These data shall, on request, be identified and made available for "on site" review by the Government Representative.

4. FACILITIES AND STANDARDS

4.1 **Drawings, Documentation and Changes.** A procedure shall be maintained that concerns itself with the adequacy, the completeness and the currentness of drawings and with the control of changes in design. With respect to the currentness of drawings and changes, the contractor shall assure that requirements for the effectivity point of changes are met and that obsolete drawings and change requirements are removed from all points of issue and use. Some means of recording the effective points shall be employed and be available to the Government.

With respect to design drawings and design specifications, a procedure shall be maintained that shall provide for the evalua-

tion of their engineering adequacy and an evaluation of the adequacy of proposed changes. The evaluation shall encompass both the adequacy in relation to standard engineering and design practices and the adequacy with respect to the design and purpose of the product to which the drawing relates.

With respect to supplemental specifications, process instructions, production engineering instructions, industrial engineering instructions and work instructions relating to a particular design, the contractor shall be responsible for a review of their adequacy, currentness and completeness. The quality program must provide complete coverage of all information necessary to produce an article in complete conformity with requirements of the design.

The quality program shall assure that there is complete compliance with contract requirements for proposing, approving, and effecting of engineering changes. The quality program shall provide for monitoring effectively compliance with contractual engineering changes requiring approval by Government design authority. The quality program shall provide for monitoring effectively the drawing changes of lesser importance not requiring approval by Government design authorities.

Delivery of correct drawings and change information to the Government in connection with data acquisition shall be an integral part of the quality program. This includes full compliance with contract requirements concerning rights and data both proprietary and other. The quality program's responsibility for drawings and changes extend to the drawings and changes provided by the subcontractors and vendors for the contract.

4.2 Measuring and Testing Equipment. The contractor shall provide and maintain gages and other measuring and testing devices necessary to assure that supplies conform to technical requirements. These devices shall be calibrated against certified measurement standards which have known valid relationships to national standards at established periods to assure continued accuracy. The objective is to assure that inspection and test equipment is adjusted, replaced or repaired before it becomes inaccurate. The calibration of measuring and testing equipment shall be in conformity with military specification MIL-C-45662. In addition, the contractor shall insure the use of only such subcontractor and vendor sources that depend upon calibration systems which effectively control the accuracy of measuring and testing equipment.

4.3 Production Tooling Used as Media of Inspection. When production jigs, fixtures, tooling masters, templates, patterns and such other devices are used as media of inspection, they shall be proved for accuracy prior to release for use. These devices shall be proved again for accuracy at intervals formally established in a manner to cause their timely adjustment, replacement or repair prior to becoming inaccurate.

4.4 Use of Contractor's Inspection Equipment. The contractor's gages, measuring and testing devices shall be made available for use by the Government when required to determine conformance with contract requirements. If conditions warrant, contractor's personnel shall be made available for operation of such devices and for verification of their accuracy and condition.

4.5 Advanced Metrology Requirements. The quality program shall include timely identification and report to the Contracting Officer of any precision measurement need exceeding the known state of the art.

5. CONTROL OF PURCHASES

5.1 Responsibility. The contractor is responsible for assuring that all supplies and services procured from his suppliers (subcontractors and vendors) conform to the contract requirements. The selection of sources and the nature and extent of control exercised by the contractor shall be dependent upon the type of supplies, his supplier's demonstrated capability to perform, and the quality evidence made available. To assure an adequate and economical control of such

material, the contractor shall utilize to the fullest extent objectives evidence of quality furnished by his suppliers. When the Government elects to perform inspection at a supplier's plant, such inspection shall not be used by contractors as evidence of effective control of quality by such suppliers. The inclusion of a product on the Qualified Products List only signifies that at one time the manufacturer made a product which met specification requirements. It does not relieve the contractor of his responsibility for furnishing supplies that meet all specification requirements or for the performance of specified inspections and tests for such material. The effectiveness and integrity of the control of quality by his suppliers shall be assessed and reviewed by the contractor at intervals consistent with the complexity and quantity of product. Inspection of products upon delivery to the contractor shall be used for assessment and review to the extent necessary for adequate assurance of quality. Test reports, inspection records, certificates and other suitable evidence relating to the supplier's control of quality should be used in the contractor's assessment and review. The contractor's responsibility for the control of purchases includes the establishment of a procedure for (1) the selection of qualified suppliers, (2) the transmission of applicable design and quality requirements in the Government contracts and associated technical requirements, (3) the evaluation of the adequacy of procured items, and (4) effective provisions for early information feedback and correction of nonconformances.

5.2 **Purchasing Data.** The contractor's quality program shall not be acceptable to the Government unless the contractor requires of his subcontractors a quality effort achieving control of the quality of the services and supplies which they provide. The contractor shall assure that all applicable requirements are properly included or referenced in all purchase orders for products ultimately to apply on a Government contract. The purchase order shall contain a complete description of the supplies ordered including, by statement or reference, all applicable requirements for manufacturing, inspecting, testing, packaging, and any requirements for Government or contractor inspections, qualification or approvals. Technical requirements of the following nature must be included by statement or reference as a part of the required clear description: all pertinent drawings, engineering change orders, specifications (including inspection system or quality program requirements), reliability, safety, weight, or other special requirements, unusual test or inspection procedures or equipment and any special revision or model identification. The description of products ordered shall include a requirement for contractor inspection at the subcontractor or vendor source when such action is necessary to assure that the contractor's quality program effectively implements the contractor's responsibility for complete assurance of product quality. Requirements shall be included for chemical and physical testing and recording in connection with the purchase of raw materials by his suppliers. The purchase orders must also contain a requirement for such suppliers to notify and obtain approval from the contractor of changes in design of the products. Necessary instructions should be provided when provision is made for direct shipment from the subcontractor to Government activities.

6. MANUFACTURING CONTROL

6.1 **Materials and Materials Control.** Supplier's materials and products shall be subjected to inspection upon receipt to the extent necessary to assure conformance to technical requirements. Receiving inspection may be adjusted upon the basis of the quality assurance program exercised by suppliers. Evidence of [illegible] suppliers' satisfactory control of quality may be used to adjust the amount and kind of receiving inspection.

The quality program shall assure that raw materials to be used in fabrication or processing of products conform to the applicable physical, chemical, and other technical requirements. Laboratory testing shall be employed as necessary. Suppliers shall be required by the contractor's quality program

to exercise equivalent control of the raw materials utilized in the production of the parts and items which they supply to the contractor. Raw material awaiting testing must be separately identified or segregated from already tested and approved material but can be released for initial production, providing that identification and control is maintained. Material tested and approved must be kept identified until such time as its identity is necessarily obliterated by processing. Controls will be established to prevent the inadvertent use of material failing to pass tests.

6.2 **Production Processing and Fabrication.** The contractor's quality program must assure that all machining, wiring, batching, shaping and all basic production operations of any type together with all processing and fabricating of any type is accomplished under controlled conditions. Controlled conditions include documented work instructions, adequate production equipment, and any special working environment. Documented work instructions are considered to be the criteria for much of the production, processing and fabrication work. These instructions are the criteria for acceptable or unacceptable "workmanship". The quality program will effectively monitor the issuance of and compliance with all of these work instructions.

Physical examination, measurement or tests of the material or products processed is necessary for each work operation and must also be conducted under controlled conditions. If physical inspection of processed material is impossible or disadvantageous, indirect control by monitoring processing methods, equipment and personnel shall be provided. Both physical inspection and process monitoring shall be provided when control is inadequate without both, or when contract or specification requires both.

Inspection and monitoring of processed material or products shall be accomplished in any suitable systematic manner selected by the contractor. Methods of inspection and monitoring shall be corrected any time their unsuitability with reasonable evidence is demonstrated. Adherence to selected methods for inspection and monitoring shall be complete and continuous. Corrective measures shall be taken when noncompliance occurs.

Inspection by machine operators, automated inspection gages, moving line or lot sampling, setup or first piece approval, production line inspection station, inspection or test department, roving inspectors — any other type of inspection — shall be employed in any combination desired by the contractor which will adequately and efficiently protect product quality and the integrity of processing.

Criteria for approval and rejection shall be provided for all inspection of product and monitoring of methods, equipment, and personnel. Means for identifying approved and rejected product shall be provided.

Certain chemical, metallurgical, biological, sonic, electronic, and radiological processes are of so complex and specialized a nature that much more than the ordinary detailing of work documentation is required. In effect, such processing may require an entire work specification as contrasted with the normal work operation instructions established in normal plant-wide standard production control issuances such as job operation routing books and the like. For these special processes, the contractors' quality program shall assure that the process control procedures or specifications are adequate and that processing environments and the certifying, inspection, authorization and monitoring of such processes to the special degree necessary for these ultraprecise and super-complex work functions are provided.

6.3 **Completed Item Inspection and Testing.** The quality program shall assure that there is a system for final inspection and test of completed products. Such testing shall provide a measure of the overall quality of the completed product and shall be performed so that it simulates, to a sufficient degree, product end use and functioning. Such simulation frequently involves appropriate life and endurance tests and qualification testing. Final inspection and testing shall provide for reporting to designers any unusual difficulties, deficiencies or question-

able conditions. When modifications, repairs or replacements are required after final inspection or testing, there shall be reinspection and retesting of any characteristics affected.

6.4 Handling, Storage and Delivery. The quality program shall provide for adequate work and inspection instructions for handling, storage, preservation, packaging, and shipping to protect the quality of products and prevent damage, loss, deterioration, degradation, or substitution of products. With respect to handling, the quality program shall require and monitor the use of procedures to prevent handling damage to articles. Handling procedures of this type include the use of special crates, boxes, containers, transportation vehicles and any other facilities for materials handling. Means shall be provided for any necessary protection against deterioration or damage to products in storage. Periodic inspection for the prevention and results of such deterioration or damage shall be provided. Products subject to deterioration or corrosion during fabrication or interim storage shall be cleaned and preserved by methods which will protect against such deterioration or corrosion. When necessary, packaging designing and packaging shall include means for accommodating and maintaining critical environments within packages, e.g., moisture content levels, gas pressures. The quality program shall assure that when such packaging environments must be maintained, packages are labeled to indicate this condition. The quality program shall monitor shipping work to assure that products shipped are accompanied with required shipping and technical documents and that compliance with Interstate Commerce Commission rules and other applicable shipping regulations is effected to assure safe arrival and identification at destination. In compliance with contractual requirements, the quality program shall include monitoring provisions for protection of the quality of products during transit.

6.5 Nonconforming Material. The contractor shall establish and maintain an effective and positive system for controlling nonconforming material, including procedures for its identification, segregation, and disposition. Repair or rework of nonconforming material shall be in accordance with documented procedures acceptable to the Government. The acceptance of nonconforming supplies is a prerogative of and shall be as prescribed by the Government and may involve a monetary adjustment. All nonconforming supplies shall be positively identified to prevent unauthorized use, shipment and intermingling with conforming supplies. Holding areas or procedures mutually agreeable to the contractor and the Government Representative shall be provided by the contractor. The contractor shall make known to the Government upon request the data associated with the costs and losses in connection with scrap and with rework necessary to reprocess nonconforming material to make it conform completely.

6.6 Statistical Quality Control and Analysis. In addition to statistical methods required by the contract, statistical planning, analysis, tests and quality control procedures may be utilized whenever such procedures are suitable to maintain the required control of quality. Sampling plans may be used when tests are destructive, or when the records, inherent characteristics of the product or the noncritical application of the product, indicate that a reduction in inspection or testing can be achieved without jeopardizing quality. The contractor may employ sampling inspection in accordance with applicable military standards and sampling plans (e.g., from MIL-STD-105, MIL-STD-414, or Handbooks H 106, 107 and 108). If the contractor uses other sampling plans, they shall be subject to review by the cognizant Government Representative. Any sampling plan used shall provide valid confidence and quality levels.

6.7 Indication of Inspection Status. The contractor shall maintain a positive system for identifying the inspection status of products. Identification may be accomplished by means of stamps, tags, routing cards, move tickets, tote box cards or other normal con-

trol devices. Such controls shall be of a design distinctly different from Government inspection identification.

7. COORDINATED GOVERNMENT/CONTRACTOR ACTIONS

7.1 Government Inspection at Subcontractor or Vendor Facilities. The Government reserves the right to inspect at source supplies or services not manufactured or performed with the contractor's facility. Government inspection shall not constitute acceptance; nor shall it in any way replace contractor inspection or otherwise relieve the contractor of his responsibility to furnish an acceptable end item. The purpose of this inspection is to assist the Government Representative at the contractor's facility to determine the conformance of supplies or services with contract requirements. Such inspection can only be requested by or under authorization of the Government Representative. When Government inspection is required, the contractor shall add to his purchasing document the following statement:

> "Government inspection is required prior to shipment from your plant. Upon receipt of this order, promptly notify the Government Representative who normally services your plant so that appropriate planning for Government inspection can be accomplished."

When, under authorization of the Government Representative, copies of the purchasing document are to be furnished directly by the subcontractor or vendor to the Government Representative at his facility rather than through Government channels, the contractor shall add to his purchasing document a statement substantially as follows:

> "On receipt of this order, promptly furnish a copy to the Government Representative who normally services your plant, or, if none, to the nearest Army, Navy, Air Force, or Defense Supply Agency inspection office. In the event the representative or office cannot be located, our purchasing agent should be notified immediately."

All documents and referenced data for purchases applying to a Government contract shall be available for review by the Government Representative to determine compliance with the requirements for the control of such purchases. Copies of purchasing documents required for Government purposes shall be furnished in accordance with the instructions of the Government Representative. The contractor shall make available to the Government Representative reports of any nonconformance found on Government source inspected supplies and shall (when requested) require the supplier to coordinate with his Government Representative on corrective action.

7.2 Government Property.

7.2.1 *Government-furnished Material.* When material is furnished by the Government, the contractor's procedures shall include at least the following:

(a) Examination upon receipt, consistent with practicability to detect damage in transit;

(b) Inspection for completeness and proper type;

(c) Periodic inspection and precautions to assure adequate storage conditions and to guard against damage from handling and deterioration during storage;

(d) Functional testing, either prior to or after installation, or both, as required by contract to determine satisfactory operation;

(e) Identification and protection from improper use or disposition; and

(f) Verification of quantity.

7.2.2 *Damaged Government-furnished Material.* The contractor shall report to the Government Representative any Government-furnished material found damaged, malfunctioning, or otherwise unsuitable for use. In the event of damage or malfunctioning during or after installation, the contractor shall determine and record probable cause and necessity for withholding material from use.

7.2.3 *Bailed Property.* The contractor shall, as required by the terms of the Bailment Agreement, establish procedures for the ade-

quate storage, maintenance and inspection of bailed Government property. Records of all inspections and maintenance performed on bailed property shall be maintained. These procedures and records shall be subject to review by the Government Representative.

8. NOTES

(The following information is provided solely for guidance in using this specification. It has no contractual significance.)

8.1 **Intended Use.** This specification will apply to complex supplies, components, equipments and systems for which the requirements of MIL-I-45208 are inadequate to provide needed quality assurance. In such cases, total conformance to contract requirements cannot be obtained effectively and economically solely by controlling inspection and testing. Therefore, it is essential to control work operations and manufacturing processes as well as inspections and tests. The purpose of this control is not only to assure that particular units of hardware conform to contractual requirements, but also to assure interface compatibility among these units of hardware when they collectively comprise major equipments, sub-systems and systems.

8.2 **Exemptions.** This specification will not be applicable to types of supplies for which MIL-I-45208 applies. The following do not normally require the application of this specification:

(a) Personal services, and

(b) Research and development studies of a theoretical nature which do not require fabrication of articles.

8.3 **Order Data.** Procurement documents should specify the title, number and date of this specification.

Custodians:
Army—Munitions Command
Navy—Office of Naval Material
Air Force—Hq USAF
DSA—Hq DSA

Preparing Activity:
Air Force—Hq USAF

APPENDIX F

Fed Std 368A

[illegible]
November 10, 1978
SUPERSEDING
FED. STD. 368
July 27, 1977

FEDERAL STANDARD

QUALITY CONTROL SYSTEM REQUIREMENTS

This standard was approved by the Commissioner, Federal Supply Service, General Services Administration, for the use of all Federal agencies.

1. SCOPE. This standard establishes minimum requirements for a quality control system to be provided and maintained by a contractor under Government contract for furnishing supplies or services. The contractor's quality control system shall include the methods, procedures, controls, records, and maintenance of the system to provide verification of product compliance with contract requirements. The extent of this system shall depend on the complexity of the item under contract. A written description of this system shall be prepared by the contractor and shall be available to the Government. The contractor's quality control system shall be reviewed by the Government and is subject to the disapproval of the Government representative when the contractor's procedures will not accomplish their objective.

1.1 Application. This standard is applicable when referenced in the contract. It is also applicable at supplier locations where Government inspection at these points is required. In such cases, it is the contractor's responsibility to invoke the use of this standard by his supplier.

2. REFERENCED DOCUMENTS None.

3. DEFINITIONS. As used herein, the following definitions shall apply:

3.1 Inspection. A process of examining, testing, measuring and otherwise comparing products and services to determine compliance with specified requirements.

3.2 Quality control. An overall system of activities, including inspection, whose purpose is to provide a quality of product or service that meets contract requirements.

3.3 Statistical quality control. Quality control in which statistical techniques are used. These techniques include the use of frequency distribution, measure of central tendency and dispersions, control charts, acceptance sampling, regression analysis, tests of significance.

4. REQUIREMENTS. The contractor shall provide and maintain a documented quality control system which will ensure that the end products (supplies or services) and associated components, spare parts, manuals, packing, packaging, marking, and any other contractual requirements, offered to the Government conform to contract requirements whether manufactured or processed by the contractor or procured from subcontractors or vendors. It shall be available for review by the Government prior to the start of production and during the life of the contract. It shall provide control over all phases of production from the initiation of design through manufacture and preparation for delivery.

5. DETAILED REQUIREMENTS.

5.1 The contractor shall perform all examinations and tests to substantiate conformance to specifications, using his own or any other inspection facilities or services acceptable to the Government, before offering to the Government for acceptance.

5.2 Organization.

5.2.1 Personnel performing quality control functions shall be identified and given sufficient well-defined responsibility, authority, and the organizational freedom to identify and evaluate quality problems, and to initiate, recommend, or provide solutions.

5.2.2 Management shall regularly review the status and adequacy of the quality organization and conformance to the quality control system.

5.2 Inspection status. The contractor shall keep raw material, parts, partially assembled products, and end products segregated in accordance with their inspection status, such as accepted, rejected, held up for rework, awaiting decision, to prevent intermixing and unauthorized use. The indication of the inspection status may be accomplished by tags, labels, marking, or other positive means.

5.4 Measuring and test equipment.

5.4.1 The contractor shall have all measuring and testing equipment required to perform testing for all characteristics called for in the contract, or shall have firm arrangements with another inspection and testing facility acceptable to the Government.

5.4.2 Measuring devices, test equipment, gages, jigs, fixtures, shall be inspected at scheduled intervals against specified, certified, or otherwise valid means to ensure continued accuracy.

5.5 Sampling plan. Statistical sampling is generally specified in the applicable product specifications. These are minimum requirements. The contractor may use other statistical sampling techniques; e.g., control charts, frequency distribution, tests of significance; whenever such sampling provides greater precision.

5.6 Inspection stations. The contractor shall set up clearly defined inspection stations for receiving, in-process, and end-product inspection.

5.6.1 The quality of all articles produced by subsidiary manufacturers and suppliers for materials and manufactured articles to be furnished under Government contract shall be controlled. Subsidiary manufacturers and suppliers shall be notified of any deficiencies which require corrective action.

5.6.2 In-process inspection shall be used for quality characteristics which are difficult or impossible to measure by end-product inspection; it shall not be used to eliminate end-product inspection.

5.6.3 End-product inspection. Prior to end-product inspection, the contractor shall ensure that all receiving and in-process inspections have been performed. End-product examinations and tests shall be performed in accordance with contract requirements.

5.6.3.1 Samples of products to be shipped in knockdown condition shall be inspected in fully assembled state to ensure adequate assembly.

5.6.3.2 Reworked material shall be fully inspected before it is reoffered.

5.7 Records. The contractor shall maintain quality control records in sufficient detail to establish evidence that the sampling was representative, the required examinations and tests have been properly performed, and only specification material has been accepted for production and delivery to the Government.

These records shall be available for review by the Government representative and copies of individual records shall be furnished him upon request.

5.7.1 Records shall cover receiving inspection, calibration of test equipment, in-process inspection, and end-product inspection. The records shall include data on both conforming and nonconforming product, or services, and show inspector's or analyst's name.

5.7.2 The inspection records shall include, as a minimum, the following information, as applicable: lot size, sample size, statistical method used, frequency of sampling, characteristic being examined or tested, number of defectives (or defects) in sample, test results, acceptance and rejection criteria, reason for rejection, and disposition instructions for rejected material.

5.8 Drawings, specifications, changes. The contractor shall develop and maintain a system to ensure that the latest applicable drawings, specifications, and instructions required by the contract are incorporated in his production and quality control.

5.9 Preparation for delivery. The contractor shall ensure, prior to shipment, that the product is completed, all required fabrication, examination, and tests have been performed, and the specified quality requirements have been met, the required components, spare parts, assembly instructions, technical manuals, packing slips, shipping envelope, inspection documents, etc., have been inspected prior to shipment and forwarded in accordance with contract instructions; all supplies have been preserved, packaged, packed, and marked in accordance with contract terms.

[illegible]

[illegible]. The contractor shall maintain a current written quality control procedure. This [illegible] and all changes thereto, shall be available to the Government representative. It shall describe the administration of the quality control system in use and list authorized names and titles for Government contacts. It shall include:

a. An organization chart which clearly depicts the place of quality control functions.
b. Persons performing quality control functions, their responsibilities, and authority in dealing with the Government on contracts.
c. A flow chart of production.
d. Inspection stations, inspection procedures, test methods, 100 percent inspection, statistical techniques, formation of lots, lot sizes, collection of samples, sample sizes, frequency of sampling, acceptance/-rejection criteria, identification of lots, segregation of lots, disposition of rejected lots, corrective action, and procedure for recording results of inspection.
e. Calibration of equipment, frequency, procedures, traceability to standards and records.
f. Samples of quality control forms, tags, charts, labels, and any other written matter used to control quality.

U.S. GOVERNMENT PRINTING OFFICE : 1980 - 311-148/1073

APPENDIX G

DEPARTMENT OF THE NAVY

CONTRACTOR QUALITY CONTROL

NAVFAC P-445

NAVFAC Construction Quality
Control Manual
(Jan 1974)

24. CONTRACTOR INSPECTION SYSTEM (1964 NOV)

The Contractor shall (i) maintain an adequate inspection system and perform such inspections as will assure that the work performed under the contract conforms to contract requirements, and (ii) maintain and make available to the Government adequate records of such inspections.

79. CONTRACTOR QUALITY CONTROL (CQC) (6-72)

(This clause applies only when specifically required by Division 1 "General Requirements" of the specifications)

(a) The contractor shall provide a quality control organization and system to perform inspections and tests of all items of work, including that of his subcontractors, to ensure conformance with the contract provisions. Quality Control will be established for all work, except where specific provisions of the contract provide for government approvals, inspections and tests. The contractor's quality control system will specifically include, but not be limited to, the inspections and tests required in the technical provisions of the contract specifications, and shall cover all construction operations, including both on-site and off-site fabrication.

(b) The contractor shall provide a CQC representative, supplemented as necessary by additional personnel, who shall be on the work at all times during progress, with complete authority to take any action necessary to ensure conformance with the contract. The CQC representative shall be appointed by a letter addressed to him and signed by an officer of the firm. The letter shall detail the CQC representative's authority and responsibility to act for the contractor. The CQC representative shall report directly to an officer of the firm and shall not be subordinate to the job superintendent or project manager.

(c) The contractor shall furnish to the Government within (15) calendar days after receipt of the Notice of Award, a CQC Plan which shall detail the procedures, instructions, and reports to be used to assure conformance with the contract. Unless specifically authorized by the OICC/ROICC in writing, no construction will be started until the contractor's quality control plan is approved. This plan will include, as a minimum:

(1) A copy of the appointing letter to the contractor quality control representative, outlining his duties, responsibilities and authority, and signed by an officer of the firm. Included in this letter as a minimum, must be the authority to direct removal and replacement of any defective work.

(2) The quality control organization in chart form, showing the relationship of the quality control organization to other elements of the company.

(3) Names and qualifications of personnel in the quality control organization.

(4) Area of responsibility and authority of each individual in the quality control organization.

(5) A listing of outside organizations such as testing laboratories, architects, and consulting engineers that will be employed by the contractor and a description of the services these firms will provide.

(6) Procedures for reviewing all shop drawings, samples, certificates, or other submittals for contract compliance, including the name of the person(s) authorized to sign the submittals for the contractor, as complying with the contract.

(7) An inspection schedule, keyed to the construction schedule, indicating what test will be performed, when testing will be performed, and by whom.

(8) Method of documenting the quality control operation, inspection, and testing, including a copy of all forms and reports to be used for this purpose.

(d) As a minimum, inspection procedures shall include:

(1) Preparatory Inspection. (Performed prior to beginning any work, or segment of work.) Preparatory inspection shall include a review of contract requirements; review and approval of shop drawings and submittal data for the work, or segment of work, (see paragraph (h) below); a check to assure that provisions have been made to provide required control testing; an examination of the work to ascertain that all preliminary work has been completed; and a physical examination of materials and equipment to assure that they conform to approved shop drawings or submittal data.

(2) Initial Inspection. (Performed as soon as a representative segment of the particular item of work has been accomplished.) Initial inspection shall include performance of scheduled tests, examination of the quality of workmanship, a review of test results for compliance with contract requirements, a review for omissions or dimensional errors, and approval or rejection of the initial segment of the work.

(3) Follow-up Inspection. (Performed daily or as frequently as necessary.) Continued testing and examinations to assure continuing compliance with contract requirements.

(e) After the contract is awarded, but before construction operations are started, the contractor shall meet with the OICC/ROICC, or his representative, and discuss the quality control requirements. The purpose of the meeting shall be to develop a mutual understanding relative to details of the system, including forms to be used for recording the quality control operations, inspections, tests, approvals, certifications, administration of the system, and government surveillance. This meeting shall also develop a schedule for future weekly or biweekly CQC meetings and shall establish procedures for submission of daily reports and other record documents.

(f) The contractor shall submit daily CQC reports to the OICC/ROICC, identifying prime and subcontractor personnel and equipment on the site, idle equipment and personnel, material deliveries, weather conditions; the work accomplished; the inspections and tests conducted; results of inspections and tests; nature of defects found; causes for rejection; proposed remedial action; and corrective actions taken; together with the following certification; "The above report is complete and correct and all material and equipment used and work performed during this reporting period are in compliance with the contract plans and specifications, to the best of my knowledge, except as noted above." This certification shall be signed for the contractor by the duly authorized CQC representative.

(g) Where test results by a testing laboratory are provided, they shall site the contract requirements, the actual test results, and include a statement that the item tested conforms (or fails to conform) to the specification requirements.

(h) All submittals, shop drawings, catalog cuts, samples, etc., unless otherwise specifically noted, shall be approved and certified by the contractor as conforming to the plans and specifications. Four (4) copies of all shop drawings, catalog cuts, or other submittals, with the contractor's approval indicated thereon, shall be sent to the ROICC for record purposes, within one (1) working day of the contractor's approval.

U.S. ARMY CORPS OF ENGINEERS
PART NINE
PROPOSED CQC SPECIFICATIONS FOR CONSTRUCTION CONTRACTS

1. GENERAL. The Contractor shall establish and maintain an effective quality control system in compliance with GENERAL PROVISIONS paragraph CONTRACTOR INSPECTION SYSTEM. The quality control system consist of plans, procedures, and organization necessary to provide materials, equipment, workmanship, fabrication, construction and operations which comply with contract requirements. The system shall cover construction operations, both onsite and offsite, and shall be keyed to the proposed construction sequence.

2. COORDINATION MEETING. As soon as practicable after receipt of Notice to Proceed and before start of construction, the Contractor shall meet with the Contracting Officer (CO) and discuss the Contractor's quality control (CQC) system. During the meeting, a mutual understanding of the system details shall be developed, including the forms for recording the (QC) operations; control activities, testing, administration of the system for both onsite and offsite, and the interrelationship of Contractor and Government control and surveillance. Minutes of the meeting shall be prepared, signed by both the Contractor and the CO and shall become a part of the contract file. There may also be occasions when subsequent conferences will be called to reconfirm understandings.

3. QUALITY CONTROL PLAN.

a. General. Prior to start of construction, the Contractor shall furnish his QC plan to the CO for acceptance. Construction will be permitted to begin only after acceptance of the QC plan, or approval of that portion of the plan applicable to the particular feature of work to be started. The QC plan the Contractor proposes to implement shall identify the personnel, procedures, instructions, records, and forms, and, as a minimum, shall include:

(1) A description of the quality management organization.

(2) The number, classifications, qualifications, duties, responsibilities and authorities of personnel. A copy of the letter, signed by an authorized official of the firm, which describes the responsibilities and delegates the authorities of the system manager shall be furnished.

(3) Procedures for processing shop drawings, samples, certificates, and other submittals.

(4) QC activities to be performed, including those of subcontractors, offsite fabricators, and suppliers.

(5) Control testing procedures.

(6) Documentation format for QC activities, and testing.

b. Notification of Changes: After approval of the QC plan, the Contractor shall notify the CO in writing of any proposed change to his QC System.

c. Corrective Actions: At any time it is determined that the QC system, personnel, instructions, controls, tests, or records are not providing construction which conforms to contract requirements actions shall be taken to correct the deficient management.

4. QUALITY CONTROL ORGANIZATION.

a. System Manager. The Contractor shall identify an individual, within his organization at the site of the work, who shall be responsible for overall management and have the authority to act in all CQC matters for the contractor.

b. Personnel. A staff shall be maintained under the direction of the system manager to perform all QC activities. The actual strength of the staff during any specific work period may vary to cover work phase needs, shifts, and rates of placement. The personnel of this staff shall be fully qualified by experience and technical training to perform their assigned responsibilities.

5. SUBMITTALS. Procedures for purchasing materials and equipment, subcontracting, and processing shop drawings, samples, certificates, and other submittals shall be developed. The procedures shall include the establishment of responsibilities to assure at each level adequate review and approval, timely delivery including verification procedures, and proper storage.

a. Procedures. Action shall be taken to ensure that only materials and equipment which comply with contract requirements are purchased and delivered to the jobsite or used in offsite fabrication, unless specific deviations are approved as specified hereinafter.

b. Selection and Control. The Contractor shall review the contract requirements and determine those submittals needed to assure himself of contract compliance. Within ___ days after receipt of notice to proceed, the Contractor shall submit to the CO for review and approval, in duplicate, a network analysis system (NAS) printout or a submittal control document (ENG Form 4288) listing and scheduling all submittal items required in the contract. When requested ENG Form 4288 will be furnished to the Contractor. The print out or control document shall include such items as shop drawings and manufacturer's literature, certificates of compliance, material samples, and guarantees. The document shall schedule for each item, the projected need dates (at least 60 day in advance) for obtaining submittals and material procurement. When NAS is used for schedule control, the

contractor should consider its use for scheduling submittals in lieu of ENG Form 4288. A print-out limited to a list of procurement activities in i-j order shall then be furnished with each progress schedule report. If the ENG Form 4288 is used, the scheduling shall be coordinated with the approved progress schedule and information contained therein shall be revised and updated at each schedule update. Adequate time shall be allowed for those submittals specified to have government approval. The Contractor shall review the listing at each progress schedule update and copies of updated documents shall be submitted to the Contracting Officer in the specified quantity. Payments to the Contractor will not be made for material or equipment which does not comply with the contract requirements.

c. Certification. The Contractor is responsible for, and shall certify that the submittals comply with contract requirements.

d. Transmittal. The Contractor shall submit copies of all submittals to the contracting officer.

e. Government Approved Submittals. When submittals are required to be approved by the CO, each copy of the drawings will be identified as having received such approval by being so stamped and dated. Delays in the approval process shall not be the basis for consideration of a time extension when such delay is the result of the contractor's failure to make proper submittal or make corrections in accordance with the specifications, or the CO's comments, or is a result of a resubmittal which is required because of an unsatisfactory original submittal. Approval action by the CO will not relieve the Contractor of his responsibility for compliance with the contract but will indicate only that the general method of construction and detailing is satisfactory.

f. Deviations: All proposed deviations from contract requirements shall be submitted in writing for approval by the CO.

6. CONTROL. The Contractor's quality control system shall include at least the following three phases of control and management for definable features of work:

a. Preparatory. This control phase shall be performed before beginning work on each definable feature of work. It shall include a review of contract requirements, to assure that materials, sample panels and equipment conforms to contract requirements, and that control testing including procedures are finalized. This control shall also include examination of the work area, upon which new work is to be placed, to verify that work over which new work is to be placed conforms to contract requirements, and determination that required materials are on hand and properly stored. The CO shall be notified at least 24 hours in advance of each preparatory activity.

b. Initial. This phase of control must be accomplished at the time of arrival of workmen on site to accomplish a definable feature of work and at any time new workmen or crews arrive for assignment to the work. The contractor's control system must permit the transfer of information on quality requirements specified in this contract to each workman before he starts, demonstration from each workman that he can provide the specified quality of work, and motivate him to continue. It is also during this phase that control testing to prove the adequacy of the contractor's control procedures shall be initiated and verified. The CO shall be notified at least 24 hours in advance of each initial activity.

c. Follow-up. The follow-up phase shall be performed continuously to verify that control procedures are providing an end product which complies with contract requirements. Adjustments to control procedures may be required based upon the results of this phase and control testing.

7. TESTS.

a. Testing Procedure: The Contractor shall perform tests specified or required to verify that control measures are adequate to provide a product which conforms to contract requirements. The Contractor shall procure the services of an industry recognized testing laboratory or he may establish an approved testing laboratory at the project site. A list of tests which Contractor understands he is to perform shall be furnished to the Contracting Officer. The list shall give the test name, specification paragraph containing the test requirements, and the personnel and laboratory responsible for each type of test. The contractor shall perform the following activities and record and provide the following data:

(1) Verify that testing procedures comply with contract requirements.

(2) Verify that facilities and testing equipment are available and comply with testing standards.

(3) Check test instrument calibration data against certified standards.

(4) Verify that recording forms, including all of the test documentation requirements, have been prepared.

b. Testing.

(1) Capability Check. The CO reserves the right to check laboratory equipment in the proposed laboratory for compliance with the standards set forth in the contract specifications and to check the laboratory equipment in the proposed laboratory for compliance with the standards set forth in the contract specifications and to check the laboratory technician's testing procedures and techniques.

(2) Capability Re-Check: Should the selected laboratory fail the capability check, the Contractor will be assessed a charge of _____ to reimburse the Government for each succeeding re-check of the laboratory or the checking of a subsequently-selected laboratory. Such costs will be deducted from the contract amount due the contractor.

(3) Project Laboratory: The CO reserves the right to utilize the Contractor's control testing laboratory and equipment to make assurance tests and to check the Contractor's testing procedures, techniques, and test results at no additional cost to the Government.

(4) Transportation of Samples for Testing: Costs incidental to the transportation of samples or materials will be borne by the Contractor. Samples of materials for test verification and acceptance testing by the Government shall be delivered to the Corps of Engineer division Laboratory, f.o.b., at the following address:

For delivery by mail:

For other deliveries:

8. DEFECTIVE WORK. The Contractor shall not build upon or conceal defective work.

9. COMPLETION. At the completion of the work, the CQC representive shall conduct a joint completion review with the CO. During this review the work shall be examined, quality control shall be reviewed, and a list shall be developed of work not properly completed or not conforming to plans and specifications. This list shall be included in the quality control documentation with an estimated date for correction of each deficiency. The contractor shall make sure that deficiencies have been corrected prior to the specified completion date. Payment will be withheld for defective or deficient features until they are satisfactorily corrected except as otherwise provided in the GENERAL PROVISIONS paragraph INSPECTION AND ACCEPTANCE.

10. DOCUMENTATION.

a. The Contractor shall maintain current records, on an appropriate approved form, of quality control operations, activities, and tests performed including the work of suppliers and subcontractors. These records shall include factual evidence that the required activities or tests have been performed, including but not limited to the following:

(1) Type and number of control activities and tests involved.

(2) Results of control activities or tests.

(3) Nature of defects, causes for rejection, etc.

(4) Proposed remedial action.

(5) Corrective actions taken.

b. These records shall cover both conforming and defective or deficient features and shall include a statement that supplies and materials incorporated in the work comply with the contract. Legible copies of these records shall be furnished to the CO daily. The records shall cover work placed during the time period the records are furnished and shall be verified by person so designated by the Contractor.

MIL-STD-1093
4 APRIL 1969
SUPERSEDING
MIL-STD-109A
30 OCTOBER 1951

APPENDIX I

MILITARY STANDARD

QUALITY ASSURANCE TERMS AND DEFINITIONS

FSC MISC

CONTENTS

1. INTRODUCTION

1.1 Purpose. The purpose of this Standard is to promote the common use of words and phrases pertaining to quality and related programs, thus improving the clarity in communications.

1.2 Scope. This document provides a standardized interpretation of quality assurance terms and definitions to be applied throughout the determination of product quality.

1.3 Application. The terms and definitions contained herein shall be used in specifications, standards, drawings, technical manuals, contracts, quality control inspection and related documents, and in engineering evaluation reports.

2. REFERENCED DOCUMENTS

2.1 Not applicable.

3. TERMS AND DEFINITIONS

Acceptability Criteria	A limit or limits placed upon the degree of nonconformance permitted in material expressed in definitive operational terms. (Source: MIL-STD-109A)
Acceptable Quality Level (AQL)	The maximum percent defective (or the maximum number of defects per hundred units) that, for the purposes of sampling inspection, can be considered satisfactory as a process average. (Source: MIL-STD-105)
Acceptance	The act of an authorized representative of the Government by which the Government assumes for itself, or as an agent of another ownership of existing and identified supplies tendered, or approves specific services rendered, as partial or complete performance of the contract on the part of the contractor. (Source: ASPR 14-001.6)
Acceptance Number	The maximum number of defects or defective units in the sample that will permit acceptance of the inspection lot or batch. (Source: MIL-STD-109A)
Attribute	A characteristic or property which is appraised in terms of whether it does or does not exist, (e.g. go or not-go) with respect to a given requirement. (Source: Handbook H53)
Average Outgoing Quality (AOQ)	The average quality of outgoing product including all accepted lots, plus all rejected lots after the rejected lots have been effectively 100 percent inspected and all defectives replaced by non-defectives. (Source: MIL-STD-105)
Average Outgoing Quality Limit (AOQL)	The maximum of the average outgoing qualities for all possible incoming qualities for a given sampling plan. (Source: MIL-STD-105)
Average Sample Size Curve	The curves that show the average sample sizes which may be expected to occur under the various sampling plans for a given process quality. (Source: MIL-STD-105)
Batch	See "Lot"
Calibration	Comparison of two instruments or measuring devices, one of which is a standard of known accuracy traceable to national standards, to detect, correlate, report, or eliminate by adjustment any discrepancy in accuracy of the instrument or measuring device being compared with the standard. (Source: MIL-C-45662)
Certificate of Conformance	A contractor's written statement, when authorized by contract, certifying that supplies or services comply with contract requirements. (Source: ASPR 14-306(c)).
Characteristic	A physical, chemical, visual, functional or any other identifiable property of a product of material. (Source: MIL-STD-109A)
Classification of Defects	The enumeration of possible defects of the unit of product, classified according to their seriousness. Defects will normally be grouped into the classes of critical, major or minor; however, they may be grouped into other classes, or into subclasses within these classes. (Source: MIL-STD-105)

Clearance Number (i)	Is the number of successively inspected units which must be found free of defects concerned before a certain action to change the inspection procedure can be taken. (Source: Handbook H107)
Contract Quality Requirements	The detailed requisites for quality incumbent on the contractor, consisting of (i) all quality requirements contained in a contract; and (ii) the detailed contractual requisites provided by the contract incumbent on the contractor to substantiate conformance of product or service to quality requirements of the contract. (Source: ASPR 14-001.2)
Critical Defect	A defect that judgement and experience indicate is likely to result in hazardous or unsafe conditions for individuals using, maintaining, or depending upon the product; or a defect that judgement and experience indicate is likely to prevent performance of the tactical function of a major end item such as an aircraft, communication system, land vehicle, missile, ship, space vehicle, surveillance system, or major part thereof. (Source: MIL-STD-105)
Critical Defective	A unit of product that contains one or more critical defects and may also contain major or minor defects. (Source: MIL-STD-105)
Defect	Any nonconformance of a characteristic with specified requirements. (Source: MIL-STD-105)
Defective	A unit of product which contains one or more defects (Source: MIL-STD-105)
Defects-Per-Hundred-Units	The number of defects-per-hundred units of any given quantity of product is the number of defects contained therein divided by the total number of units of product, the quotient multiplied by one hundred (one or more defects being possible in any unit of product). Expressed as an equation: Defects per hundred units = $\frac{\text{Number of Defects} \times 100}{\text{Number of Units}}$ (Source: MIL-STD-105)
Deviation	Written authorization, granted prior to the manufacture of an item, to depart from a particular performance or design requirement of a contract, specification, or referenced document, for a specific number of units or specific period of time. (Source: DOD-D-5010.19)
Examination	An element of inspection consisting of investigation, without the use of special laboratory appliances or procedures, of supplies and services to determine conformance to those specified requirements which can be determined by such investigations. Examination is generally non-destructive and includes, but is not limited to visual, auditory, olfactory, tactile, gustatory, and other investigations; simple physical manipulation; gaging; and measurement. (Source: MIL-STD-109A)
Formulation of Inspection Lots	See "Lot Formation"
Government Procurement Quality Assurance (PQA)	The function by which the Government determines whether a contractor has fulfilled his contract obligations pertaining to quality and quantity. This function is related to and generally preceeds the act of acceptance. (Source: ASPR 14-001.1)
Inspection	The examination and testing of supplies and services (including, when appropriate, raw materials, components, and intermediate assemblies) to determine whether they conform to specified requirements. (Source: ASPR 14-001.3)
Inspection by Attributes	Inspection whereby either the unit of product or characteristics thereof, is classified simply as defective or nondefective, or the number of defects in the unit of product is counted, with respect to a given requirement. (Source: MIL-STD-105)
Inspection by Variables	Inspection wherein certain quality characteristics of sample are evaluated with respect to a continuous numerical scale and expressed as precise points along this scale. Variables inspection records the degree of conformance or nonconformance of the unit with specified requirements for the quality characteristics involved. (Source: MIL-STD-109A)

Inspection, Cyclical	A system whereby supplies and equipment in storage are subjected to, but not limited to, periodic, scheduled, and special inspection and continuous action to assure that material is maintained in a ready for issue condition. (Source: MIL-STD-109A)
Inspection, In-Process	Inspection which is performed during the manufacturing or repair cycle in an effort to prevent defectives from occurring and to inspect the characteristics and attributes which are not capable of being inspected at final inspection. (Source: MIL-STD-109A)
Inspection Level	An indication of the relative sample size for a given amount of product. (Source: MIL-STD-109A).
Inspection Lot	See "Lot"
Inspection, Original	First inspection of a particular quantity of product as distinguished from the inspection of product which has been resubmitted after prior rejection. (Source: MIL-STD-105)
Inspection, Quality Conformance	All examinations and tests performed on items or services for the purpose of determining conformance with specified requirements. (Source: Defense Standardization Manual 4120.3-M)
Inspection Record	Recorded data concerning the results of inspection action. (Source: MIL-STD-109A)
Inspection System Requirement	A requirement to establish and maintain an inspection system in accordance with Government specification, MIL-I-45208. The requirement is referenced in contracts when technical requirements are such as to require control of quality by in-process as well as final, end item inspection. (Source: ASPR 14-101.3)
Inspection, Tightened	Inspection under a sampling plan using the same quality level as for normal inspection, but requiring more stringent acceptance criteria. (Source: MIL-STD-109A)
Limiting Quality	Limiting quality (LQ) is the maximum defective in product quality (or the worst product quality that the consumer is willing to accept at a specified probability of occurrence. (Source: Handbook H53)
Lot	A collection of units of product bearing identification and treated as a unique entity from which a sample is to be drawn and inspected to determine conformance with the acceptability criteria. (Source: MIL-STD-105)
Lot Formation	The procedure of collecting, segregating, or delineating production units into homogeneous identifiable groups according to type, grade, class, size, composition, or condition of manufacture. (Source: MIL-STD-109A)
Lot Size	The number of units of product in a lot. (Source: MIL-STD-105)
Maintainability	A characteristic of design and installation which is expressed as the probability that an item will be retained in or restored to a specified condition within a given period of time, when the maintenance is performed in accordance with prescribed procedures and resources. (Source: MIL-STD-721)
Maintenance Quality Assurance	The actions by which it is determined that material maintained, overhauled, rebuilt, modified, and reclaimed conforms to the prescribed technical requirements. (Source: DOD-D-4155.15)
Major Defect	A defect other than critical, that is likely to result in failure, or to reduce materially the usability of the unit of product for its intended purpose. (Source: MIL-STD-105)
Major Defective	A unit of product that contains one or more major defects, and may also contain minor defects but contains no critical defect. (Source: MIL-STD-105)
Material Review Board	The formal Contractor-Government Board established for the purpose of reviewing, evaluating, and disposing of specific non-conforming supplies or services; and, for assuring the initiation and accomplishment of corrective action to preclude recurrence.

Measuring and Test Equipment	All devices used to measure, gage, test, inspect, diagnose, or otherwise examine materials, supplies and equipment to determine compliance with technical requirements. (Source: Proposed DOD-D on Management of Metrology)
Minor Defect	A defect that is not likely to reduce materially the usability of the unit of product for its intended purpose, or is a departure from established standards having little bearing on the effective use or operation of the unit. (Source: MIL-STD-105)
Minor Defective	A unit of product that contains one or more minor defects but contains no critical or major defect. (Source: MIL-STD-105)
Nonconformance	The failure of a unit of product to conform to specified requirements for any quality characteristic. (Source: Handbook H53)
Normal Inspection	Inspection, under a sampling plan, which is used when there is no evidence that the quality of the product being submitted is better or poorer than the specified quality level. (Source: Handbook H53)
Objective Quality Evidence	Any statement of fact, either quantitative or qualitative, pertaining to the quality of a product or service based on observations, measurements, or tests which can be verified. (Evidence will be expressed in terms of specific quality requirements or characteristics. These characteristics are identified in drawings, specifications, and other documents which describe the item, process, or procedure.) (Source: MIL-STD-109A)
One Hundred Percent Inspection	Inspection in which specified characteristics of each unit of product are examined or tested to determine conformance with requirements. (Source: MIL-STD-109A)
Operating Characteristic Curves (OC Curves)	The curve of a sampling plan which shows the percentage of lots or batches which may be expected to be accepted under the specified sampling plan for a given process quality. (Source: MIL-STD-105)
Percent Defective	The percent defective of any given quantity of units of product is one hundred times the number of defective units of product contained therein divided by the total number of units of product, i.e.: Percent Defective = $\frac{\text{Number of Defectives}}{\text{Number of Units Inspected}} \times 100$ (Source: MIL-STD-105)
Pre-Award Survey	An evaluation of a prospective contractor's capability to perform under the terms of a proposed contract. (Source: ASPR 1-905.4(a))
Probability of Acceptance	That percentage of inspection lots expected to be accepted when the lots are subjected to a specific sampling plan. (Source: MIL-STD-109A)
Process Average	Is the average percent of defective or average number of defects per hundred units of product submitted by the supplier for original inspection. (Source: MIL-STD-105)
Product Quality Review	An action by the Government to determine that the quality of supplies or services accepted by the Government do, in fact, comply with specified requirements. (Source: DOD-D-4155.11)
Qualification	The entire process by which products are obtained from manufacturers or distributors, examined and tested, and then identified on a Qualified Products List. (Source: Defense Standardization Manual 4120.3-M)
Qualified Product	A product which has been examined and tested and listed on or qualified for inclusion on the applicable Qualified Products List. (Source: Defense Standardization Manual 4120.3-M)
Qualified Product List (QPL)	A list of products, qualified under the requirements stated in the applicable specification, including appropriate product identification and test reference with the name and plant address of the manufacturer or distributor, as applicable. (Source: Defense Standardization Manual 4120.3-M)

Quality	The composite of all the attributes or characteristics, including performance, of an item or product. (Source: DOD-D-2155.1)
Quality Assurance	A planned and systematic pattern of all actions necessary to provide adequate confidence that the item or product conforms to established technical requirements. (Source: DOD-D-2155.1)
Quality Assurance Representative (QAR)	The individual directly charged with performance of the government quality assurance function at a contractor facility.
Quality Control (QC)	A management function whereby control of quality of raw or produced material is exercised for the purpose of preventing production of defective material. (Source: MIL-STD-109A)
Quality Program Requirement	It is the requirement for the establishment and maintenance of a quality program in accordance with MIL-Q-9858. The specification requires that the program shall assure adequate quality throughout all areas of contract performance; for example, design, development, fabrication, processing, assembly, inspection, test, maintenance, packaging, shipping, storage, and site installation. (Source: ASPR 14-101.4)
Random Sample	A sample selected in such a way that each unit of the population has an equal chance of being selected. (Source: MIL-STD-109A)
Reduced Inspection	Inspection under a sampling plan using the same quality level as for normal inspection, but requiring a smaller sample for inspection. (Source: MIL-STD-109A)
Rejection Number	The minimum number of defects or defective units in the sample that will cause rejection of the lot represented by the sample. (Source: MIL-STD-109A)
Reliability	The probability that an item will perform its intended function for a specified interval under stated conditions. (Source: MIL-STD-[illegible])
Reliability Assurance	All actions necessary to provide adequate confidence that material conforms to established reliability requirements. (Source: DOD-D-2155.1)
Resubmitted Lot	A lot which has been rejected, subjected to either examination or testing, or both for the purpose of removing all defective units which may or may not be reworked or replaced, and submitted again for acceptance. (Source: MIL-STD-109A)
Sample	One or more units of product drawn from a lot or batch, the units of the sample being selected at random without regard to their quality. (Source: MIL-STD-105)
Sample, Representative	The number of units selected in proportion to the size of sub-lots or sub-batches, or parts of the lot or batch, identified by some rational criterion. When representative sampling is used, the units from each part of the lot or batch shall be selected at random. (Source: MIL-STD-105)
Sample Size	The number of units of product in the sample selected for inspection. (Source: MIL-STD-105)
Sample Unit	A unit of product selected to be part of a sample. (Source: MIL-STD-109A)
Sampling, Biased	Sampling procedures which will not guarantee a truly representative or random sample. (Source: MIL-STD-109A)
Sampling Frequency (f)	The sampling frequency, f, is the ratio between the number of units of product randomly selected for inspection at an inspection station to the number of units of product passing the inspection station. (Source: Handbook H107)
Sampling Plan	A statement of the sample size or sizes to be used and the associated acceptance and rejection criteria. (Source: MIL-STD-109A)

Sampling Plan, Double	A specific type of attributes sampling plan in which the inspection of the first sample leads to a decision to accept, to reject, or to take a second sample. The inspection of a second sample, when required, then leads to a decision to accept or reject. (Source: MIL-STD-105)
Sampling Plan, Multi-level Continuous	A specific type of sampling plan in which the inspection periods of 100 percent inspection and two or more levels of sampling inspection are alternated with the sampling frequency remaining constant or changing on the basis of the inspection result. (Source: Handbook H106
Sampling Plan, Multiple	A specific type of attributes sampling plan in which a decision to accept or reject an inspection lot may be reached after one or more samples from that inspection lot have been inspected, and will always be reached after not more than a designated number of samples have been inspected. (Source: MIL-STD-105)
Sampling Plan, Sequential	A specific type of sampling plan in which the sample units are selected one at a time. After each unit is inspected, the decision is made to accept, reject, or continue inspection until the acceptance or rejection criteria is met. Sampling terminates when the inspection results of the sample units determine that the acceptance or rejection decision can be made. The sample size is not fixed in advance, but depends on actual inspection results. (Source: Handbook H53)
Sampling Plan, Single	A specific type of sampling plan in which a decision to accept or reject an inspection lot is based on a single sample. (Source: MIL-STD-105)
Sampling Plan, Single-Level, Continuous	A specific type of sampling plan in which the inspection periods of 100 percent inspection and sampling inspection are alternated with the sampling rate remaining constant. (Source: Handbook H107
Screening Inspection	Inspection in which each item of product is inspected for designated characteristics and all defective items are removed. (Source: MIL-STD-109A)
Specification	A document intended primarily for use in procurement, which clearly and accurately describes the essential and technical requirements for items, materials, or services, including the procedures by which it will be determined that the requirements have been met. Specifications for items and materials may also contain preservation, packaging, packing and marking requirements. (Source: Defense Standardization Manual 4120.3-M)
Storage Quality Control	Storage quality control is the technical inspection of materiel received from vendors which was not previously inspected at source and for which acceptance at destination is required; inspection of materiel returned from consuming installations for return to stores, forwarding to repair facilities, or for release to disposal areas; the examination and testing of samples of supplies selected from storage to assess the overall quality of materiel stored, and the identification of previously unidentified materiel in store; and inspection of materiel prior to shipping to using activities. (Source: DOD-D-4155.13)
Survey, Product Oriented	A review and evaluation to determine the adequacy of the technical requirements relating to quality and product conformance to design intent. (Source: ASPR 14-202(b))
Testing	Is an element of inspection and generally denotes the determination by technical means of the properties or elements of supplies, or components thereof, including functional operation, and involves the application of established scientific principles and procedures. (Source: ASPR 14-001.4)
Unit of Product	A unit of product is the thing inspected in order to determine its classification as defective or nondefective or to count the number of defects. It may be a single article, a pair, a set, a length, an area, an operation, a volume, a component of an end product, or the end product itself. The unit of product may or may not be the same as the unit of purchase, supply, production, or shipment. (Source: MIL-STD-105)

Waiver — A written authorization to accept a configuration item or other designated items, which during production or after having been submitted for inspection, are found to depart from specified requirements, but nevertheless are considered suitable for use "as is" or after rework by an approved method. (Source: DOD-D-5010.19)

4. GENERAL REQUIREMENTS

4.1 Not applicable

5. DETAIL REQUIREMENTS

5.1 Not applicable

BIBLIOGRAPHY

(1) ASPR - Armed Services Procurement Regulations

(2) Defense Standardization Manual 4120.3-M - Standardization Policies, Procedures and Instructions.

(3) Department of Defense Directives;

(a) DOD-D-4155.11 - Improved Management for Quality and Reliability Assurance of Material.
(b) DOD-D-5010.19 - Configuration Management.
(c) Proposed DOD-D - Improved Management of Metrology and Calibration Programs.

(4) Department of Defense Instructions;

(a) DOD-I-4155.13 - Quality Control and Reliability Management at Supply and Storage Depots.
(b) DOD-I-4155.15 - Quality and Reliability Assurance at Depot Maintenance Activities.

(5) Department of Defense Handbooks;

(a) H53 - Guide for Sampling Inspection.
(b) H106 - Multi-level Continuous Sampling Procedures and Tables for Inspection by Attributes.
(c) H107 - Single-level Continuous Sampling Procedures and Tables for Inspection by Attributes.

(6) Military Standards;

(a) MIL-STD-105 - Sampling Procedures and Tables for Inspection by Attributes.
(b) MIL-STD-109A, - Quality Assurance Terms and Definitions.
(c) MIL-STD-721 - Definitions of Effectiveness Terms for Reliability, Maintainability, Human Factors, and Safety.

(7) Military Specifications;

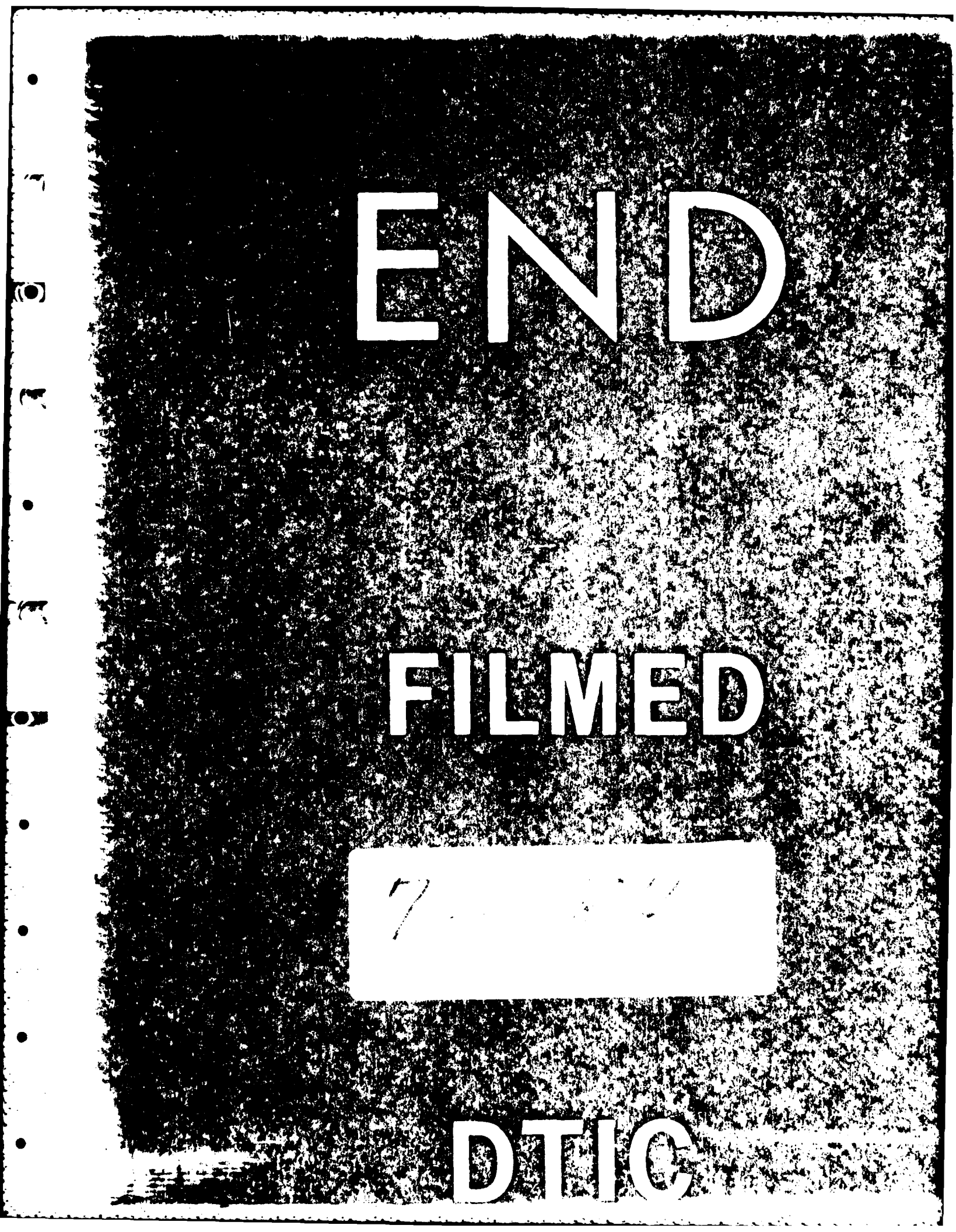
(a) MIL-Q-9858 - Quality Program Requirements.
(b) MIL-I-45208 - Inspection System Requirements.
(c) MIL-C-45662 - Calibration System Requirements.

Custodians:
Army - EL
Navy - SH
Air Force - 23

Review activities:
Army - EL
Navy - SH, AS, EC, SA, OS, YD
Air Force - 23

Preparing activity:
Navy - SH
(Project MISC-0437)

*U.S. GOVERNMENT PRINTING OFFICE: 1976- 603-766.5274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