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THE CONTRACTING WORLD TURNED UPSIDE-DOWN: THE PREPRODUCTION EVALUATION CLAUSE AND ITS AFFECTS ON TRADITIONAL RISK ALLOCATION METHODS

A Thesis

Presented to

The Judge Advocate General's School, United States Army

The opinions and conclusions expressed herein are those of the author and do not necessarily represent the views of either The Judge Advocate General's School, The United States Army, or any other government agency.

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United States Army

42ND JUDGE ADVOCATE OFFICER GRADUATE COURSE

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THE CONTRACTING WORLD TURNED UPSIDE-DOWN: THE PREPRODUCTION EVALUATION CLAUSE AND ITS AFFECTS ON TRADITIONAL RISK ALLOCATION METHODS

by Major David C. Hoffman

ABSTRACT: The U.S. Army Materiel Command developed the Preproduction Evaluation (PPE) clause in the late 1960's. The clause requires a contractor to review and correct specification deficiencies during the mass production of an end item. The Army believed that the clause would shift the risks of deficiencies in contract specifications to contractors and reduce the number of delays and change orders in initial production contracts. This analysis examines the Army's success in accomplishing those goals. It reviews typical risk allocation practices in Government contracting and discusses how the PPE clause has altered those practices. It also examines the validity of some of the contractors' complaints concerning the clause and its implementation.

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I. Introduction

Can the Government do that? Can it impose a clause that places many of the Government's normal risks on the contractor? That was my initial reaction when I first noticed the Preproduction Evaluation (PPE) clause.[1] Several appeals are pending before the Armed Services Board of Contract Appeals involving the PPE clause.[2] Contractors are complaining about virtually every aspect of the clause. They are upset about the amount of risk that the clause forces a contractor to assume. They complain about the Government's broad interpretation of the clause. They even allege that the PPE clause eliminates their rights under the standard Changes clause.

This analysis will look at the limits of the PPE clause and discuss the validity of the contractors' complaints. It will review some of the normal risk allocation techniques used in Government contracting and discuss how the PPE clause alters those techniques. It will look at the scope of the effort required under the PPE requirement and its relationship to the Changes clause. It will look at some of the administration difficulties that the Government will encounter with the clause. Finally, this analysis will respond to some of the contractors' complaints about the PPE clause.

II. The Preproduction Evaluation Clause.

A. Background.

The PPE clause is an expansion of the "Production Drawing Changes" (PDC) clause[3] which the Army Signal Corps used as early as 1953.[4] Under the PDC clause, the contractor must check the Government furnished drawings and resolve any errors the contractor finds before proceeding with production. The contractor is responsible for any costs resulting from an inadequate check of the drawings. The Government, however, is responsible for the costs of any changes to the contract requirements that are caused by the review.

In *Coditron Corp.*,[5] the Armed Services Board of Contract Appeals affirmed the Army's use of the PDC clause. It held that the contractor is responsible for all costs resulting from deficiencies in the specifications that the contractor should have discovered by a reasonably thorough check of the drawings. The Board noted that the PDC clause "does not absolve the Government from liability for drawing errors which cannot be detected by a reasonably thorough check of the drawings before proceeding to assemble the units. However, the clause is a warning that the contractor must review the drawings with reasonable thoroughness and detect and resolve discrepancies before incurring assembly costs."[6]

In 1970, the Army Materiel Command (AMC) published AMC

Pamphlet 715-6 which it developed under the AMC Program for the Refinement of Material Acquisition Process (PROMAP-70).[7] This pamphlet provided information and guidance on the use of what the pamphlet described as "a recent innovation in current contractual techniques."[8] That recent innovation was the PPE clause. The pamphlet[9] indicates that Frankford Arsenal developed the "Basic PPE clause"[10] in 1965 and used it "on a number of contracts."

The PPE clause goes beyond the PDC clause by placing responsibility for the accuracy of the specifications upon the contractor. Like the PDC clause, the PPE clause warns the contractor of possible deficiencies in the specifications and requires a preproduction review of the specifications. Unlike the PDC clause, the PPE clause requires the contractor to include the price of the review, and any changes that result from the review, in its contract price. It also requires a more in-depth review of the specifications and makes the contractor responsible for latent errors, as well as patent errors, in the specifications.

B. Elements of the PPE Clause.

There are three critical elements to a PPE clause. The first involves the scope of the work expected under the clause. The clause identifies the parties' understanding of the status of the specifications at the time they enter into the contract. This understanding is set forth in a cautionary statement in the PPE clause.[11] It indicates that the Government prepared and checked the

specifications under accepted engineering practices and confirmed the design through the manufacture, inspection, and testing of prototypes. The cautionary statement also assures the contractor that the Government is unaware of any deficiencies, but due to previous experience, it is reasonable to assume that the technical data may contain deficiencies. As discussed later,[12] this understanding of the parties places a limit upon the scope of the risks that the contractor assumes by limiting the extent of design effort the contractor is expected to perform.

The second element of a PPE contract is the requirement for a thorough review of the specifications. The contractor must perform a detailed review of all technical data and identify any discrepancy which may preclude practical manufacture or assembly of the item to be manufactured. The review is not limited to a review for the obvious errors that were to be detected under the PDC clause. It includes errors or omissions that may not be apparent until the contractor begins to manufacture the end item or perform final inspections on the item.

The contractor is usually responsible for seven categories of changes under the Basic PPE clause. Each change is of a type or nature that a contractor could expect to experience in an initial production of a technical data package. Those changes are: 1) the attainment of functional or performance requirements specified; 2) the attainment of compatibility between quality assurance

provisions and mandatory physical or functional requirements; 3) the attainment of compatibility between the Engineering Parts list and other technical data; 4) the correction of impossible or impractical manufacturing conditions; 5) the correction of impossible or impractical assembly conditions; 6) the procurement of physically and functionally suitable purchase parts and materials; and 7) the correction of errors in the specification where correction provides for greater compatibility with existing detailed design.[13] While the name "Preproduction" clause implies that the contractor must complete the detailed review before production begins, the contract clause demands that the review and correction of the specifications continue throughout the production and inspection phase.

The third element of a PPE clause is the requirement that the contractor include the total cost of its anticipated PPE effort in its original contract price. The PPE concept may only be used in fixed-price contracts.[14] Under the PPE clause, the contractor must make changes to the drawings and its production line without an equitable adjustment to the contract price or delivery schedule. As stated in AMC PAM 715-6:

> The distinctive feature of the PPE contract is that any engineering change which may be found necessary in manufacture or assembly to enable the contractor to meet the requirements of the end item specification must be accepted without additional cost to the Government and

without delay in delivery, i.e., without recourse to the Changes article of the contract.[15]

The requirement that the contractor perform this effort under a predetermined price places the risk of costs in excess of the contractor's estimate solely on the contractor.

C. Purpose of the PPE Clause.

The primary purpose of the clause is to increase the probability of a success for an initial production contract by shifting responsibility from the Government to the contractor for deficiencies or errors in the specifications.[16] The Army Materiel Command developed the PPE clause due to a perception that the courts have expanded the role of the Government warranty of specifications by demanding error free production packages.[17] There was concern for the high incidence of claims[18], and the perceived problem of "buying-in." This concern is evident in the following statement:

> The certainty of engineering changes, particularly in initial production contracts, has too often resulted in the submission of bids which are not based on a realistic analysis of production costs, but rather on a sharply sophisticated analysis of potential reimbursement by the Government for the cost of engineering changes - a reimbursement which must be arrived at through noncompetitive negotiation and often under subtle, but nonetheless real, threat of nondelivery.[19]

The intent of the PPE clause was to "share with industry the responsibility for minor errors and omissions" in a new Technical Data Package (TDP) and to "relieve the Government of the excessive costs and delays associated with the introduction of numerous minor engineering changes."[20]

Typically, in an initial production contract, the Government uses a technical data package that it developed through various stages of research and development and tested in an Advanced Production Engineering (APE) contract. In an APE contract, the Government hires a contractor to "prove-out" the design by manufacturing one or more prototypes. The contractor builds the prototypes through low rate production methods. There is no need for a contractor to establish a production line when it produces only a few items. The production methods used for prototypes do not always work in a high volume production, or may be too costly for mass production assembly lines. During the manufacture of the prototypes, the contractor is expected to suggest changes to the design that could help in the successful mass production of the item. Upon completion of the prototypes, the Government inspects and tests the prototypes to assure that the resultant product meets the dimensional and functional requirements.

This APE process is not perfect. Rarely does the process find all the deficiencies in a technical data package. "Not even the best managed APE project of moderate complexity will produce a

Technical Data Package of such perfection that a PPE contract for initial production could not be justified."[21] Without a PPE clause, numerous engineering changes and price increases often delay the initial production of an item.[22] The Government intended to eliminate many of the changes and delays that occur in the initial production contract by the implementation of the PPE clause.

The contractor's performance of its PPE obligations under a predetermined price encourages it to economize the number of changes it makes to the specifications. If the contractor spends less on its PPE effort, then the contractor earns more profit on the contract. There is relatively little chance that the contractor will propose unnecessary changes under a PPE contract. The contractor must, however, make those changes that aid it in the mass production of the item since it is also contractually required to mass produce the item. The PPE clause relieves the Government of much of the excessive costs associated with numerous engineering changes.

The PPE concept also expedites significantly the time it takes to implement the many routine engineering changes that are inevitable in an initial production. In 1969, the Comptroller General expressed concerns that, in view of the risks shifted to the contractor, it was essential that the Government act promptly in its consideration of proposals for change under the PPE clause.[23] Most PPE contracts since that decision have used an automatic

approval provision[24] to eliminate the possible delays in the approval process. The automatic approval provision allows a contractor to assume that a proposed change is acceptable to the Government if the Government does not reject the proposal within 15 days.

The contractor may depart from the specifications under the PPE clause if it can show an incompatibility in the design or technical data and developed an alternative. With the automatic approval provision, the contractor may implement the change within 15 days. This expedited process places extreme demands upon the responsiveness of all parties in the contract, but saves both the Government and the contractor time and money.

An important goal of the PPE clause is to discourage contractors from "buying-in."[25] Too often, contractors bid low on initial production contracts knowing that many changes will be necessary to complete the contract. When the parties eventually negotiate those changes under the Changes clause, the contractor benefits from noncompetitive negotiations and may recoup any losses that may have resulted from its original bid. This practice results in prices bid in a competitive procurement that should not be a valid basis for award.[26] The PPE clause eliminates many of these abuses. The contractor must implement many of the required changes under its original contract price. The PPE clause prevents the recoupment of low bids through inequitable adjustments.[27]

The PPE concept also encourages the most qualified and knowledgeable suppliers to bid on contracts and discourages the unqualified suppliers[28]. The PPE contract requires a certain level of engineering effort that some contractors do not have sufficient staff to perform. Many small machine shops do not maintain a staff of sophisticated engineers capable of dissecting a complex design for errors in dimensions and tolerance stack-up. A detailed design specification may, however, tempt that same contractor to make an offer on a solicitation without the PPE provision that it would not attempt with the clause.

The engineering effort required for an initial production contract may be no different than the effort in a contract with a PPE clause. In an initial production contract, the contractor often must develop engineering change proposals under the Changes clause to fix any deficiencies in the specification. Since the engineering effort is not a line item of the contract, as it is in the PPE contract, contractors may bid on the contract under a misapprehension that it will not require such an effort. This results in a contractor getting a contract that is incapable of performing the necessary engineering analysis.

D. The Contracting World Turned Upside Down.

The PPE clause dramatically changes the traditional contracting relationship between the Government and the contractor. The Government enters a contract with a "design specification,"[29]

and gets the benefits of a "performance specification.[30]" This seemingly eliminates the Government's implied warranty of its specifications. In addition, the contractor must perform a certain amount of engineering or design effort and assumes all the cost risks for that effort under a fixed-price contract. To make matters worse, the contractor must perform the changes within its original bid price - changes for which it would ordinarily receive an equitable adjustment under the Changes clause.

Contractors do not like these changes. In 1970, the Chairman of the American Bar Association's Public Contract Law Section wrote a letter to the Department of Defense[31] protesting the use of the PPE clause.[32] In that letter, the Chairman characterized the PPE clause as "an improper combination of traditional concepts."[33] He indicated that it was unrealistic to expect contractors to estimate accurately during the solicitation stage of the contract the costs of all deficiencies which may reasonably be discoverable only during contract performance.[34] He also expressed a concern for the arbitrary manner in which the military uses contractual provisions to "eliminate one of the most fundamental protections afforded to contractors under the 'Changes' clause; namely equitable adjustments for any increased costs of, and time required for, contract performance caused by the government drawing errors, design deficiencies, etc."[35] The Chairman concluded the letter by asking the military to defer using the provision until they received comment from the public and industry.[36]

To understand the affect the PPE clause has upon traditional contract relationships, it is important to look at the typical risk allocation techniques used in Government contracting. After summarizing some of these techniques, we will then address the affects of the PPE clause on those allocation techniques.

III. Traditional Risk Allocation Methods.

The allocation or risk between the Government and the contractor is one of the most important functions of a contract.[37] Contractors frequently encounter problems during the performance of a contract that substantially increases the costs they will incur. Some contract provisions distribute the risks of many of these additional costs among the parties. Other risks that contract clauses do not specifically address may be allocated through legal principles recognized by the boards and courts.

Government contracting uses a wide variety of techniques to assign risk between the Government and the contractor. Government personnel begin to allocate risks at the earliest stages of acquisition planning with the determination of the agency need. The manner in which an agency defines its need and the type of specification it uses to express that need affects materially the way the contract assigns risk. An agency's selection of a pricing arrangement or contract type is the most basic and effective method to distribute risk. Likewise, the parties may include clauses in the contract that address specific contingencies and assign

responsibility for those contingencies.

The PPE clause is an alteration of normal risk allocation techniques. It affects all levels of normal risk distribution. The clause alters the warranty of specifications, and materially increases the risks associated with a fixed-price contract. This section discusses some of the common methods of risk allocation associated with Government contracts.

A. Nature of the Specification.

A specification is a description of the Government's need in sufficient detail to describe the contractor's potential obligation under the contract. It serves as a basis for evaluation of the resultant product or performance.[38] "The specification establishes rules, provides methods, and outlines the course of performance that is to be followed during the life of the contract."[39] In determining how to define a Government need, Government personnel face the problem of how much specificity that they should include in specifications.

The Government must balance certain conflicting interests to determine how much detail to put into a specification. It must put sufficient detail in the specification to allow a proper comparison of the bids or proposals in a competitive procurement. "Specifications must define the product to be contracted for in terms sufficiently definite to assure that every bid made in

compliance therewith will be for substantially the same product."[40] Specifications also must provide enough detail so that contractors who cannot provide engineering or design services can compete on acquisitions. Design specifications also insure uniformity, interchangeability, and standardization.[41]

The Government must balance these interests, however, against a need for flexibility in design to encourage innovation and the development of new technology. It also must balance those interests against the danger of specifying so many details that competition is reduced and only one product can fulfill the requirement.[42] Thus, Government personnel must walk a tight-rope in describing the agency need. They must choose between flexibility and standardization, uniformity and the stagnation of technology. The overriding goal is to express the agency's need in a manner that promotes competition and satisfies the minimum needs of the agency.[43]

1. Types of Specifications. It has long been recognized that there are three types of specifications: design specifications, performance specifications, and functional[44] specifications.[45] The Armed Services Board of Contract Appeals (ASBCA), in *Aerodex, Inc.*, described a design specification as follows:

> There are design specifications in which are stated precise measurements, tolerances, materials, in-process and finish product tests, quality control and inspection

> requirements, and other information. With regard to design specifications, the Government accepts general responsibility for design and related omissions, errors, and deficiencies in the specifications and drawings. [citation omitted][46]

The Court of Claims observed in *J.L. Simmons Co. v. United States* that design specifications "set forth in precise detail the materials to be employed and the manner in which the work was to be performed, and the plaintiff was not privileged to deviate therefrom, but was required to follow them as one would a road map."[47]

On the other hand, the Courts define a performance specification as follows:

> There are also performance specifications, in which are stated the performance characteristics desired of the item, e.g., a vehicle to attain a speed of 50 miles per hour. In such specifications, design, measurements, etc. are not stated nor considered to be of importance so long as the performance requirement is met. Consequently, where an item is purchased by a performance specification, the contractor accepts general responsibility for design, engineering and achievement of stated performance requirements. He has general discretion and election as to detail, but the work or product is subject to the Government's reserved right of

final inspection, and approval or rejection of the work or product. [citation omitted][48]

In *Inlet Co., Inc.,* the board described the following characteristics of a performance specification:

> We believe the following circumstances are indicative of a performance type specification: lack of detailed, step-by-step instructions on drawings or in specifications; reference to a standard product; a required guarantee of design; requirement that a representative of the manufacturer observe installation by a third party to assure that the system was not damaged or its intended performance abilities changed by poor installation; . . . final testing of the system by such unspecified means as would demonstrate the "satisfactory functional and operating efficiency" of the system.[49]

Finally, a functional specification describes the work the contractor must perform in terms of the end purpose or the Government's ultimate objective rather than the manner in which the contractor is to perform the work. It describes the ultimate need or objective without specifying any particular approach or type of product the contractor should use.[50] A functional specification is supposed to permit the widest possible competition by specifying the result, but leaving to the contractor how it is achieved.[51]

The functional specification has become the preferred type of

specification due to its perceived ability to stimulate competition and purchase advanced technology. "Congress has enunciated a policy that agencies 'require descriptions of agency requirements, whenever practicable, in terms of functions to be performed or performance required.' [citation omitted]"[52]

2. Defective Specifications. Defective specifications arise from a wide variety of situations. Problems may occur in the performance of a contract that result from some error or omission in the contract specification. Questions may arise about the interpretation of certain ambiguities contained in the contract. A contractor may complain that certain materials or components specified in the contract are not commercially available or that it cannot obtain them within enough time to meet the required delivery schedule. The Government may possess certain details or technical information that it fails to convey to the contractor which the contractor believes is necessary to complete the contract. Finally, the contract may contain certain requirements that are impossible or impracticable to attain due to the materials, processes, tolerances, or a combination of all of these factors in the specifications.

These include only some of the scenarios that are included in the broad class called defective specifications. "[D]efective specifications are defined as those specifications (and drawings) which contain errors, conflicts or omissions which prevent

performance completely or, at least, in the manner contemplated by the parties to the contract."[53] All of these problems may result in adjustments to the contract price or delivery schedule. The adjustment can be in the form of an equitable adjustment in favor of the contractor, or as a downward adjustment in favor of the Government for accepting waivers or deviations from the contract requirements. In the most severe cases, the Government may terminate the contract.

The equitable adjustments resulting from these problems are "probably the most liberal of any given in the constructive changes field."[54] When these types of problems arise, there is an economic incentive to place the blame for the contractual failures on the opposite party. Determination of which party bears the burden of these problems requires an analysis of which party assumed the risk of the difficulty and an understanding of the Government's warranty of its specifications.

3. Government's Implied Warranty of Specifications. Every contract imposes upon each party a duty of good faith and fair dealing in its performance and in its enforcement.[55] Implied warranties impose upon the Government this duty of good faith and fair dealing by compelling obligations that are not specifically written into the contract. It requires the Government to assume certain risks, out of fairness, that are not usually assumed by the contractor.[56] When applied to Government specifications, this duty

of fair dealing imposes risks flowing from the accuracy and completeness of information within those specifications.

The United States Supreme Court first recognized this obligation in its decision in *United States v. Spearin*.[57] In this benchmark case, the contract required the contractor to modify a storm sewer in accordance with Government plans and specifications. When that sewer failed, the court held:

> . . . [O]ne who undertakes to erect a structure upon a particular site, assumes ordinarily the risk of subsidence of the soil. . . . But if the contractor is bound to build according to plans and specifications prepared by the owner, the contractor will not be responsible for the consequences of defects in the plans and specifications. . . .
>
> . . . [T]he insertion of the articles prescribing the character, dimensions and location of the sewer imported a warranty that, if the specifications were complied with, the sewer would be adequate. This implied warranty is not overcome by the general clauses requiring the contractor, to examine the site, to check up the plans, and to assume responsibility for the work until completion and acceptance. [citations omitted][58]

The Supreme Court recognized that it was unfair to hold a contractor responsible for failures that were a result of inaccuracies with the specifications - inaccuracies that the

contract bound the contractor to follow. Thus, the Court recognized the principle that the Government impliedly warranted the detailed specifications that it inserts into contracts.

The basis for the implied warranty is the Government's responsibility for preparation of the specifications.[59] It is unnecessary for the contractor to show that the Government had any superior knowledge. The ASBCA observed in *Consolidated Diesel Electric Corp.*, that:

> The Government's implied warranty of the adequacy of its specifications is based on its responsibility for the specifications rather than any presumed "superior knowledge" in the sense of greater expertise. When one of the parties to a contract undertakes to prepare the specifications, that party is responsible for the correctness, adequacy and feasibility of the specifications, and the other party is under no obligation to check and verify the work product of the party who assumed responsibility for preparation of the specifications, even though he may be as much or more of an expert than the party who prepared the specifications.[60]

The Government warranty is independent and requires no proof of any Government fault or negligence, but originates solely from its undertaking to prepare the detailed specifications.[61]

To prove a breach of an implied warranty of specifications, the contractor must establish two basic elements.[62] First, the contractor must prove that the Government specified the precise manner in which it was to perform the contract. To prove this element, the contractor must show that the contract stated the requirement in the form of a design type specification which left the contractor no discretion concerning the manner of performance. Second, the contractor must show that as a result of performing in exactly the manner specified, problems occurred that prevented or delayed performance. The problems must be due solely to the manner of performance specified by the Government. While this analysis sounds simple, its application is rarely as simple as it sounds. The problems with the application of this analysis usually stem from what at first blush appears to be the easiest stage of the analysis - identification or characterization of the type of specification.

As discussed above, the Government does not always specify its requirements through detailed specifications. Functional and performance specifications state the Government requirements in terms or characteristics that leave the manner in which the contractor attains these goals to the discretion of the contractor. If the Government leaves the choice of the manner of performance to the contractor, the Government assumes no implied warranty of the specifications.[63] As the Board said in *Inlet Co., Inc.*, "If the specifications were performance in nature, then there obviously is

no such warranty, but, quite the contrary, evidences of the Government's intention not to perform detailed design but to expect that service from the contractor."[64] Under such specification types, the implied warranty does not attach.

The Government, however, rarely specifies its needs in terms of pure design, performance, or functional specifications, but uses mixtures or composites of each.[65] "[A]lmost all contracts contain mixed specifications including elements of all three types."[66] The first step of the analysis, therefore, cannot end with a general characterization of the contract specifications as a whole.[67] When there is a "composite" of two or more types of specifications, "*it is necessary to test each portion of the specification, insofar as responsibility is concerned*"[emphasis added].[68]

It is usually very easy to classify the general character of a specification. A contractor's claim, however, cannot rest on that general characterization.[69] It must analyze that portion of the specification which the contractor claims is defective to determine whether it was a design requirement or a performance requirement.[70] The difficulty with such an analysis stems from how a specification conveys the performance requirement. Design requirements are easy to identify because they always meet the classic definition of "detailed" specifications. They tell the contractor what to do and how to do it. The Government may state performance requirements, however, in very general terminology. In

addition, performance requirements may be completely absent from the specification, but remain a requirement of the contract.[71] Performance requirements may be implied.[72]

A frequent example of implied performance requirements occurs when the Government expresses its needs through end item drawings.[73] Under this form of specification, the Government leaves the manufacturing processes up to the contractor who is responsible for exercising a reasonable amount of expertise and know-how to manufacture the item.[74] The Board observed in *Monitor Plastics Co.*, that:

> The contract specifications described an end product. The size given is the size of the final product after complete fabrication. How the finished product is to be manufactured, except for the vacuum pouring of the rubber, is left to the contractor's discretion and know-how. There is nothing in the contract which tells the contractor what tools to use or how to use them. He is not told how to mix the chemical components for the rubber in single, continuous, or multiple mixes. Thus the contract specifications describe what was to be made, but left to the contractor's devices generally how to do it. The evidence is not sufficient to show a design defect as distinct from a processing difficulty.[75]

Under specifications of this type, the contract does not state the performance requirement. The process chosen by the contractor is,

however, a requirement that it must accomplish to complete the contract. If the problems that a contractor encounters arise out of its choice of processing techniques, or its improper performance of these processes, then the problems fall outside the Government's warranty of its specifications.[76]

The Government typically uses end item drawings to specify the fabrication of metal, plastic, and rubber components. The Government specifies the dimensions and tolerances of the end item, but leaves it to the contractor's discretion how it will form the material to meet those requirements. The contractor must determine how it will fabricate the raw material, like a flat sheet of metal, into the properly shaped end item. This often involves a great deal of engineering effort, the design of fixtures, tools and appliances, and the development of manufacturing techniques to cut and weld the metal into the dimensions required. The contractor must use its expertise to predict how the material will react to each fabrication process and to develop techniques to avoid dimensional distortion of the material. All of these requirements fall under the contractor's "design" requirements and fall outside of the Government's warranty of the specifications. These efforts are not research and development if they can be accomplished through processes that are within the general knowledge or practice of the industry.[77]

Once the contractor shows that the problem resulted from

design specifications, it must then prove that it discharged its responsibility by executing the Government design in a workmanlike manner.[78] Design specifications do not require a contractor to test the adequacy or feasibility of the design before or after bidding.[79] If the contractor performed in compliance with the detailed specifications and the design did not produce an adequate result, the contractor should receive an equitable adjustment. The adjustment may include the costs of extra work performed, delays caused, or added operations to bring the product back into conformity with the contract requirements.[80]

B. Pricing Arrangements.

One of the most effective means of assigning risk in a Government contract is through the use of various prescribed pricing arrangements or contract types.[81] A pricing arrangement is "a basis agreed to by contractual parties for the payment of amounts for specified performance."[82] It allocates the risk associated with the cost of performance and determines which party is responsible if the costs exceed those projected. There are two basic forms of pricing arrangements: fixed-price contracts, and cost reimbursement contracts.[83]

In a fixed-price contract, the contractor agrees to perform a specified amount of work (i.e., delivery of an end product) for a predetermined price.[84] A fixed-price contract provides the maximum incentive to the contractor to reduce costs. The contractor will

receive the contract price without regard to the actual costs it expends to perform the contract. If its costs exceed the contract price, the contractor will incur a loss. If its costs are lower, the contractor will earn a profit. The fixed-price contract also imposes the greatest financial burden on the contractor since it usually receives payment for only completed and accepted work.[85]

Conversely, in a cost reimbursement contract, the contractor receives all of the allowable costs that it incurs during performance of the contract.[86] The contractor does not guaranty that it can complete the work within any cost ceiling, but merely that it will notify and receive approval from the Government before exceeding the ceiling.[87] In fact, there is no guaranty that the contractor will complete all of the work called for in the contract - only that it will perform work so long as the Government continues to pay. Ordinarily, a contractor will receive either a set fee that does not vary or a fee that the parties will adjust slightly based on the contractor's efficiency of performance.[88] Under these types of contracts, the Government bears the financial risks of cost overruns, and the contractor bears only the risk of continued performance with no additional fee.[89]

To determine how much of financial risk to allocate to the contractor, the Federal Acquisition Regulation recommends that the parties consider such factors as the degree of stability of the design, the complexity of the requirement, the length of

performance, and the technical and financial capability of the contractor.[90] The Government's goal is to place enough risk on the contractor to cause the contractor to perform efficiently and economically.[91] The Government must, however, weigh this incentive for efficiency against the risk of overpayment for uncertainties that may never occur.

While there are some uncertainties in any situation in which the parties set a price in advance of performance, use of a fixed-price contract implies an ability to identify the relative areas and degrees of uncertainty. "It also implies that these uncertainties are relatively few in number and that their occurrence during contract performance will not or should not jeopardize the contractor's ability to deliver the product or perform the service required by the contract."[92] If the uncertainties rise to a level that it is no longer possible to predict them with any degree of certainty, then a cost reimbursement arrangement may be necessary to protect both the Government and the contractor.

During the life cycle of a major system, changes occur that favor different contract types in later stages of development than used at the outset.[93] The development of a more stable design often results in a reduction of uncertainties in later periods of the life of the system. For example, during the research and exploratory development stage of a major system, the parties

usually encounter a lack of definitive requirements and an inability to measure the technical objectives. This results in an inability to measure risk. Acquisitions at this stage of the development of a system usually lack a competitive marketplace and price is not a significant source selection criteria. Under these circumstances, the Government usually uses cost reimbursement contracts in which it assumes the greatest risks. The Government incorporates pricing arrangements like the Cost-Plus-Fixed-Fee or Cost-Plus-Award-Fee into the contract.[94] Usually, the Government will not use incentive type contracts[95] and fixed-price contracts[96] at this stage because targets and costs are difficult to determine.

As a system advances from the developmental stages into prototype and low rate production contracts, the Government begins to incorporate the concepts derived from the research and development into an operational system. The efforts shift from advancement of the overall concept of the system to development of manufacturing techniques and equipment. As the project shifts toward the manufacturing phase, uncertainties become more predictable and parties can start setting realistic, measurable targets. At this stage, the parties may establish meaningful incentives that properly harness the contractor's basic motivational factor - profit.[97] The contractor should begin to assume a reasonable degree of the cost responsibility as soon as possible under incentive and fixed-price contracts.[98]

There is no magic formula for selecting a pricing arrangement. Such a determination requires the exercise of sound judgement[99] and a careful analysis of many factors by contracting personnel. When a reasonable basis for a fixed-price contract exists, the regulations[100] demand that the Government must use it. "Sound procurement requires use of the right contract type. The best, most realistic, and reasonable price in the world (for the particular requirement at hand) may turn sour if the contract type is wrong."[101]

C. Contract Clauses.

1. Standard Clauses. The Government allocates risks by including many standard clauses in a contract. The Suspension of Work clause,[102] Delay of Work clause,[103] and the Stop Work Order clause[104] all provide for the allocation of duties and risks should the Government act in a manner that delays performance of the contract. The Government Furnished Property clause[105] assigns the risk of loss or damage to Government-furnished property and enables the parties to adjust the contract price if the property fails to function in the manner intended. Likewise, the Default clause[106] permits the Government to terminate contracts and seek damages if contractors breach their obligations under the contract.

One of the most important standard clauses to the allocation of risks in Government contracts is the Changes clause.[107] The Changes clause permits parties to address problems that the

contract does not specifically address elsewhere. It allocates the costs of those problems to the appropriate party.[108] The Changes clause also permits the Government to change the terms of a contract unilaterally[109] while allowing the contractor adjustments to the contract price or delivery schedule through an equitable adjustment.[110]

Change proposals may originate with the Government or the contractor. In fact, the Government often encourages contractors to suggest changes in the interest of improving the quality and performance of the supplies and services it purchases. Despite this encouragement, much of the Government acquisition community suspects contractors of improperly using changes as a means of increasing their profits on Government contracts.[111] A contractor is usually in a distinctly better bargaining position while negotiating change orders than it was during the negotiation of the original contract price. The parties may negotiate the original price in a competitive environment. The negotiation of an equitable adjustment, however, is always sole source and rarely receives the affects of a competitive marketplace.

One method the Government uses to limit the influence of the contractor's improved bargaining position is to encourage forward pricing. FAR 43.102(b) states:

> Contract modifications, including changes that could be issued unilaterally, shall be priced before their

> execution if this can be done without adversely affecting the interest of the Government. If a significant cost increase could result from a contract modification and time does not permit negotiation of a price, at least a maximum price shall be negotiated unless impractical.

A forward priced modification requires a contractor to assume the risk that it can perform the change within the price negotiated - in effect, a fixed-price modification. If the Government fails to price a change before the contractor completes the work, it must adjust the contract price by the actual costs incurred by the contractor - in effect, the creation of a cost reimbursement transaction. Sometimes, the Government may intentionally wait until the contractor incurs its costs before pricing a change so it need not pay for uncertainties. More often than not, however, the parties fail to execute changes bilaterally because they disagree over the price of the change.

2. Exculpatory Clauses and Disclaimers. An exculpatory clause is "a contract clause stating that one of the contracting parties is not liable upon the occurrence of some specified event."[112] In Government contracts, the Government typically uses an exculpatory clause to warn the contractor of potential problems it may encounter with the contract and, through that warning, impose the risks of the problems on the contractor. How effective can such a disclaimer be? In *Rixon Electronics, Inc. v. United States*,[113] the Court of Claims observed "You can engage a contractor

to make snowmen in August, if you spell it out clearly, you are not warranting there will be any subfreezing weather in that month."

While the Government seldom buys snowmen in August, it does frequently try to shift risks to the contractor that would fall on the Government ordinarily. Shifting such risks to a contractor through the terms of a contract is not against public policy[114] if the exculpatory language does not relieve the Government of liability for willful misconduct.[115] But, as evidenced in the *Rixon* decision, courts do not like to transfer broad risks to contractors that the Government ordinarily assumes:

> Of course we will not be understood as awarding laurels to the Government for its procurement policy here displayed. It may perhaps be deemed reprehensible to lure a small company into a difficult contract that could only be performed successfully with full Government cooperation as to divulging the details of the technical design, to state in the small print of the IFB that such cooperation is not guaranteed, to withhold it in fact, whether purposely or from inability to do more, and to take advantage of the resultant economic weakness to extract a release for small consideration. The Government can do all this under our decisions, but it is natural that courts will try to rescue the contractor from consequences of its folly when they think they see their way clear to do so. It, therefore, becomes

> difficult to enforce a policy that the loss incurred by the contractor will remain its loss, however stoutly the Government representatives assert it. In this case, however, to shift the loss requires misapprehension of the record and the decided cases.[116]

The courts will enforce a disclaimer only if the language is sufficiently clear and unmistakable so the contractor is on notice of the potential problem.[117] Courts will not enforce disclaimers when the language is general and vague.[118] They will interpret exculpatory clauses narrowly to limit their impact.[119] For example, in *North American Philips Co. v. United States*,[120] the Government supplied contract drawings for the contractor's guidance. The contract, however, required the contractor to correct the drawings under the following provision: "The responsibility for assuring that the drawings have been corrected will be the contractor's, and the Government will not be responsible for damages or extra costs as a result of inaccuracies or omissions in the corrected drawings." The Court of Claims found that the parties believed at contract award that the drawings were reasonably accurate. The court ruled that the disclaimer did not prevent a contractor recovery when the drawings turned out to be grossly inaccurate.[121] Under this reasoning, the court would have upheld the disclaimer had the drawings been reasonably accurate as the parties imagined. When correction of the drawings required more work than the parties reasonably predicted, however, the court refused to give the

disclaimer such broad application.

Courts also consider the reasonableness of enforcement of a disclaimer. For example, they interpret the Omissions and Misdescription clause[122] to require a contractor to perform work that the Government omitted from the drawings or specifications when it is "manifestly necessary to carry out the intent" of the contract.[123] The clause "was not designed to constitute a complete shifting to the contractor of the burden of erroneous specifications."[124] The Government inserted the clause only to hold the contractor "responsible for what they knew or should have known to be erroneous specifications, precluding them from taking advantage of the Government, but at the same time protecting contractors by granting adjustments when the errors were not patent."[125] Thus, the disclaimer protects the Government from only those errors and omissions that a contractor could reasonably discover during its review.[126]

Courts also try to harmonize broad exculpatory clauses with other standard contract clauses so they render no terms of the contract meaningless. In *C.H. Leavell & Co. v. United States*,[127] the court harmonized a clause that disclaimed liability for failure to fund the contract with the Suspension of Work clause. The court found that the disclaimer precluded breach damages, but did not preclude an equitable adjustment under the Suspension of Work clause.[128] Likewise, courts consider exculpatory language

concerning underground conditions of construction sites in conjunction with the Differing Site Conditions clause[129] or Change of Conditions clause[130]. In *United Contractors v. United States*, the court stated:

> But we have held, in comparable circumstances, that broad exculpatory clauses (identical in effect with this one) cannot be given their full literal reach, and "do not relieve the defendant of liability for changed conditions as the broad language thereof would seem to indicate." [citation omitted] . . . [G]eneral portions of the specifications should not lightly be read to override the Changed Conditions clause. It takes clear and unambiguous language to do that, for the "provision sought to be eliminated, or subordinated, is a standard mandatory clause of broad applications. . ." [citation omitted][131]

Most important to the analysis of the PPE clause, courts will also harmonize an exculpatory provision with the Changes clause. In *Morrison-Knudsen v. United States*,[132] the Government tried to place the entire risk of the location of a "borrow pit" on the contractor. The court observed that it will, to the extent possible, construe an agreement so as not to eliminate the standard Changes clause or deprive it of its ordinary coverage.[133] Read in conjunction with the Changes clause, the court interpreted the exculpatory provision very narrowly, and the Government was

responsible for costs of correcting the problem.[134]

In summary, courts will enforce exculpatory provisions if their language is so clear and precise that it precludes a narrow construction unless: 1) the parties do not contemplate enforcement in that manner at the time they enter the contract; 2) enforcement is unreasonable under the circumstances; or 3) enforcement is inconsistent with significant contract provisions.

IV. The Affects of the PPE Clause on the Risk Allocation Mechanisms.

A. Can the Government do that?

As discussed above, my initial reaction upon reading a contract containing a PPE clause was "Can the Government do that?" The answer to the question is not difficult. As stated so aptly by the Court of Claims, "You can engage a contractor to make snowmen in August, if you spell it out clearly. . . ."[135] Likewise, you can hire a contractor to correct your specifications, if you can agree on a price.

Can, however, the Government require the correction of its specifications in conjunction with the full scale production of the item depicted in the specifications? In the past, the boards have been very reluctant to hold a contractor responsible for any research and development effort in a production contract.[136] Even where the contract specifically requires the contractor to review

and correct the specifications before production, the boards only hold the contractor responsible for errors that the contractor could detect by a reasonable review.[137]

The Government approach with the PPE clause is different from its approach with the Production Drawings Changes (PDC) clause,[138] the Omissions and Misdescription clause,[139] and other broad exculpatory clauses.[140] With the PPE clause, the Government specifies classes of specification deficiencies that the contractor is responsible to correct. It allows the parties to adjust under the Changes clause all other deficiencies and Government suggested changes.

In addition, the language of the disclaimer is not vague. It usually specifies those areas that are contractor responsibility and those areas that are Government responsibility. While the clause contains a broad disclaimer, the clause sufficiently defines the areas of responsibility that the contractor assumes so that it is enforceable before the boards and courts.

Almost as soon as the Department of the Army started to used the PPE clause, the Comptroller General reviewed the propriety of the clause. In letters dated 26 December 1968 and 16 January 1969, the Dynamics Corporation of America protested to the Comptroller that the PPE clause places the responsibility for the completeness of the drawings solely upon the contractor in contradiction of the

implied warranty of specifications.[141] Dynamics Corporation also complained that the clause circumvented the Changes clause[142] and made it impossible to compete with other contractors on an equal basis due to the inability of contractors to project the cost of probable errors or defects in the specifications.[143]

In a decision dated 23 May 1969, the Comptroller upheld the use of the PPE clause.[144] The decision upheld the manner in which the Government placed prospective offerors on notice of possible errors in the technical data package and placed responsibility for identifying the errors on the contractor.[145] The Comptroller also indicated that it saw no legal impediment to how the Government required the predetermination of the costs of remedying the discrepancies in the specifications in substitution of an equitable adjustment under the Changes clause.[146] Finally, the Comptroller observed that it saw no reason to believe that it would be more difficult to estimate costs to correct the deficiencies in the specifications under the PPE clause than it would be "to estimate production costs of complex equipment procured on the basis of a performance specification alone."[147]

On at least five other occasions, the Comptroller General has considered the validity of the PPE clause or similar clauses.[148] Each time the Comptroller has ruled that the clause was permissible. The "ASPR Committee" also reviewed the clause and indicated that it requires no deviation of the standard Changes

clause and the Department of the Army may use the clause when it deems appropriate.[149] Thus, as so frequently found by the Comptroller General, the Government can do that.

B. The PPE Clause and the Warranty of Specifications.

Over the two decades immediately preceeding the development and implementation of the PPE clause, the courts and boards expanded the limits and use of the Government implied warranty of specifications greatly. Additionally, there have been significant advances in engineering drawing practices that enable engineers to use more precise techniques for dimensioning and tolerancing contract drawings.[150] Both of these factors lead to the following Government perception:

> The trend toward the attainment of perfection in the preparation of technical data has unfortunately lent false encouragement to marginal suppliers who have been unable or unwilling to recognize that even the most carefully prepared Technical Data Package cannot contain all the processing and assembly information necessary to ensure a reliably functional end item, and that competent production engineering, process planning and process control by the contractor are a necessary adjunct to the Technical Data Package. . . . Right or wrong, the persistent demand by contractors and by our courts that the Government Technical Data Package serve as a complete and error free production package has compounded the

problem of engineering change negotiation to a degree which threatens the very foundation of Government fixed-price procurement.[151]

In an initial production contract, there is only a moderate degree of confidence in the accuracy of the specifications. The Government may acquire the item under a cost-type mass production contract, or encounter the numerous delays and price increases of a fixed-price contract. The Government envisioned the PPE contract as an alternative. The drafters of the clause designed it to shift some of the responsibility and risk for updating the specifications to the contractor. They intended to limit the Government's warranty of its specifications.

Does the PPE clause eliminate the warranty of specifications? At first blush, it may seem so. The PPE concept takes a design specification and gives the contractor the ability to stray from that rigid design. The contractor can and must depart from the design requirements that are incompatible with the performance objectives. This includes requirements that are incompatible with the capability of mass production. The Government has effectively created a performance requirement out of a design specification. As the Comptroller General observed:

> [W]here the Government vests in the contractor discretion, based on its technical know-how, skill and judgement, to produce an acceptable product and permits

> a contractor to come forward with its own modifications to Government specifications with full knowledge of the perils of performance, we think the assumed risk of performance under the contractor may, and should, properly be placed on the contractor.[152]

A performance-type specification does not carry with it a Government warranty. Thus, the implied warranty is dead - they solved the problem. Wrong!

The PPE clause does not eliminate the Government's warranty of its specifications completely. The clause merely shifts many of the risks associated with the warranty to the contractor. As stated by the ASBCA, the PPE clause "modified the usual warranty of adequacy of Government-prepared designs to the extent that the appellant undertook financial responsibility for the time and effort needed to detect drawing errors, component unsuitabilities, etc., and propose feasible solutions from the standpoint of satisfying the performance specifications."[153] Under the PPE concept, the contractor is to review the specifications for a broad range of discrepancies and errors that may affect the success of its mass production of the item. That broad range of discrepancies, however, is finite. The PPE clause lists specific categories of problems for which the contractor is responsible and must develop solutions for under the fixed-price of the contract. With respect to those areas of possible discrepancies, the burden is shifted to the contractor to bear the risks if problems arise.

There are, however, other categories of possible discrepancies[154] that remain the Government's responsibility and for which the burden does not shift.

Even if the risk of defective specifications shifts to the contractor, a court may shift the risk back to the Government due to Government actions or failures to act. In its first review of a PPE contract, the Comptroller General observed that if the Government fails to act in a timely manner by approving or rejecting a proposed change, it will be responsible for any increased costs of performance.[155] Thus, delay in approval of the proposed changes could result in Government responsibility for certain costs associated with those changes.[156]

In *Therm-Air Manufacturing Co.*,[157] the ASBCA observed that the Government's reservation of the right to approve a change under the PPE clause "does not place an unlimited risk upon the contractor." In effect, the Government reserved some of the risk of the defective specifications to itself by retaining a veto power over the contractor's choice of remedy. In the *Therm-Air* case, the Government rejected a proposed meritorious solution of a specification problem and required the contractor to find an alternative solution.[158] The board found that the contractor had satisfied its obligations under the clause upon its proposal of a viable solution.[159] If the Government rejects the contractor's solution, the Government has the duty to initiate an alternative

solution or is responsible for the contractor's costs if it requires the contractor to look for an alternative.[160]

The courts will also shift any risk back to the Government that falls outside the expectations of the parties. Usually, the parties enter a PPE contract with the assumption that the specifications are basically sound, but may contain some discrepancies or errors.[161] The parties do not contemplate a major redesign effort, but only that effort that a reasonable contractor would expect when moving from a pilot production to mass production.[162] The Government remains responsible for additional design efforts beyond the assumed conditions of the specifications. This is an important exception of the PPE concept which requires further discussion later in this analysis.[163]

C. The PPE Clause and the Fixed-Price Contract.

The Government may only use a PPE clause in a Firm-Fixed-Price or Fixed-Price-Incentive contract.[164] By adding the clause to these contracts, it increases the risks of the contractor ordinarily associated with the fixed-price contract. It requires a contractor to assume the cost risks of successful manufacture of the required product and to assume the cost risks of the correction of the contract specifications, as well. In essence, the Government is buying two things: 1) a number of mass produced items, and 2) establishing the feasibility of mass producing the design of the end items.[165] The contractor must use its engineering expertise

and its production know-how to provide both the service and the product.[166]

The addition of this "service" under the predetermined price of the fixed-price contract forces a contractor to estimate its costs for the PPE effort. The contractor must try to calculate the various contingencies involved in the review and correction of specification defects. If the contingencies are too great, due to a genuine lack of confidence in the design, the contractor has two options. It can include all the contingencies in its contract price and risk not getting the contract award because its price is too high. On the other hand, the contractor may exclude some contingencies, with the hope that they will not occur, and take the chance that it will not lose money.

The Comptroller General observed that it was not unreasonable to expect contractors to predetermine the cost of the PPE effort.[167] As stated in its 1969 decision:

> Contractors are often called upon to estimate production costs on the basis of complex equipment procured on the basis of a performance specification alone, and they do so without undue difficulties. We find no reason to believe that it would be more difficult to estimate costs on the basis, as in this case, [of] a performance specification plus drawings and designs which are known to be for the most part essentially sound.[168]

The further the Government believes its specifications stray from "essentially sound," the greater the probability that the contractor will encounter these difficulties.

Based upon the importance that the Comptroller General has placed upon the assumption that the specifications are "essentially sound,"[169] it is unwise to use the PPE concept with specifications that the Government believes to be defective unless the Government specifically reveals those defects to the contractor before award. If the agency has information concerning deficiencies, they should reveal them to the contractor before bid opening to allow the contractor to evaluate the costs of those deficiencies.[170] In addition, if the Government intends to hold the contractor responsible for correction of these known deficiencies, it should include specific provisions concerning that requirement in the contract. As observed in AMC PAM 715-6: "Bidders should be given all available information concerning the history of development and testing, with particular intention to the preparation, checking and prove-out of the Technical Data Package. Nothing of significance should be withheld. The Army has no intention of selling a 'pig in a poke.'"[171]

There is always the chance that the Government will pay an excessive price for the contractor's engineering services because the contractor included too many contingencies in the contract price. The Government must weigh this danger against the costs

saved by the reduction in equitable adjustments under the Changes clause, and any perceived reduction in contract litigation. Under the PPE concept, however, the Government usually solicits the contract competitively. If the Government obtains adequate competition, proposals with excessive allowances should be "self-eliminating."[172]

D. The PPE Clause as a Disclaimer.

The PPE clause is, itself, a disclaimer. To avoid the harsh affects of the implied warranty of its specifications, the Government in the clause discloses the possibility that the specifications may be inadequate to perform the contract. Though the Government is unaware of any errors or discrepancies with the specifications, the Government disclaims their accuracy based upon its previous experience with similar contracts.[173] This PPE concept also takes one step beyond many typical exculpatory provisions - it hires the contractor to perform a special effort to correct the discrepancies. The clause transfers broad risks normally assumed by the Government which the courts have been reluctant to uphold with other disclaimers. To analyze the effectiveness of this disclaimer, we must therefore apply the rules for enforcement of exculpatory clauses that we discussed above.[174]

1. Sufficiently Clear. The clause is not general or vague. It clearly informs a prospective contractor that the Government expects errors in the specifications and that the Government

expects the contractor to find them. In fact, the PPE clause does something that similar exculpatory clauses, like the Production Drawings Changes (PDC) clause or the Omissions and Misdescription (O & M) clause, did not do. It lists the classes of errors for which the contractor is responsible.

In a contract with language similar to the PPE clause,[175] the Comptroller General observed that a contractor is ordinarily under no obligation to seek clarification of minor ambiguities, or discrepancies absent a clear warning in the contract.[176] The contractor may, however, assume such a risk.[177] The mere fact that a provision such as the PPE clause can "be construed as shifting to a contractor the assumption of risk of deficiencies in Government specifications and drawings would not of itself render the advertised terms of the contract invalid."[178]

In *Therm-Air Manufacturing* the ASBCA observed that it was evident that the Government was buying the contractor's engineering and production abilities to both correct errors in the drawings and to mass produce the resultant product.[179] The board also stated: "The text of the clause clearly indicates that appellant was required to perform this engineering and production evaluation work throughout its performance of the contract, not merely at the outset, and appellant would not be entitled to additional compensation except in cases of changes to performance requirements or other Category II type change[s]."[180] Finally, in that decision

the Board held: "In our opinion Article 11 modified the usual warranty of adequacy of Government-prepared designs . . ."[181] Thus, the courts analyzed and approved the language of the PPE clause. It is sufficiently clear to accomplish its purpose.

2. The Reasonableness of the Disclaimer. One aspect of the PPE concept that will be a regular topic for controversy and litigation is the reasonableness or extent of the disclaimer. A broad interpretation of the clause could require a contractor to bear the responsibility for virtually anything a contractor could accomplish through an engineering change proposal. If, upon completion of an item, it fails to meet a performance requirement, a broad reading of the PPE clause could require the contractor to redesign the item so it meets the performance requirement. Additionally, a broad interpretation could construe the clause to require the contractor to develop new, state of the art, production or fabrication methods if known methods prove to be inadequate for mass production of the item.

The boards and courts, however, interpret exculpatory provisions narrowly.[182] They look at the intent of the parties to determine what the parties reasonably believed at the time they entered the contract.[183] The courts will limit the scope of the disclaimer through a standard of reasonableness.[184]

Usually, the parties enter a PPE contract under an assumption

that the specifications are basically sound. This assumption is based upon knowledge that the Government developed the specifications through sound engineering practices.[185] It includes development of the design through research and development, and testing of the design through prototypes or pilot production. When the Government awards the contract, it believes that the design is capable of mass production. It is unaware of any discrepancies that may prevent the contractor from producing the item, or if it is aware of problems, it has disclosed those problems fully to the contractors. The Government, however, is aware, due to experience, that problems occur in any initial production contract. Based on this knowledge, the government disclaims the accuracy of the specifications. When the parties enter the PPE contract, they understand that the specifications are basically sound, but that the contractor must find any errors that may prevent the mass production of the item. This premise, that the specifications are basically sound, is extremely important when trying to determine the scope of the disclaimer in the PPE contract.

In 1969, the Comptroller General expressed its opinion about the scope of the disclaimer when asked whether it was reasonable or fair to expect a contractor to be responsible for correcting "latent defects in specifications provided by the Government."[186] In that protest, the contractor complained that the Government could require it to redesign certain components of the air conditioners it was manufacturing if the components did not meet

the performance requirements.[187] In its decision, the Comptroller observed:

> It appears to us that Army counsel recognizes the need to interpret [the PPE clause] in a reasonable manner. . . . The current clause is an attempt specifically to assign the risk of defective specifications to the contractor. However, we do not believe that the contractor should be expected to assume an unreasonable risk. If, for example, the amount of redesigning necessary to correct a defect is substantially greater than could reasonably have been contemplated at the time of bidding, it could well be argued, we think, that the [PPE] clause does not bar an equitable adjustment in such a case.[188]

The Comptroller recognized there were clearly limits on what efforts the Government could require a contractor to perform under the PPE clause. It defined those limits based on the understanding of the parties "at the time of bidding."[189]

In its decision in *Varo, Inc.*,[190] the Comptroller General again expressed its opinion about the scope of the disclaimer. The Comptroller held that where the technical data package was basically sound, the agency could reasonably require the contractor to assume responsibility for all design and data deficiencies.[191] When explaining the scope of the responsibility assumed, however, the comptroller stated:

> Varo contends the PPE clause as explained in the minutes

> of the preproposal conference is unreasonable in that a major design change could be required at no cost to the agency. We believe this position arises from a misinterpretation. The minutes indicate the Army stated it was unaware of any basic design deficiencies and that pilot production had been successfully completed. It then stated the contractor would have full responsibility for meeting the performance requirements including any required design changes. We believe this language clearly indicates the Army did not contemplate the need for a major redesign and the "additional design effort" would be limited to that generally to be expected when moving from pilot production to high volume production.[192]

The Comptroller relies heavily upon the parties' understanding of the status of the specifications at the time the contract is entered. Once again, that understanding encompassed the assumption that the specifications were "basically sound." To the Comptroller, the assumption, when applied to the PPE disclaimer, means that the parties do not reasonably expect a major redesign effort. The parties expect only the design effort that would ordinarily accompany an initial mass production contract.

An example of the "additional design effort" that the Comptroller might consider to be within the expectations of the parties is present in *Kasel Manufacturing Co.*[193] A contract

containing the PPE clause required the contractor to produce 254 12-ton semi-trailer supply vans.[194] During performance, the suppliers of the largest material component, a metal I-beam, discontinued use of the beam specified in the contract as a standard industry beam. The suppliers replaced the beam with a new beam that had slightly different dimensions.[195] *Kasel* complained that the incorporation of the new I-Beam would be a major design effort which was beyond the capabilities of its personnel.[196] The new dimensions affected the spacing of the holes on the I beam and required the contractor to transpose the dimensions and location of the holes on the new beam.[197]

Kasel contended that the unavailability of the contractually required I-beam caused it to perform an additional design effort that was outside the scope of the PPE clause.[198] The contractor claimed that the change should fall under the Changes clause which would entitle it to an equitable adjustment for the changes.[199] The Board denied the claim on the ground the contractor did not establish the evidentiary prerequisite that the old I-beam was no longer available.[200] However, in response to the contractor's claim that the change of the beam caused a major design change, the board stated: "[T]he evidence which, according to appellant 'shows clearly that the PPE [clause] was not applicable by its own terms,' is so wide of the mark that it does not merit further discussion."[201]

Obviously, the board felt that the PPE clause was applicable to what the contractor alleged was a "major design change." The facts illustrate perfectly the difference between what the Comptroller General referred to in *Varo, Inc.* as a "major design change" verses "that generally to be expected when moving from pilot production to high volume production."[202] When a contractor is performing a PPE contract, the Government expects the contractor to convert the design to fit the material and components that are commercially available. Such a process is necessary to mass produce the item. The conversion of the placement of the holes from the old I-beam to the new I-beam did not require an advancement of the state of the art or an intensive design effort. As shown by the board's quick dismissal of the contractor's argument, it is hard to find a better example of "additional design effort" that a contractor must perform under the terms of the PPE clause.

One final opinion exists concerning the scope of the design effort expected in a PPE contract. The ASBCA expressed that opinion in *Therm-Air Manufacturing Co., Inc.*[203] In that case, the Government hired *Therm-Air* to manufacture 708 air conditioners under a PPE contract.[204] During the manufacturing stage of the air conditioners, the contractor experienced a considerable number of failures in the motors and valves of the air conditioners. The contractor determined a lack of power caused the failure of the motors and improper placement caused the failures of the valves.[205]

Therm-Air submitted engineering change proposals under the PPE clause for an increase in the horsepower of the motors and a change in the location of the valves on the air conditioners.[206] The Government rejected the proposed solutions and asked the contractor to explore alternative solutions.[207] Ultimately, the Government determined that the *Therm-Air* solutions were acceptable.[208]

Were these changes properly submitted under the PPE clause? The contractor did not complain in *Therm-Air* that the engineering effort required to develop the solutions was outside the scope of the PPE clause. The board based its decision on the Government's rejection of an acceptable solution.[209] However the Board observed: "Appellant's contract was basically a competitively negotiated fixed price production contract, not a research or development contract."[210] By this statement, the ASBCA further limits the scope of the effort a contractor should expect to perform under a PPE contract. It should not involve research or development.[211]

The board express its opinion that the contractor "had a duty under [the PPE clause] to propose viable solutions to the types of technical problems described in the clause."[212] The Board also stated that the PPE clause "modified the usual warranty of adequacy of Government-prepared designs to the extent that appellant undertook financial responsibility to detect drawing errors, component unsuitabilities, etc., and propose feasible solutions from the standpoint of satisfying the performance

specifications."[213] The board, therefore, considered the types of changes suggested by the contractor to be within the realm of those changes the contractor had a "duty" to make under the PPE clause. It considered the increased horsepower of the motor and the relocation of the valves as the types of discrepancies that mandated the contractor's attention under the PPE clause.

During administration of PPE contract, questions concerning whether a change should fall under the PPE clause or under the Changes clause will arise frequently. A satisfactory answer must start with an analysis of the understanding of the parties about the accuracy of the specifications at the time of award. Any specific representation that the contract may require an effort beyond the effort normally expected in a PPE contract may expand the scope of the PPE requirements. If, however, the contractor discovers during its PPE effort that it must advance the state of the art, develop manufacturing techniques that are not within the general knowledge of the industry, or perform considerably more work than a contractor might reasonably expect because the specifications were grossly inaccurate, then the contractor's effort may fall outside the scope of the exculpatory provisions of the contract. Contracting officers must realize that they do not have, as the Comptroller general observed in *Varo, Inc.*,[214] "unbridled power to upgrade the delivered article at the contractor's expense."

3. The PPE Clause Harmonized with the Changes Clause. In *Southwest Marine, Inc.*,[215] the ASBCA found an exculpatory clause unenforceable because it "contravened the Changes clause." The objectionable clause in that case required the contractor to perform certain "additional requirements" without any recourse to adjustments to the contract's fixed-price for delay or disruption.[216] The Board found that the clause "deprived SWM of its right to file claim for delay and disruption under the pertinent work specifications and, therefore, constituted a deviation from the Changes clause, which was mandated for inclusion in the contract by the FAR."[217]

The effect of the PPE clause is similar. Under the PPE concept, the contractor must perform its review and correction of specification deficiencies within a predetermined price. Ordinarily, these deficiencies would entitle a contractor to an equitable adjustment under the Changes clause. But the PPE clause forces a contractor to estimate those costs before entering the contract, and eliminates those changes from the equitable adjustment provisions of the Changes clause.

In 1969, the Dynamics Corp. of America complained to the Comptroller General that the PPE concept circumvents the Changes clause and could place the contractor in the position of facing impossible performance conditions while having no recourse to the equitable adjustment provisions of the Changes clause.[218] In

response, the Comptroller stated: "We see no legal impediment to a substitution of this procedure in place of the contractor's normal remedy under the Changes clause."[219] The Comptroller also noted that the contractor still has access to the Changes clause for certain changes outside the scope of the PPE clause.[220] Also, on September 18, 1970, the "ASPR Committee" approved the use of the PPE clause without requiring a waiver to the Changes clause.[221]

In 1980, and again in 1990, the Comptroller received additional complaints from contractors that the PPE clause was an improper deviation of the Changes clause that requires approval at a higher level of the agency.[222] The Comptroller disagreed each time. In *Engineered Air Sys., Inc.*, the Comptroller stated:

> It is clear from reading the solicitation as a whole that the PPE clause is intended to be read in conjunction with the Changes clause, and the contractor will be paid for any changes to specifications, designs, or drawings under either the PPE or the Changes clause. To the extent that the contractor does not agree with the contracting officer that a particular change is covered under the PPE clause, the contractor may make a claim for an equitable adjustment in price or other relief in accord with the procedure set out in the Disputes clause. Thus, we do not believe that the Army has modified the Changes Clause by adding the PPE clause or that the PPE clause represents a deviation from the FAR-mandated clauses.[223]

Thus, the PPE clause does not eliminate the Changes clause, but works in conjunction with it. A contractor is getting paid for the correction of the deficiencies as if it performed the corrections under a change order. The difference is the contractor bears the risk of cost overruns. The contractor must estimate in advance the amount of effort it will take to perform the corrections. It does not have the benefit of charging for the work after it performs the work. The Changes clause is still necessary, however, to implement those changes that the PPE clause does cover - like Government initiated changes. If the contractor questions including a change under the PPE clause, it can raise the issue through the Disputes clause. There is no change to the application of the Changes clause, merely a shifting of the risks.

V. Administration Issues of a PPE Contract.

A. What Contracts are Appropriate for the PPE Concept?

AMC Pamphlet 715-6[224] lists three basic prerequisites for the use of the PPE concept in a contract. The first is a technical data package that contains a "detailed design." The PPE contract is inappropriate for contracts that use pure functional or performance specifications. In those situations, the contractor has broad discretion about the manner in which to perform the contract. There is no need to require a contractor to perform a detailed review of the specifications because the specific design is the contractor's. In addition, when using functional and performance specifications, there is usually no warranty of

Government specifications from which the Government needs to insulate itself.

The second prerequisite for the use of the PPE contract is a requirement that the item or system the Government is purchasing must be of at least moderate complexity.[225] Systems that lack complexity are usually simple to engineer and manufacture. In a procurement of a simplistic design, the Government expects relatively few changes. The risks that the PPE clause would transfer to a contractor are probably so minor that they are not worth the effort to maintain a PPE contract.

The final element is a detailed specification that is complete and accurate with respect to all essential functional requirements.[226] A design that fails to describe adequately the functional and performance characteristics of the end item will not be enforceable. Those characteristics, however, must be realistic. They must be characteristics that were possible in prior development efforts. Including performance characteristics in a PPE contract that the Government never attained in prior development attempts will result in failures and lengthy disputes.

While the Government developed the PPE concept for use in initial production contracts, AMC PAM 715-6 recognizes there may be occasions when the PPE concept is appropriate for older technical

data packages.[227] With the advent of the military draw-down and reduced military budget, this may, in fact, be the future of the PPE concept. It is especially appropriate for extremely old technical data packages that require up-to-date references and do not meet today's standards of interchangability. The situation is basically the same. The specifications contain a design that is basically sound, but based upon the Government's experience with old designs, it may contain deficiencies.

B. Changes Covered by the PPE Clause.

Most PPE clauses use a modified classification system than that found in Military Standard 480 (MIL-STD-480).[228] At the risk of oversimplification, a Class I engineering change under MIL-STD-480 is one that affects the form, fit, and function of the item the Government is purchasing and for which the contractor requires an equitable adjustment under the Changes clause.[229] A Class II engineering change is usually a change in documentation only. It may include such changes as an addition of a clarifying note or a substitution or addition of an alternate material.[230] Class II changes generally do not require an equitable adjustment to the contract price and the Government processes them as "No-cost" changes under the Changes clause.

The PPE clause modifies this definition significantly due to many engineering changes that are the responsibility of the contractor under the original contract price. The clause

classifies all the areas that it defines as the contractor's responsibility as Class II engineering changes. Any engineering change that may have an affect on the contract price and any Government originated engineering change is a Class I engineering change. Any engineering change that does not affect the contract price or schedule, including all changes required under the PPE clause, are Class II changes.[231]

As mentioned above,[232] the PPE clause usually contains seven categories of specification deficiencies for which the contractor is responsible.[233] The Government classifies these changes generically as "compatibility changes." Each of the categories is the type of condition that a contractor would expect to correct when hired to make a technical data package feasible for mass production. They include such changes as correcting impossible or impractical manufacturing and assembly conditions and procuring suitable components and materials. The character of each of the mandated changes corresponds to the purpose and intent of the clause.

When a contractor submits a "compatibility change," it must, under the provisions of the Basic PPE clause, assure that the changes are clearly described, essential, and do not have an adverse affect on performance, reliability, maintainability, operability, safety, or interchangeability.[234] These three requirements form the basis of the Government's grounds for

rejection of a contractor submitted change proposal.

A "non-essential change" is a change that the Government determines is not necessary because it offers little or no improvement to the end product. Nonessential changes include minor improvements to produceability, broadening the range of selected material, or proposing additional commercial sources for subcomponents.[235] The Government may require a different system of approval for "non-essential changes." It may specify a longer period for Government review of the engineering change proposals, and may exclude such changes from the automatic approval provisions. Rejection of a nonessential change, however, leaves the Government in an unusual position. The Government may be in a position of responsibility for a failure to meet end item performance requirements if the contractor can show the failure was cause by the refusal to approve the recommended change.[236] The best policy may be to approve nonessential changes unless there is a clear detrimental impact to the interests of the Government or to a future production contract.

C. Changes that Fall Within the Changes Clause.

AMC Pamphlet 715-6 recognizes that "the nature of the PPE contract demands absolute definition of those functionally essential changes which will be processed in accordance with the 'equitable adjustment' provisions of the Changes article."[237] The Basic PPE clause contains a detailed description of those changes

considered to be the Government's responsibility.[238] Unfortunately, not all versions of the PPE clause follow this practice. The versions of the clause being used by U.S. Army Tank-Automotive Command and the U.S. Army Missile Command do not contain detailed descriptions of the Government responsibility changes. These omissions can lead to misunderstandings and misapplication of the PPE provisions.

"Government responsibility" changes, or Class II changes, relate to the types of changes needed to control the interface of the item produced with other Government products or procedures. They include changes necessary to interface with other components of a weapon system and changes necessary for the logistics support of the item.[239] There are also two very important classes of "Government responsibility" changes that recognize the clear limitation on the scope of responsibility transferred to the contractor. The first includes all changes necessary when Government furnished components are other than as stated in the specifications. The second class of change is any Government initiated or approved change that requires a contractor to improve the performance or reliability of the product beyond the requirements of the original specifications.[240] These classes of changes recognize the Government's responsibility under other clauses, like the Government Furnished Property clause. They are an acknowledgement that the scope of the risk that the contractor assumes does not cover such intentional or negligent acts as

furnishing defective materials or requiring products of higher quality than required under the contract.

Where the Government suitably demonstrates confidence in the technical data package by a prototype prove-out, it may use the compatibility definition and Government responsibility definition of the PPE clause without modification. Exceptions, however, may be necessary when special circumstances or characteristics of an acquisition package place unrealistic burdens upon a contractor. The Government may need to specify other Government responsibility changes that remove from the contractor's risk certain factors that would normally fall within its responsibilities.[241] "Any tendency to place a degree of design responsibility upon the PPE contractor which would be inconsistent with a firm fixed-price or fixed-price incentive contract and specified schedule requirements should be carefully avoided."[242]

The type of changes envisioned in AMC PAM 715-6 that are exempt from the normal compatibility definition are changes with specific military characteristics that are beyond the normal range of industrial experience and would be difficult for a contractor to evaluate.[243] An example of the this type of exception is a failure of mechanical or structural components due to environmental tests conducted by the Government. These tests may include high and low temperature tests, shock and vibration tests, humidity and salt-laden air tests.[244] It may also be desirable to limit the

contractor's responsibility under the PPE effort to "manufactureability and fit" characteristics of the end item, but exclude all "performance" issues.[245]

In addition, the Government may want to exclude a component from the contractor's responsibilities so that it can maintain close control over the configuration. Due to the automatic approval provisions in the PPE clause and the inability to disapprove viable solutions without resorting to the changes clause, the Government loses a certain degree of control over the configuration of items manufactured under a PPE contract. The agency may find it necessary to exclude certain critical components from the contractors' responsibilities so that it maintains strict control over their designs. These components would likely be of such a character that a minor change in the tolerances, dimensions, or other aspects of the component would adversely affect the component or operation of the complete end item.[246] Other components that the Government may exclude are standard interchangeable or multiusage items that the Government has thoroughly tested or have a successful production history.

There is a real danger with any modification of the basic premise of the PPE concept. Any attempt to increase the scope of the contractor's responsibilities or remove certain limited items from the contractor's risk may complicate the administration and interpretation of the contract. The PPE clause is an exculpatory

provision that the courts will construe narrowly. The language of the clause must be clear and unmistakable before a board will allow the clause to alter a traditional relationships between the parties. Additionally, the parties should strive to avoid an adversarial relationship and seek a fair and timely resolution of any difference of interpretation of responsibility under the clause.

Another danger that flows from the PPE effort is the tendency to rely on the contractor to develop solutions to problems that are clearly within the Government's responsibility. Since the contractor has a staff of engineers already reviewing the technical data package and developing solutions to errors that may exist, it is very easy to look to that effort for solutions to problems that fall within the Government's responsibility. Often, the Government technical personnel actively or passively encourage the contractor's engineering staff to solve problems without the knowledge of the contracting officer.[247] The work performed by the contractor's staff ultimately will result in an equitable adjustment to the contract price that may be higher than an adjustment negotiated prior to performing the work.

D. Affects Upon Source Selections.

The only restrictions upon source selection procedures recommended by AMC PAM 715-6 is that the Government should avoid soliciting a PPE contract under sealed bidding.[248] Under a

negotiated procurement, PPE functions are usually not valuable technical evaluation factors because they do not provide a basis of discriminating between proposals. However, it is extremely important that a contractor demonstrate its understanding of the effort and its capability of complying with the requirements. There is very little that a contractor can submit in a sealed bid to demonstrate these qualifications. But in a negotiated procurement, the Government can evaluate the contractor upon the experience of its engineering staff and the cost realism of its cost estimates for the PPE effort.

A pre-award survey is a procurement technique that is indispensable in a PPE contract.[249] In addition to the factors normally considered during a pre-award survey, AMC PAM 715-6 states: "the survey team will evaluate the contractor's understanding of his responsibilities for tolerance accumulation, his proposed analytical methods, his allocation of engineering manhours with due consideration to applicable experience, and his allowance for scrapping or rework."[250] The key to the solicitation strategy in a PPE contract is to evaluate the contractor's responsibility to perform the specification analysis and mass produce the end product.

E. The Automatic Approval Feature.

The "contractor's costs and schedule are critically dependant upon expeditious approval of changes by the Government."[251] The PPE

clause provides an approval guarantee by allowing the contractor to assume approval if the Government does not reject a proposal within 15 days (or some other contractually specified time). When a contractor submits a proposal, it must determine that the proposal does not affect "interchangeablity, performance, reliability, maintainability, operability or safety."[252] Theoretically, once the contractor makes that determination, it can begin to implement the change immediately. "Basic to the PPE concept is the premise that a contractor can proceed on the assumption that a valid 'compatibility' change may be acted upon immediately."[253] Realistically, the contractor should wait until the 15 days have expired before implementing the change unless the contractor is willing to gamble on the probability that the Government will accept the change.

The automatic approval feature of the PPE clause requires a significant commitment by the Government administrative and technical staff. All levels of the contract administration team must expeditiously handle engineering change proposals. The parties must make arrangements for the immediate transmittal of all proposals directly to the technical activity that will review proposals. With today's level of automation, the contractor should provide a facsimile copy of the proposal to the technical activity on the same day they provide a hard copy to the contract administrator. The contracting officer should delegate approval authority for Class II changes to the lowest possible level that

will assure configuration integrity.

In addition to an organization structured to handle the PPE effort, there must be an appropriate mindset of the Government administration team. As stated in AMC PAM 715-6:

> In view of the demanding nature of the PPE contract, it cannot be undertaken half-heartedly. It must be strongly recommended by the development/engineering activity, and fully endorsed by the procurement and production activity, if it is to achieve its inherent advantages. It is not to be undertaken as a new procurement "fad;" nor should it be undertaken without a complete understanding by both the contractor and the Government of their respective responsibilities under the terms of the contract. There is no room in the PPE concept for the all too typical "adversary" roles of the Government and industry in fixed-price competitive contracting. The PPE contract calls for Government-industry cooperation in its most ideal form, with the mutual objective of delivering quality material on time and at a fair and reasonable profit to the contractor.[254]

Too often, it is the adversarial relationship that prevents a contract from progressing to completion in a timely manner. Without a spirit of cooperation and a genuine effort by the parties to communicate to each other, a PPE contract is full of possibilities for disputes and litigation.

VI. How Has The PPE Concept Been Challenged?

This final section will look at some of the issues raised by contractors while performing under the PPE clause. Contractors have actually raised in the appeals pending before the Armed Services Board of Contract Appeals all of the issues discussed in this section.[255] While the actual facts of the appeals will not be discussed,[256] this section will highlight the types of problems that result in these issues. Hopefully, by highlighting these issues, agencies that are administering future PPE contracts will take preventive measures to avoid the problems discussed.

A. Government Non-Disclosure of Superior Knowledge.

Like a defective specification, nondisclosure of information can cause a contractor to perform extra work and may result in a breach of the duty to cooperate.[257] It has long been recognized that a party to a contract has an implied duty to disclose vital information to the other contracting party when it has reason to know that the other contracting party does not possess the information.[258] In *Helene Curtis Industries v. United States*,[259] the then Court of Claims stated:

> In this situation, the Government, possessing vital information which it was aware the bidders needed but would not have, could not properly let them flounder on their own. Although it is not a fiduciary toward its contractors, the Government - where the balance of knowledge is so clearly on their side - can no more

> betray a contractor into a ruinous course of action by silence than by the written or spoken word.

Generally, it is the fault of the Government rather than an act or a communication that constitutes the constructive change.

Since the contractor is undertaking the responsibility of instituting all engineering changes necessary to mass produce the end product, it is vitally important that the Government disclose all information about development of the design to the contractor. AMC PAM 715-6 recognizes this requirement in the following statement:

> Bidders should be given all available information concerning the history of development and testing, with particular attention to the preparation, checking and prove-out of the Technical Data Package. Nothing of significance should be withheld. The Army has no intention of selling a "pig in a poke." The contractor is entitled to know precisely the conditions which determine the degree of risk he is willing to assume. If the package is so risky that there will be no takers, it is well that this be known as early as possible so that a more appropriate type of contract can be considered.[260]

The drafters of AMC PAM 715-6 recognized the importance of complete disclosure of the history of the contract specifications to prospective contractors on a PPE effort.

To accomplish this goal of complete disclosure, the Government must accumulate data that does not always accompany a technical data package. It must present to the contractors the detailed history of problems that have occurred in the past and the solutions that were developed to those problems. The Government does not usually reveal this information to contractors in mass production contracts because the contractors are not ordinarily concerned with accuracy of the technical data package. There is also a perception in the Government contracting community that such information will only fuel contractor claims by pointing out past weaknesses of the specifications. In a typical mass production contract, however, the contractor does not accept responsibility for correction of errors in the technical data package. It is important that the Government perform the extra effort of placing the historical data before prospective contractors so they understand the type of risk involved in the PPE contract.

A review of the claims pending before the ASBCA[261] shows that many contractor complaints arise from a perception or belief that the Government withheld information about the specifications that would have been helpful in their PPE effort. One frequent complaint is that the Government did not disclose engineering change proposals, waivers, and deviations that previous contractors submitted. This is a legitimate complaint. In any effort to disclose the history of the technical data package, the release of the previous engineering change proposals should be the first task

that the Government accomplishes. While such information may have very limited value when moving from a low-rate prototype contract to a mass production contract, it is the contractor that should determine the relative usefulness of the information, not the Government.

Even if the contractor can establish a factual predicate for these complaints, the important element of proof in this type of claim is whether the information was crucial to the contractor's understanding of the risks it was undertaking.[262] Much of the information that the Government fails to turn over to a contractor in this area proves to be insignificant or has little impact upon a contractor's estimation of its risks. Thus, while the Government has no excuse for its failure to disclose this information, the Government must require the contractor to prove the resulting impact of its lack of information.

B. Contractor Claims Based Upon The Reliability of the Design.

As discussed above, an important element of the PPE concept is the assumption that the technical data package is basically sound and that the Government has proven the design by some limited low-rate or prototype production. The classification of "basically sound" specifications include a wide range of engineering practices and design prove-out techniques. The engineering effort and number of prototypes necessary to accomplish this level of

development depend on the nature and complexity of the end item, not upon some artificial standard.

The message that the Government conveys to a contractor when it releases a design for mass production is that the contractor can produce the design through known manufacturing techniques without a significant design or developmental effort.[263] This does not mean that the Government believes the specifications are without error or that it will not require some redesign effort. In an initial production contract, the Government expects to find some errors in the specifications. But it does not expect the contractor to redesign the end item significantly.

The following contractor complaints all relate to the inadequacy of design: 1) the technical data package was not proven; 2) the technical data package did not follow sound engineering practices; 3) the number of changes exceeded those projected by the contractor; and 4) extensive redesign was necessary. In each of these claims, the contractor attempts to affix a level of effort that was reasonably understood at the outset of the contract. As the Comptroller General observed, in a PPE contract, the "language clearly indicates that the Army did not contemplate the need for a major redesign and the 'additional design effort' would be limited to that generally to be expected when moving from pilot production to high volume production."[264] Once the contractor establishes the assumed level of effort, it

must then show that the PPE effort involved an effort significantly greater than the effort assumed.

This type of claim stands the best chance of success given the past decisions of the General Accounting Office and the Boards of Contract Appeals. The Armed Services Board of Contract Appeals indicated that the PPE clause does not shift an unlimited risk to the contractor.[265] It also observed that the Government warranty of specifications shifted where the contractor "undertook financial responsibility" for the PPE effort.[266] Thus, the Board recognized there is a limit on the contractor's responsibility. It set that limit at the amount of effort that was reasonably apparent to the contractor and for which the contractor assumed financial responsibility. If a contractor can show that the number of changes or the amount of PPE effort exceed significantly its reasonable estimate, then the Board may grant the contractor relief from the costs of that effort.

This does not mean that a contractor may simply rely on its estimate of costs for the PPE effort as a yardstick of the effort it should incur. *In Magnavox Gov't & Indus. Elec. Co.*,[267] the Armed Services Board of Contract Appeals reviewed a defective specification claim in a PPE contract. *Magnavox* complained that the number and magnitude of the software changes in its PPE effort exceeded the scope of the effort expected by the contractor. They asked the Board to find that the Government was responsible for the

delays resulting from those changes.[268] In response to this argument the Board stated:

> This argument is devoid of merit. Appellant entered into the contract fully aware that the Litton TDP was replete with software "shortcomings," described at length in Section IV of the scope of work, and that it was encouraged and expected to recommend further product improvements in this area as well. Yet Magnavox "underestimated" the scope of the software effort and the difficulty of solving the problems it had undertaken to solve."[269]

Thus, the Board denied the claimed delay because it was within the risk assumed by the contractor and because the contractor had underestimated the scope of that risk.[270]

The *Magnavox* case illustrates that the Board will consider the contractor's assumption of risk when determining the scope of the PPE effort presumed by the parties. The board will not relieve a contractor that risk simply because it underestimates the scope of the risk. The contractor must prove that the effort "significantly" exceeded the risks presumed by the parties before the Board will overcome its assumption of that risk.

C. Government initiated changes.

There are generally two types of Government initiated changes in a PPE effort. The first type is the change directly ordered by

Government personnel to correct some area that falls within a Government responsibility change. The second type of Government initiated change is a change to the design that the Government did not order, but was encouraged by Government actions and falls within Government responsibility changes.

This class of change is obviously outside the scope of the contractor's responsibility in a PPE contract and should not result in any dispute over responsibility for costs. Yet, some of the claims pending before the Board still include Government initiated changes. Some of these changes occur due to a misunderstanding by Government personnel of the scope of the responsibility assumed by a contractor. Some people really do believe the PPE clause eliminated the Changes clause. They treat every change to the technical data package as the contractor's responsibility.

A possible explanation for the mislabeling of Government initiated changes is the fast pace at which the parties are implementing changes in a PPE contract. Anyone familiar with Government contracting knows that a 15-day Government response on an engineering change proposal is remarkable under any conditions. Under the PPE concept, the Government team must make a commitment to this express service throughout the life of the contract. At such a fast pace, it is probable that some Government initiated changes get lost in the shuffle and get executed as Class II changes.

These changes should be simple to resolve. If the contract clearly defines the types of changes that are Government responsibility, there should be no real controversy concerning liability for the cost of a change. It is in those instances, however, where the PPE clause does not define the areas excluded from the contractor's responsibility that some Government initiated changes have reached the Board of Contract Appeals. A failure to define the scope of a contractor's responsibility does not increase that scope in an exculpatory contract clause - if anything, courts will interpret the clause more narrowly.[271] Even when the clause does not define Government responsibility changes, agencies should consult AMC PAM 715-6 for those changes that are properly the Government's responsibility under the PPE concept.

D. A Deviation From the Changes Clause.

Despite the decisions of the General Accounting Office and the Boards of Contract Appeals, contractors continue to complain that the PPE clause is an improper deviation of the Changes clause. This was discussed above[272] and stands virtually no chance of success. There is, however, one possibility that we will address at this point. If Government administrators treat the PPE clause as a deviation of the Changes clause and refuse to give equitable adjustments for Government responsibility changes, will the PPE clause be unenforceable as an improper deviation?

In *Southwest Marine, Inc.*,[273] the board found that a disclaimer

was unenforceable because the language of the clause constituted a deviation of the Changes clause. The Board, however, determined that the PPE concept was a sound concept that effectively passes certain risks to the contractor. Abuse of the clause during administration of the contract should not result in its demise. Improper administration of the PPE clause would entitle the contractor to a claim under the Disputes clause, not to an attack on the propriety of the clause itself. Those acts should merely be considered constructive changes and the contractor should be reimbursed in accordance with that doctrine.

E. Complaints That Fall Within The Risk Assumed By The Contractor.

As we have discussed throughout this analysis, the PPE clause transfers certain risks concerning the adequacy of the specifications to the contractor. Encompassed within the risks transferred to the contractor is the requirement that the contractor must find solutions to problems that arise. Those risks do not just occur in the preproduction phase of the contract. They exist throughout production. The contractor has agreed to perform a complete analysis of the technical data package which includes all phases of production.

The stage of production that the contractor chooses to perform its specification review is generally of no concern to the Government. If a contractor chooses to do less work in the

preproduction phase of the contract at the risk of causing greater delays and a higher scrap rate later in production, that is the contractor's choice. As the drafters of AMC PAM 715-6 stated:

> The depth of the "paper" analysis performed by the contractor early in the contract should be of greater concern to the contractor than to the Government. At least theoretically, it is immaterial to the Government whether the PPE is accomplished primarily by drawing analysis, by evaluation of preproduction model fabrication, by a preproduction "proof" run or by costly correction of errors during production. In practice, however, the Government should require early evidence of an effective PPE effort and rigid adherence to established preproduction model schedules in order to avoid later slippage of production schedules.[274]

Many contractor complaints currently before the Armed Services Board of Contract Appeals include risks that the contractor has assumed under the PPE clause. They include such complaints as: 1) the source directed vendors could not produce the components specified or were making the components differently; 2) the design is impossibile or impractical; 3) the design requires additional work during fabrication, assembly, scrap, inspection, and acceptance of the end item.

All of these complaints fall under the duties assumed by the

contractor. The contractor should have estimated the costs of these problems before performance and included them in the contract price. The contractor's predetermination of the price is the method the Government uses to shift the risk to the contractor. The courts have recognized and enforced the contractors' assumption of these risks.

VII. Conclusion.

Before beginning any research or performing any analysis, I expected this conclusion to condemn the PPE concept. I expected the same negative reaction from the General Accounting Office and Boards of Contract Appeals that was received from the contractors when the concept originated. I also expected contractors to include so many contingencies in the price of their proposals that the expense of the concept would outweigh the benefits received. None of these turned out to be true.

Instead, this conclusion endorses the concept with reservations. As the drafters of AMC PAM 715-6 aptly observed, the PPE concept is no more "than a partial solution to some of the problems involved in Government procurement."[275] It is an innovative solution to some of the problems plaguing initial production contracts. If used on the proper contracts and administered in the right manner, the PPE concept can effectively reverse the trend of numerous change orders and extensive delays in initial production contracts.

There are, however, two very important prerequisites to the use of the PPE concept. First, the agency must review the technical data package carefully to insure that the design is sufficiently stable for a PPE contract. If the Government expects a significant design effort to be necessary before the end item can be mass produced, a PPE contract would be an improper attempt to shift that burden to the contractor. The most likely result of such an attempt would be prolonged litigation and a failure to produce a satisfactory end item.

When the Government uses the PPE concept in conjunction with a proper technical data package, it will accomplish its purpose. It will transfer many of the risks of defective specifications to the contractor. It will require a contractor to estimate the costs of changes to the specifications in advance of performance and thereby eliminate many of the expensive and time consuming changes that ordinarily occur in initial production contracts.

Second, agencies must commit themselves to the proper administration of the contract. That commitment must include the dedication of knowledgeable technical personnel who are able to respond rapidly to contractor proposed changes. It must include contracting officers and contract administrators that understand the PPE concept and the extent of the risks assumed by the contractor. Finally, it must include an agency commitment to work with the contractor as a member of a team rather than as an

adversary.

If the agency selects the right technical data package and develops the right attitude, then the PPE concept is a realistic option for initial production contracts. It will accomplish its objective by shifting much of the risk of the Government's implied warranty of its specifications to the contractor and by eliminating many of the costly delays associated with initial production contracts. The Preproduction Evaluation Clause may not turn the contracting world upside-down, but it definitely has it moving in a different direction.

NOTES

1. There are many versions of the Preproduction Evaluation clause. The following PPE clause [hereinafter the Basic PPE clause] was originally developed by the Frankford Arsenal for the U.S. Army Weapons Command in early 1965, and has been used on a number of PPE contracts. The entire text of the clause is found in U.S. ARMY MATERIEL COMMAND, PAMPHLET 715-6, PREPRODUCTION EVALUATION (PPE) CONTRACTS, at F-1 to F-10 (May 1970) [hereinafter AMC PAM 715-6]. The introduction of the clause states, in pertinent part, as follows:

> Supplied And Services - Item No. 0001.
>
> Preproduction Evaluation of Technical Data Package (TDP) No. _____ dated _____, for __(Contract End Item)__, including application of all authorized Code A and Code C (Category II) "compatibility" changes to Items No. 0002 and 0003 in accordance with "Special Provisions Relative to Supplies and Services", Item 0001.
>
> . . .
>
> Prospective offerors are cautioned that although all of the engineering drawings included in technical data cited above have been prepared and checked in accordance with accepted engineering practices and have been used for the manufacture of (quantity) prototype models using soft-tool model shop methods, said

technical data has not been proven out in a production type manufacturing operation for compatibility with the assembly and performance requirements of this contract.

SPECIAL PROVISIONS RELATIVE TO PREPRODUCTION EVALUATION, SUPPLIES AND SERVICES

ITEM 0001

A. Review of Technical Data Package

Prior to, or in conjunction with process planning, tool design, development of inspection plans and procedures, and design of inspection equipment, and throughout the production and inspection phases of the contract, the contractor shall perform a detailed review of all technical data furnished under the contract (except as excluded in para D(1)(c) below) for the purpose of identifying, and proposing the correction of any discrepancy, error, omission, or deficiency in design or technical data which may preclude practical manufacture or assembly, or which may preclude the attainment of required performance as set forth in specification(s) cited in item 0002.

B. Contractor's Obligations with Respect to Engineering Changes.

In consideration of payment for preproduction evaluation services to be performed under item 0001 of this contract, and in mutual recognition that

compliance with the performance requirements of this specification(s) cited therein, form the basis for the terms and conditions of this contract, the contractor agrees to accept, without increase in contract price or delay in delivery, any change in technical data which both the Government and the contractor consider to be essential to:

1. Attainment of functional or performance requirements of Specification(s) cited in item 0001 of the contract exclusive of those shock, vibration, and other extreme environmental requirements specifically listed as a Code D change in paragraph D below.

2. Compatibility between specified quality assurance provisions and the mandatory physical or functional requirements of specifications and drawings.

3. Compatibility between Engineering Parts Lists and other technical data.

4. Correction of an impossible or impractical manufacturing condition.

5. Correction of an impossible or impractical assembly condition.

6. Procurement of physically and functionally suitable purchased parts and materials.

7. Correction of mutually recognized errors in specification(s) cited in item 0001, where such correction will provide greater compatibility with the existing detail design.

2. The cases referenced in the text were appeals pending before the Armed Services Board of Contract Appeals in December 1993. The following are some of those appeals:

a) *BMY-Combat Sys., Div. of Harsco Corp.*, Contract No. DAAE07-86-C-R100, ASBCA No. 42469;

b) *John R. Hollingsworth, Co.*, Contract No. DAAK01-90-D-0046, ASBCA No. 44674;

c) *Applied Cos.*, Contract No. DAAK01-91-C-0092, ASBCA No. 45470;

d) *West End Welding & Fabrication Co., Inc.*, Contract No. DAAE07-88-C-J001, ASBCA No. 41213.

3. The following is, in part, the text of the Production Drawing Changes Clause cited in *Coditron Corp.*, ASBCA No. 18129, 76-1 BCA ¶ 11,818, at 56,432:

> The contractor agrees to thoroughly check the furnished Government drawings and utilize same in manufacture of the item they cover and the contractor agrees to revise the drawings as directed by the Contracting Officer. Inaccuracies, incompleteness, errors, etc., of the drawings will be resolved by consultation with the office cited in paragraph (e) below, BEFORE proceeding with production. The Government will not be responsible for damages or extra costs resulting from

an inadequate check of the drawings or revisions to the drawings. If, because of the above action, there results a change in the contract requirements, the contractor and the Government will negotiate an equitable adjustment of the contract price. . . . The contractor agrees to furnish the Contracting Officer a complete statement detailing his operations in checking of the Government drawings. Any discrepancies which might arise between the drawings and the model will be resolved in consultation with the Contracting Officer . . .

4. Vom Baur, Coburn, Simmons & Turtle, B-169838, B-169839, Oct. 30, 1970 (unpub.), 1970 WL 4154 (C.G.)(The clause in this case was "a rewrite" of a 1953 Signal Corps clause entitled Production Drawing Changes which the Comptroller indicated was similar to the PPE clause).

5. Coditron Corp., at 56,437.

6. *Id.*

7. AMC PAM 715-6, *supra* note 1, at iv.

8. *Id.*

9. *Id.* at F-1.

10. *See* the Basic PPE clause *supra* note 1.

11. AMC PAM 715-6, *supra* note 1, at H-2 (The technical data "has been prepared and checked in accordance with accepted engineering practices. On the basis of previous experience, however, it is reasonable to assume that such data may contain deficiencies which would preclude, from an actual or practical standpoint, the

manufacture or assembly of the contract items in strict accordance with the technical data").

12. See discussion *infra* pp. 48 to 55.

13. *See* the Basic PPE clause *supra* note 1.

14. AMC PAM 715-6, *supra* note 1, at A-1 ("the PPE contract is a firm fixed-price or fixed-price incentive production contract").

15. *Id.*

16. *Id.* (PPE contract is primarily intended for initial production contracts).

17. *Id.* at 1-2 ("The deleterious effect of the influx of marginal suppliers drawn toward military procurement by the detailed specificity of today's Technical Data Package and the ineffectiveness of any specified or implied contractor responsibility for end item performance in the usual production contract has been further aggravated by a series of contractual and legal precedents established during the past 20 years which have subtly redefined the role of the Technical Data Package in Government Procurement").

18. *Id.* at 1 (". . . there has been a high incidence of claims based on the absence of process information, although it is commonly understood that the purpose of the Government Technical Data Package is to define <u>what</u> is wanted rather than <u>how</u> it is to be made. Unique process information is generally included only when the Government needs added assurance that it will get exactly what it wants").

19. *Id.* at 2.

20. *Id.* at iv.

21. *Id.* at A-1.

22. *Id.* at 2 ("In case after case, production costs have escalated to incredible proportions, and production has been delayed for months, and even years, as a result of engineering changes in initial production contracts").

23. Dynamics Corp. of Am., B-165593, 48 Comp. Gen. 750, 756 (1969).

24. The following are the provisions in the "Basic PPE Clause" related to the automatic approval provisions:

> E. Submission and Authorization of Engineering Change Proposals.
>
> 1. Essential Category II "Compatibility" Changes.
>
> a. Recommendations for essential changes shall be submitted on DD Form 1693 Engineering Change Proposal (ECP)(MIL-STD-481), as soon as practical after disclosure of the need for change. The description and need for the change shall be clearly and explicitly stated so as to permit expedited evaluation, serve as a basis for revision of technical data by the Government, and serve as basis for acceptance inspection. Approval may be assumed for any essential Code A or Code C "compatibility" change, as defined in paragraph B above, which does not adversely affect performance, reliability, maintainability, operability, safety, or

interchangeability of parts items already produced under the contract, and which otherwise complies with criteria for a Class II change, MIL-STD-480. Such requests shall be properly coded in accordance with paragraph C above, and classified as Class II changes.

b. Block 15 of DD Form 1693 shall include the statement: "This ECP is submitted as a Category II "compatibility" change as defined in the contract." The effect on Delivery Schedule and Estimated Costs shall be indicated as "none," in accordance with contract terms and provisions.

c. Approval may not be assumed for any change which falls under the definition of a Class I change, MIL-STD-480. The "Note" which follows the definition of a Class I engineering change in MIL-STD-480 does not apply to this contract, i.e., an ECP shall not be designated a Class I change solely by virtue of its affecting drawings specified in the contract. Any change to a component subsequent to first article delivery which renders that component noninter-changeable with first article configuration, or which will otherwise adversely affect maintainability shall be designated a Class I change. Class I changes shall not be considered authorized until specific written approval has been received from the procuring agency.

d. Requests shall not knowingly be submitted as Class II "compatibility" changes which adversely affect performance, reliability, operability, safety, maintenance, or which otherwise fall under the definition of a Class I change. The Government reserves the right to reject any Class II "compatibility" ECP for the foregoing reasons by notification to the contractor within 15 days after receipt of the ECP by the contracting agency, as evidenced by registered mail return receipt or other suitable receipt form.

e. Upon approval of a PPE "compatibility" change or in the absence of rejection of such a change within the specified 15-day period, the contractor's obligations relative to the pertinent Engineering Change Proposal shall be discharged to the extent that the deficiency is corrected. If the incorporation of an authorized "compatibility" change does not correct the deficiency, the contractor shall yet remain responsible for resubmitting and accepting any further necessary change to the technical data and for incorporating such change into all contract items not yet accepted by the Government.

f. In the event of incompatibility between a "common" or standard part and a mating part, preference

shall be given to correcting the incompatibility by changing the mating part rather than the common or standard part.

g. The Government reserves the right to direct an alternate correction in lieu of a valid contractor-proposed "compatibility" change when such action is in the interest of interchangeability with material in service or in stock, or for other vital logistical considerations. Such Government-directed changes will be subject to equitable adjustment under the changes article, with the provision that the adjustment of cost and/or delivery will be limited to the difference, if any, between the contractor's originally proposed "compatibility" change and the Government-directed correction. This provision for equitable adjustment shall not be construed to cover instances in which the contractor's proposal is rejected for reasons set forth in paragraph E(1)(d) above, or to cover functionally nonessential ECP's submitted under provisions of paragraph E(3) below.

AMC PAM 715-6, *supra* note 1, at F-5 to F-6.

25. AMC PAM 715-6, *supra* note 1, at A-4 (the PPE contract will "tend to discourage unethical 'buying-in' on a production contract by reducing the possibility of getting well through the negotiation of changes").

26. *Id.* at 3 ("The Army and its more dependable suppliers have been deeply concerned that competitive fixed-price contracts for production of new material may have degenerated to a point where the bid price is no longer a valid basis for award of a contract; and even the more moral and competent bidders are in danger of being drawn, of necessity, into bidding on contracts at prices and schedules which, at most, are considered to be 'best effort'").

27. *Id.* at A-5 (the PPE clause "significantly reduces the possibility that a contractor who grossly under-estimated his costs can get well through the negotiation of engineering changes").

28. *Id.* at A-4 (the PPE contract's "use will encourage participation of the most qualified and most dependable suppliers by requiring bidders to be sufficiently knowledgeable and experienced in production of the type of material to be procured to risk a guarantee of end item assembly and function at the time of acceptance").

29. For a definition of "design specification," *see infra* p. 14.

30. For a definition of "performance specification," *see infra* p. 15.

31. The letter was addressed to the Armed Services Procurement Regulation Committee or the "ASPR Committee."

32. *See, Preproduction Evaluation Clause Draws Fire from ABA Public Contracts Law Section*, 337 FED. CONT. REP. at A-8 (1970).

33. *Id.*

34. *Id.*

35. *Id.* at A-9.

36. *Id.*

37. For a discussion on risk allocation in Government contracts *See*, JOHN CIBINIC, JR. AND RALPH C. NASH, JR., ADMINISTRATION OF GOVERNMENT CONTRACTS, ch. 3 (2d ed. 2d printing 1986).

38. *See* GENERAL SERVS. ADMIN. ET AL., FEDERAL ACQUISITION REG. 10.001, (codified in C.F.R. parts 1-53)(1 Apr. 1984)[hereinafter FAR]; Gary L. Hopkins & Riggs L. Wilks, Jr., *Use of Specifications in Federal Contracts: Is the Cure Worse than the Disease*, 86 MIL. L. REV. 47, 50 (1979)[hereinafter Hopkins & Wilks].

39. Hopkins & Wilks at 55.

40. To J.G. Conkey, Maritime Admin., B-134597, 37 Comp. Gen. 479, 481 (1958). *See* Secretary of Agric., B-178154, 52 Comp. Gen. 815, 817 (1973)(clause allowing deviations from the specification was stricken because it did not permit free and equal competitive bidding).

41. *See* Paul D'Aloisio, *The Design Responsibility and Liability of Government Contracts*, 22 PUB. CONT. L.J. 515, 524 (1993).

42. *Id.* at 524-5.

43. 10 U.S.C. § 2305(b)(1976); *See also*, FAR, *supra* note 38, at 10.002(a)(3); To R.D. Sweeney, B-176949, B-177228, 53 Comp. Gen. 102, 103 (1973)(while specifications are obviously restrictive of competition in the broadest sense, the General Accounting office will not consider unduly restrictive if it represents the Government's actual needs).

44. A purchase description is similar to a functional specification since it sets out the "essential physical and

functional characteristics of the materials or services required." *See* FAR, *supra* note 38, at 10.004(b). The FAR classifies a purchase description as a means of describing a need when no "specification exists." FAR 10.004(b). It indicates that specifications and purchase descriptions may be used to state functional, performance or design requirements. FAR 10.002(a)(4). The Armed Services Board of Contract Appeals indicated that a purchase description was the third type of specification. *See* Aerodex, Inc., ASBCA No. 7121, 1962 BCA ¶ 3492, at 17,822; Monitor Plastics Co., ASBCA No. 14447, 72-2 BCA ¶ 9626, at 44,971. For an excellent discussion of the similarities of a purchase description and a functional specification *see* Hopkins & Wilks, *supra* note 38, 92-6. For examples of differences between functional specifications and purchase descriptions, *see Suma Corp.*, 89-1 CPD ¶ 109 (brand-name or equal purchase description did not allow a contractor to submit a functional equal to a 12-cylinder engine). For a discussion of the difficulty in classifying a specification as functional, *see Digital Equipment Corp.*, GSBCA No. 9131-P, 1987 WL 45940 (G.S.B.C.A.)("There is, we suggest, a certain lack of specificity in the regulations regarding the phrase 'functional specification; 'however, we suspect that the writers of these regulations have had the same difficulty that concept as many courts have had with the definition of obscenity, even though the later can be readily recognized).

45. FAR, *supra* note 38, at 10.002(a)(4); Aerodex, Inc., ASBCA No. 7121, 1962 BCA ¶ 3492, at 17,822; Monitor Plastics Co.,

ASBCA No. 14447, 72-2 BCA ¶ 9626, at 44970-1.

46. ASBCA No. 7121, 1962 BCA ¶ 3492, at 17,822, *reversed on other grounds,* Aerodex, Inc. v. United States, 417 F.2d 1361 (Ct. Cl. 1969). *See also*, Monitor Plastics, at 44,971.

47. 412 F.2d 1360, 1363 (Ct. Cl. 1969).

48. Aerodex, Inc., at 17,882.

49. ASBCA No. 9095, 1964 BCA ¶ 4093, at 19,999.

50. *See* Jamerson Const. Co., Inc., EBCA No. 392-6-87, 88-1 BCA ¶ 20,452 (detailed listings of required equipment are antithetical to the concept of functional specifications).

51. *See* GTE Telecom Inc., GSBCA No. 10987-P, 91-2 BCA ¶ 23,691. (Functional specifications require contractor to determine number and type of equipment to be used as well as configuration to be employed in meeting requirements for voice and data services. Manner in which contractor designs the systems is within the contractor's discretion so long as it meets the framework of the functional specifications); Racal Info. Sys, Inc., GSBCA No. 10264-P, 90-1 BCA ¶ 22,495.

52. Integrated Sys. Group, Inc. v. NASA, GSBCA No. 12603-P, 1993 WL 467172 (G.S.B.C.A.)(9 NOV 1993). *See also* FAR, *supra* note 38, at 10.002(b)("Acquisition policies and procedures shall require descriptions of agency requirements, whenever practicable, to be stated in terms of functions to be performed or performance required"). *But cf*, Compuserve, B-188990, Sep. 9, 1977, 77-2 CPD ¶ 182 (Use of functional specifications may have complex and costly results: considerable effort drafting specifications; considerable expense developing a solution; and a substantial

effort to evaluate proposals).

53. C. STANLEY DEES & GILBERT J. GINSBERG, THE GEORGE WASHINGTON UNIVERSITY, GOVERNMENT CONTRACT MONOGRAPH NO. 4, CONTRACT INTERPRETATION AND DEFECTIVE SPECIFICATIONS 32 (1975).

54. RALPH C. NASH, JR., GOVERNMENT CONTRACT CHANGES 13-2 (2d ed. 1989)[hereinafter GOVERNMENT CONTRACT CHANGES].

55. Uniform Commercial Code § 1-203; Commercial Contractors, Inc. v. U.S. Fidelity & Guar. Co., 524 F.2d 944 (C.A. Ala. 1975)(there is an implied duty of cooperation and good faith between contracting parties).

56. George H. Dygert, *Implied Warranties in Government Contracts*, 53 MIL. L. REV. 39, 40 (1971).

57. 248 U.S. 132 (1918).

58. *Id.* at 137.

59. At one time, it was thought that the warranty was based upon superior knowledge or expertise by the Government. *See* Railroad Waterproofing Corp. v. United States, 137 F. Supp. 713 (Ct. Cl. 1956); Jefferson Constr. Co., ASBCA No. 7,008, 61-2 BCA ¶ 3,222; Metal Bldg. Specialties Co., ASBCA No. 8,651, 1963 BCA ¶ 3,943.

60. ASBCA No. 10,486, 67-2 BCA ¶ 6,669, at 30,951-52.

61. J. L. Simmons Co. v. United States, 188 Ct. Cl. 684, 412 F.2d 1360 (1969).

62. *See generally* Inlet Co., Inc., ASBCA No. 9095, 1964 BCA ¶ 4093, at 19,999 ("If the specifications were design in nature, the Government must be held to have warranted their adequacy, and if the contractor followed them strictly, the responsibility for the failure of the system to function adequately cannot be laid

to it").

63. Brinderson Corp., ASBCA No. 30938, 86-3 BCA ¶ 19,107; American Ship Bldg. Co. v. United States, 228 Ct.Cl. 220, 654 F.2d 75 (1981).

64. ASBCA No. 9095, 1964 BCA ¶ 4093, at 19,999.

65. Aerodex, Inc., ASBCA No. 7121, 1962 BCA ¶ 3492, at 17,822 ("A great deal of difficulty lies in the fact that many statements of contract requirements are necessarily a mixture of two or all three types of specifications described above); Monitor Plastics Co., ASBCA No. 14447, 72-2 BCA ¶ 9626, at 44,971; D'Aloisio, *supra* note 41, at 523-4.

66. GOVERNMENT CONTRACT CHANGES, *supra* note 54, at 13-10.

67. For a time, the general characterization of the whole specification was thought to be the end of the first step in the analysis. In 1971, it was observed:

> The courts and boards have not distinguished portions of the specifications relating to one component from the specifications as a whole even where the component and specifications relating to it are easily severable from the remainder of the product and the overall specifications. In each case, the court and board have considered the overall contract and characterized the specifications on a dominant or major purpose basis. The criterion for determining the characterization of the specifications appears to be the relative significance of the details specified with regard to the product to be provided under the contract.

[citations omitted]

Dygert, *supra* note 56, at 51-2.

68. Aerodex, Inc., ASBCA No. 7121, 1962 BCA ¶ 3492, at 17,822; Monitor Plastics Co., ASBCA No. 14447, 72-2 BCA ¶ 9626, at 44,971.

69. For an illustrations of design specifications that were controlling over performance requirements *see Bethlehem Steel Corp.*, ASBCA No. 13341, 72-1 BCA ¶ 9186, at 42,590 ("When the Government specifies in detail the design and construction to be followed by the contractor in the manufacture of equipment and also specifies performance requirements for such equipment, and the contractor manufactures the equipment in a workmanlike manner in accordance with the Government design, but the equipment does not meet the performance requirements of the specifications, the contractor will not be denied compensation for the reason that it finally develops that the work done in accordance with the Government plans does not produce the intended results"); *Valor Electronics, Inc.*, ASBCA No. 10056, 67-1 BCA ¶ 6320 (Design specifications for coating power cores that did not meet the performance requirements of water resistance).

70. The term performance requirement will hereinafter be used to describe those circumstances where the contractor can exercise its discretion and a warranty does not attach. It may include either a performance specification or a functional specification.

71. *See* Bruce-Anderson Co., Inc., ASBCA No. 29460, 88-3 BCA ¶ 20,998 (failure to specify details of a walk-in cooler did not remove the requirement from the contract, but was stated in a

manner to give the contractor discretion in the manner of performance).

72. *See* Flinchbaugh Prods. Corp., ASBCA No. 18851, 78-2 BCA ¶ 13,375 (contractor's difficulties arose from finding the method of performing a manufacturing operation for which the specification gave no guidance); Baifield Indus., Div. of A-T-O, Inc., ASBCA No. 13418, 77-1 BCA ¶ 12,308 (contract specified a hardness requirement without specifying the heat treatment that would attain that performance requirement).

73. End Item Drawings are design specifications that depict the product in its final shape, dimensions and tolerances. They do not provide production process drawings. This method of stating the Government requirement leaves to the contractor's discretion a choice of the many manufacturing processes available to accomplish the finished dimensions. *See* M.A. Mortenson Co., VABCA No. 2824, 89-2 BCA ¶ 21,660 (contract assigned to the contractor the responsibility to select the appropriate type of lighting fixture); Bachan Aerospace Corp., ASBCA No. 34786, 88-3 BCA ¶ 20,867 (Specifications stated only final dimensions and tolerances and left to the contractor the manner in which they were to be attained); Monitor Plastics Co., ASBCA No. 14447, 72-2 BCA ¶ 9626, at 44,971.

74. Helene Curtis Indus., Inc. v. United States, 312 F.2d 774, 777 (Ct. Cl. 1963)(end-product specification did not require any particular method or process, as Government contracted for the contractor's technical know-how and manufacturing skill).

75. Monitor Plastics, at 44,971.

76. For a detailed discussion of the design responsibilities of a contractor under design specifications, *see* D'Aloisio, *supra* note 41.

77. Turnmill, Inc., ASBCA No. 15285, 71-2 BCA ¶ 9169 (stabilization process for steel was a performance requirement within the standard practice of the industry, but a sleeve straightening and lengthening process exceeded the general knowledge of the industry and, therefore, was beyond the contract requirements).

78. J.L. Simmons Co. v. United States, 412 F.2d 1360 (Ct. Cl. 1969).

79. Ordinance Research, Inc. v. United States, 609 F.2d 462 (Ct. Cl. 1979); Ithaca Gun Co., Inc. v. United States, 176 Ct. Cl. 437 (1966).

80. *See* Pittsburgh-Des Moines Corp., EBCA No. 314-3-84, 89-2 BCA ¶ 21,739, at 109,374.

81. *See* FAR, *supra* note 38, at Part 16.

82. RALPH C. NASH, JR. & STEVEN L. SCHOONER, THE GOVERNMENT CONTRACTS REFERENCE BOOK, 306 (Joan Nelson Phillips ed., 1992)[hereinafter CONTRACTS REFERENCE BOOK].

83. FAR, *supra* note 38, at 16.101(b).

84. *See* FAR, *supra* note 38, at 16.202-2.

85. *See generally* FAR, *supra* note 38, at 52.246-2, Inspection of Supplies, Fixed-Price clause; FAR 52.249-8, Default (Fixed-Price Supply & Service) clause.

86. FAR, *supra* note 38, at 16.301-1.

87. *Id.* *See also* FAR, *supra* note 38, at 52.232-20, Limitations

of Cost clause; FAR 52.232-22, Limitations of Funds clause.

88. *See generally* FAR, *supra* note 38, at 16.306, Cost-plus-fixed-fee contracts; FAR 16.404, Cost-plus-incentive-fee contracts.

89. *See* FAR, *supra* note 38, at 52.232-20, Limitation of Cost clause.

90. *See* FAR, *supra* note 38, at 16.104.

91. FAR, *supra* note 38, at 16.103(a).

92. DEPARTMENT OF DEFENSE, ARMED SERVICES PRICING MANUAL (ASPM), 1-11 (1986).

93. *See* FAR, *supra* note 38, at 16.103(c).

94. *See* DEP'T OF DEFENSE, DEFENSE FEDERAL ACQUISITION REG. SUPP. 216.104(S-71) (1 Apr. 1984) [hereinafter DFARS]. Previously, DFARS 216.104(S-71) had an excellent discussion of the various factors that affect the choice of a contract type during the developmental stages of a system. This section was removed in the 1991 edition of the DFARS.

95. *See* FAR, *supra* note 38, at 16.403, Fixed-Price-Incentive; FAR 16.404, Cost-Plus-Incentive-Fee.

96. It is Department of Defense (DoD) policy not to contract for risky development efforts on a fixed-price basis. *See* DoD DIRECTIVE 5000.1, DEFENSE ACQUISITION (1991). For the determination that must be submitted to the Under Secretary of Defense for Acquisition if an agency decides to use a fixed-price contract on such a contract, *see* DoD DIRECTIVE 5000.2-M, DEFENSE ACQUISITION MANAGEMENT DOCUMENTATION AND REPORTS, Part 22 (1991).

97. FAR, *supra* note 38, at 16.103(b). DFARS, *supra* note 94, at

216.101(a) had an excellent discussion on this point. It was removed in the 1991 edition of the DFARS.

98. DEP'T OF DEFENSE, DEFENSE FEDERAL ACQUISITION REG. SUPP. 216.101(a)(3) (31 Dec. 1991).

99. FAR, *supra* note 38, at 16.103(a).

100. FAR, *supra* note 38, at 16.103(b); DFARS, *supra* note 94, at 216.104-70(d)(3).

101. DEP'T OF DEFENSE, DoD & NASA INCENTIVE CONTRACTING GUIDE, 4 (1969).

102. FAR, *supra* note 38, at 52.249-10.

103. FAR, *supra* note 38, at 52.212-15.

104. FAR, *supra* note 38, at 52.212-13.

105. FAR, *supra* note 38, at 52.245-5.

106. FAR, *supra* note 38, at 52.249-8.

107. FAR, *supra* note 38, at 52.243-1.

108. This is obviously the common law right to a bilateral modification of the contract that is accomplished through the mechanisms established in the Changes clause.

109. Changes that are within the general scope of the contract. *See* FAR, *supra* note 38, at 52.243-1(a).

110. FAR, *supra* note 38, at 52.243-1(b).

111. AMC PAM 715-6, *supra* note 1, at 2 ("The certainty of engineering changes, particularly in initial production contracts, has too often resulted in the submission of bids which are not based on a realistic analysis of production costs, but rather on a sharply sophisticated analysis of potential reimbursement by the Government for the cost of engineering

changes - a reimbursement which must be arrived at through noncompetitive negotiation and often under subtle, but nonetheless real, threat of nondelivery.")

112. CONTRACTS REFERENCE BOOK, *supra* note 82, at 162.

113. 536 F.2d 1345, 1351 (Ct. Cl. 1976).

114. United States v. Croft-Mullins Elec. Co., 333 F.2d 772, 778 (5th Cir. 1964), *cert. denied*, 379 U.S. 968 (1965)("We know of no general rule that the parties to a contract dealing at arms length may not agree that one should save another harmless from simple negligence. . . . such a provision is 'no more against public policy . . . than an indemnity clause in an insurance policy would be"). *See also* Wood v. United States, 258 U.S. 120 (1922).

115. Ozark Dam Constr. v. United States, 127 F. Supp 187 (Ct. Cl. 1955)(contract clause indicating that the Government will not be liable for expenses or delays caused by late deliveries did not avoid liability for a failure to deliver concrete as promised); Hoel-Steffen Constr. Co. v. United States, 684 F.2d 843 (Ct. Cl. 1982)(contract clause relieving the Government for liability for failure to substitute a subcontractor did not preclude recovery for arbitrary and capricious acts of contracting officer).

116. Rixon Elecs. v. United States, 536 F.2d 1345, 1354 (Ct. Cl. 1965).

117. Wunderlich Contracting Co. v. United States, 351 F.2d 956 (Ct. Cl. 1965); P.J. Maffei Bldg. Wrecking Corp. v. United States, 3 Cl. Ct. 482 (1983), *affd.*, 732 F.2d 913 (Fed. Cir.

1984).

118. Bethlehem Steel Corp., ASBCA No. 13341, 72-1 BCA ¶ 9186 (clause placing responsibility on contractor to assure that items produced were adequate for their intended purpose was unenforceable because it lacked clear and unmistakable language to impose such a requirement); Toombs & Co. v. United States, 4 Cl. Ct. 535 (1984)(clause stated that approval by the contracting officer would not relieve the contractor for error or omissions); *see also* Department of Nat. Resources & Conservation of Mont. v. United States, 1 Cl. Ct. 727 (1983); Peterson Builders, Inc., ASBCA No. 31859, 87-1 BCA ¶ 19,485.

119. Whittaker Corp. v. United States, 443 F.2d 1373 (Ct. Cl. 1971)(clause disclaiming the accuracy of drawings applied only to drawings of model and not to all Government furnished drawings); Thompson Ramo Wooldridge, Inc. v. United States, 361 F.2d 222 (Ct. Cl. 1966)(clause disclaiming the legibility, accuracy, and completeness of microfilm interpreted to disclaim perfection, but not that it was unsuitable for its intended purpose).

120. 358 F.2d 980, 984 (Ct. Cl. 1966).

121. *Id.* at 985-86.

122. Now the "Contract Drawings, Maps & Specifications" clause, DFARS, *supra* note 94, at 252.236-7002.

123. Pike Paschen Joint Venture III, ASBCA No. 37353, 89-1 BCA ¶ 21,429, at 108,003 (electrical power was manifestly necessary to operate the equipment, and even though it was not shown on the drawings, the contractor was required to install the wiring under the Omissions and Misdescription clause).

124. Basic Constr. Co., ASBCA No. 20585, 76-2 BCA ¶ 12,142, at 58,370.

125. *Id.*

126. *Id.* (contractor was not aware, nor reasonably should have been aware, that drawings had erroneously left out the conduit and wiring for the heaters); Wick Constr. Co., ASBCA No. 35378, 89-1 BCA ¶ 21,239 (omissions clause did not cover omission of such major work as the insulation of 420 feet of pipe).

127. 530 F.2d 878, 891 (1976).

128. *Id.*

129. Peter Kiewit Sons' Co. v. United States, 74 F. Supp. 165 (Ct. Cl. 1947).

130. United Contractors v. United States, 368 F.2d 585 (Ct. Cl. 1966).

131. *Id.* at 598.

132. 397 F.2d 826, 829 (Ct. Cl. 1968)

133. *Id.*

134. *Id.*

135. 536 F.2d 1345, 1351 (Ct. Cl. 1976).

136. *See* Whittaker Corp., Power Sources Div., ASBCA No. 14191, 79-1 BCA ¶ 13,805 (short-term, formally advertised production contract did not envision an extensive research and development effort or an advancement of the state of the art); Bethlehem Steel Corp., ASBCA No. 13341, 72-1 BCA ¶ 9186 (a requirement that a contractor make expensive changes in the advertised bid design without any price adjustment requires clear and unmistakable language to impose such an extraordinary requirement).

137. Coditron Corp., ASBCA No. 18129, 76-1 BCA ¶ 11,818.

138. *Id.*

139. Basic Constr. Co., ASBCA No. 20585, 76-2 BCA ¶ 12,142 (clause was not designed to constitute a complete shifting of the burden of erroneous specifications, but only to preclude the contractors from taking advantage of patent ambiguities).

140. *See* Gracon Corp., IBCA No. 2271, 89-1 BCA ¶ 21,232 (broad exculpatory language requiring contractor to coordinate components of the system to ensure proper operation did not shift design responsibility from the Government to the contractor); Avery Mays Constr. Co., GSBCA No. 5198, 79-2 BCA ¶ 13,982 (contract requirement that required contractor to coordinate drawings did not require contractor to check for drawing discrepancy).

141. Dynamics Corp. of Am., B-165953, 48 Comp. Gen. 750, 753 (1969).

142. *Id.* at 754.

143. *Id.* at 753-54.

144. *Id.*

145. *Id.* at 754.

146. *Id.* at 755.

147. *Id.*

148. Engineered Air Sys., Inc., B-236932, Jan. 19, 1990, 90-1 CPD ¶ 75 (PPE clause); Varo, Inc., B-193789, July 18, 1980, 80-2 CPD ¶ 44 (PPE clause); AMF Inc. Elec. Prods. Group, B-181732, May 28, 1975, 54 Comp. Gen. 978, 75-1 CPD ¶ 318 (Patent and Latent Defects clause); Vom Baur, Coburn, Simmons & Turtle, B-169838 &

B-169839, Oct. 30, 1970 (unpub.), 1970 WL 4154 (C.G.)(clause similar to the Production Drawings Changes (PDC) clause); American Air Filter Co., Inc., B-165953, Oct. 27, 1969 (unpub.), 1969 WL 3436 (C.G.)(clause similar to the PDC clause).

149. *See* 350 FEDERAL CONTRACT REPORTS D-3, para. 43 (Nov. 2, 1970). The Comptroller General stated in *Vom Baur, Coburn, Simmons & Turtle*, B-169838 & B-169839, Oct. 30, 1970 (unpub.), 1970 WL 4154 (C.G.), at 9, as follows:

> The ASPR Committee has informed our office that the "Preproduction Evaluation" clause used by Frankford Arsenal was discussed at a committee meeting on September 18, 1970. The consensus of the committee was that the clause does not conflict with the standard Changes clause for supply contracts, that it requires no deviation under ASPR 1-109, and that it may therefore be used by the Department of the Army when deemed appropriate.

150. *See* AMC PAM 715-6, *supra* note 1, at 2 (more precise techniques which increased the ability to dictate the necessary degrees of parallelism, concentricity, perpendicularity, flatness, roundness, and positioning).

151. *Id.* at 1-2.

152. Dynamics Corp. of Am., B-165953, 48 Comp. Gen. 750, 754-55 (1969).

153. Therm-Air Mfg. Co., Inc., ASBCA No. 15842, 17143, 74-2 BCA ¶ 10,818, at 51,431.

154. The categories of problems that the contractors assume and

those that remain the Government's responsibility are discussed *infra* pp. 60 to 66.

155. Dynamics Corp. of Am., at 756. *See also*, Therm-Air Mfg. Co., at 51,431 (the PPE clause did not require the contractor to assume the risk of expense incident to an unreasonable delay on the part of the Government in acting upon a proposed solution).

156. The implementation of the automatic approval provisions mentioned *supra* page 8, and discussed further *infra* page 67, has virtually eliminated this hazard.

157. 74-2 BCA ¶ 10,818, at 51,431.

158. *Id.*

159. *Id.*

160. *Id.*

161. Varo, Inc., B-193789, July 18, 1980, 80-2 CPD ¶ 44, at 3.

162. *Id.* at 4.

163. *See infra* pp. 48 to 55.

164. AMC PAM 715-6, *supra* note 1, at A-1.

165. Therm-Air Mfg. Co., Inc., ASBCA No. 15842, 17143, 74-2 BCA ¶ 10,818, at 51,430.

166. Id.

167. Dynamics Corp. of Am., B-165953, 48 Comp. Gen. 750, 755 (1969); Varo, Inc., B-193789, July 18, 1980, 80-2 CPD ¶ 44, at 3-4.

168. Dynamics Corp. of Am., at 755.

169. *See Id.* at 755; Varo, Inc., at 3; Engineered Air Sys., Inc., B-236932, Jan. 19, 1990, 90-1 CPD ¶ 75; Essex Electro Eng'rs, Inc., B-253301, Aug. 31, 1993, 93-2 CPD ¶ 141.

170. *See* Local Contractors, Inc., ASBCA No. 37018, Oct. 11, 1991 (unpub.), 1991 WL 517213 (A.S.B.C.A.)(Government failure to turn over 14 PPE proposals submitted by previous contractor did not excuse nonperformance because contractor was aware that the PPEP's were missing and did not consider it an impediment).

171. AMC PAM 715-6, *supra* note 1, at B-13.

172. Dynamics Corp. of Am., B-165953, 48 Comp. Gen. 750, 756 (1969).

173. The U.S. Army Tank-Automotive Command's version of the PPE clause states, in its introductory paragraph, as follows:

> The technical data for the (Contract End Item), incorporated herein, has been prepared and checked in accordance with accepted engineering practices. On the basis of previous experience, it appears reasonable to assume that the data may contain deficiencies which would make it impossible, from an actual or practical standpoint, to produce, fabricate, or assemble the contract items in the quantities specified in exact accordance with the required delivery schedule and all of such technical data. This preproduction evaluation clause is intended to (i) particularly identify the problem of possible technical data deficiencies; (ii) provide for the contractor's responsibility to review the technical data package to identify and correct such deficiencies to permit quantity production; (iii) require reporting of such deficiencies to the Government; and, (iv) to provide that the

identification of such deficiencies and the necessary correction thereof shall not be cause under this contract for any price increase or revision in the delivery schedule except as is hereinafter provided with respect to Government-issued changes. By way of example only, such deficiencies would include errors and omissions in drawings, tolerance stack-ups beyond the overall specified tolerance limitations for an end item, dimensions resulting in no-fit conditions, requirements for material which is not readily available or suitable for production, conflicts between separate requirements of the technical data, and processing requirements not suitable for production. This clause is not intended to place upon the contractor any design responsibility under this contract except as provided herein.

174. See the discussion *supra* pp. 31 to 36.

175. It is important to note at this point that the contracts referred to in the Comptroller General decisions involving B-169838 and B-169839 do not include the PPE clause. The Comptroller consistently refers to Note 21 of these contracts as a clause "similar" to the PPE clause. It, however, is closer to the PDC clause than the PPE clause. Note 21 only required the contractor to review the drawings within 15 days after receipt of the drawings for errors and discrepancies and to make changes to the contract under the Changes clause. It also required the contractor, after the review period, to bear all responsibility

for damages, costs or delays resulting from an inadequate review of the drawings. The Comptroller ruled that the contractor was not responsible for all errors discovered after the review, but only those errors that the contractor should have reasonably discovered by an adequate review. *See* Vom Baur, Coburn, Simmons & Turtle, B-169839, July 28, 1970 (unpub.), 1970 WL 4524 (C.G.); Vom Baur, Coburn, Simmons & Turtle, B-169838, B-169839, Oct. 30, 1970 (unpub.), 1970 WL 4154 (C.G.).

The PPE clause is very different from Note 21. The PPE clause requires a continuous review throughout performance of the contract and does not permit the errors to be corrected under the Changes clause. The limitation by the Comptroller on the extent of the disclaimer is also not applicable to the PPE clause. This decision, however, has created some confusion. *See* the clearly wrong application of this holding to the PPE clause in *GAO Interpretation of Preproduction Evaluation Clause Suggests Limit to Contractor's Risk*, 351 FEDERAL CONTRACTS REPORT A-1, A-4 (Nov. 9, 1970).

176. Vom Baur, Coburn, Simmons & Turtle, B-169839, July 28, 1970 (unpub.), 1970 WL 4524, at 14 (C.G.).

177. *Id.*

178. Id.

179. ASBCA No. 15842, 17143, 74-2 BCA ¶ 10,818, at 51,430.

180. *Id.* at 51,430-431.

181. *Id.* at 51,431.

182. *See* Bethlehem Steel Corp., ASBCA No. 13341, 72-1 BCA ¶

9186.

183. *See* North Am. Phillips Co. v. United States, 358 F.2d 980, 984 (Ct. Cl. 1966).

184. *See* Basic Constr. Co., ASBCA No. 20585, 76-2 BCA ¶ 12,142.

185. *See* the introduction to the TACOM PPE clause, *supra* note 173.

186. To American Filter Co. Inc., B-165953, Oct. 27, 1969, 1969 WL 3436, at 2 (C.G.).

187. *Id.*

188. *Id.* at 4-5.

189. *Id.*

190. B-193789, July 18, 1980, 80-2 CPD ¶ 44, at 4.

191. Id. at 3.

192. *Id.* at 4.

193. ASBCA No. 26974, 89-1 BCA ¶ 21,464.

194. *Id.* at 108,158.

195. *Id.* at 108,159.

196. *Id.* at 108,159-60.

197. *Id.* at 108,159.

198. *Id.* at 108,163.

199. *Id.*

200. *Id.*

201. *Id.* at 108,164.

202. B-193789, July 18, 1980, 80-2 CPD ¶ 44, at 4.

203. ASBCA No. 15842, 17143, 74-2 BCA ¶ 10,818.

204. *Id.* at 51,412.

205. *Id.* at 51,429-30.

206. *Id.* at 51,431-32.

207. *Id.* at 51,431.

208. *Id.*

209. As discussed earlier, it was improper for the Government to reject a viable solution and require the contractor to develop alternatives. *See* discussion *supra* p. 42.

210. Therm-Air Mfg. Co., at 51,431.

211. In *Thurnmill, Inc.*, ASBCA No. 15285, 71-2 BCA ¶ 9169, the board distinguished developmental work from that work that was standard practice in the industry. It found that the Government was responsible for the costs of development of a straightening procedure that was not within the general knowledge or practice of the industry. In *Whittaker Corp., Power Sources Div.*, ASBCA No. 14191, 79-1 BCA ¶ 13,805, the board equated research and development work with the advancement of the state of the art. Finally, in *Maxwell Elec. Corp.*, ASBCA No. 8261, 1963 BCA ¶ 3916, the board indicated that research and development may include the development of a component that is not commercially available.

212. Therm-Air Mfg. Co., Inc., at 51,431.

213. *Id.*

214. B-193789, July 18, 1980, 80-2 CPD ¶ 44, at 4.

215. ASBCA No. 34058, 91-1 BCA ¶ 23,323, at 116,984-85.

216. *Id.*

217. *Id.*

218. Dynamics Corp. of Am., B-165953, 48 Comp. Gen. 750, 754 (1969).

219. *Id.* at 755.

220. *Id.*

221. See *supra* note 149.

222. Varo, Inc., B-193789, July 18, 1980, 80-2 CPD ¶ 44, at 8; Engineered Air Sys., Inc., B-236932, Jan. 19, 1990, 90-1 CPD ¶ 75, at 6.

223. Engineered Air Sys., Inc., at 6.

224. AMC PAM 715-6, *supra* note 1, at B-11.

225. *Id.*

226. *Id.*

227. *Id.* at B-12.

228. DEPARTMENT OF DEFENSE, MILITARY STANDARD 480A, CONFIGURATION CONTROL-ENGINEERING CHANGES, DEVIATIONS AND WAIVERS (1978).

229. *Id.* ¶¶ 4.2.1 & 4.2.1.1.

230. *Id.* ¶ 4.2.2.

231. AMC PAM 715-6, *supra* note 1, at B-3.

232. *See* discussion *supra* p. 4.

233. The current TACOM version of the PPE clause contains the following description of the contractors responsibilities:

> H.1.2.1 During the term of this contact, the Contractor shall perform a detailed review of the technical data furnished for the contract items or otherwise specified by the Government as a part of the contract as awarded and as a part of any change issued to the "Changes" article thereafter. This review shall serve to identify, evaluate and be the basis for recommending corrective action in the form of a data

change proposal, hereinafter referred to as a PPE proposal (PPEP) in order to correct any deficiency which would preclude practical manufacture or assembly in order to assure that:

H.1.2.1.1 The contract items, including all components, assemblies and parts thereof can be produced, fabricated, and assemble in strict accordance with the technical data, corrected as required by this clause, without resort to any deviations, waivers or changes therefrom.

H.1.2.1.2 The quality assurance provisions are compatible with all other technical data.

H.1.2.1.3 The engineering as associated lists are comparable with all other technical data.

H.1.2.1.4 The parts and materials required for vehicle assembly can be procured and manufactured in accordance with the applicable technical data of this contract.

H.1.2.2 Upon Government approval of the PPEP, as hereinafter set forth, the Contractor shall correct any described deficiency in all contract items offered for acceptance if those items are affected by the change insofar as interchangeability, function service life,

or safety are concerned.

This is the TACOM PPE clause used in Contract No. DAAE07-86-C-R100. *See* BMY-Combat Sys., Div. of Harsco Corp., ASBCA No. 42469, Rule 4 File, Tab 1.

234. AMC PAM 715-6, *supra* note 1, at F-5 to F-6. The following are sections of the Basic PPE clause related to submission of compatibility changes:

> E.1. Essential Category II "Compatibility" Changes.
>
> a. Recommendations for essential changes shall be submitted on DD Form 1693 Engineering Change Proposal (ECP) (MIL-STD-481), as soon as practicable after disclosure of the need for change. The description and the need for the change shall be clearly and explicitly stated so as to permit expedited evaluation, serve as a basis for revision of technical data by the Government, and serve as basis for acceptance inspection. Approval may be assumed for any essential Code A or Code C "compatibility" change, as defined in paragraph B above, which does not adversely affect performance, reliability, maintainability, operability, safety, or interchangeability of parts items already produced under the contract and which otherwise complies with criteria for a Class II change, MIL-STD-480. Such requests shall be properly coded in accordance with paragraph C above, and classified as Class II changes.

. . .

c. Approval may not be assumed for any change which falls under the definition of a Class I change, MIL-STD-480. The "Note" which follows the definition of a Class I engineering change in MIL-STD-480 does not apply to this contract, i.e., an ECP shall not be designated a Class I change solely by virtue of its affecting drawings specified in the contract. Any change to a component subsequent to first article delivery which renders that component noninterchangeable with first article configuration, or which will otherwise adversely affect maintainability shall be designated a Class I change. Class I changes shall not be considered authorized until specific written approval has been received from the procuring agency.

d. Requests shall not knowingly be submitted as Class II "compatibility" changes which adversely affect performance, reliability, operability, safety, maintenance, or which otherwise fall under the definition of a Class I change. The Government reserves the right to reject any Class II "compatibility" ECP for the foregoing reasons by notification to the contractor within 15 days after receipt of the ECP by the contracting agency, as evidenced by registered mail return receipt or other

suitable receipt form.

e. Upon approval of a PPE "compatibility" change or in the absence of rejection of such a change within the specified 15-day period, the contractor's obligations relative to the pertinent Engineering Change Proposal shall be discharged to the extent that the deficiency is corrected. If the incorporation of an authorized "compatibility" change does not correct the deficiency, the contractor shall yet remain responsible for resubmitting and accepting any further necessary change to the technical data and for incorporating such change into all contract items not yet accepted by the Government.

. . .

g. The government reserves the right to direct an alternate correction in lieu of a valid contractor-proposed "compatibility" change when such action is in the interest of interchangeability with material in service or in stock, or for other vital logistical considerations. Such Government-directed changes will be subject to equitable adjustment under the changes article, with the provision that the adjustment of cost and/or delivery will be limited to the difference, if any, between the contractor's originally proposed "compatibility" change and the government-directed correction. This provision for equitable adjustment

shall not be construed to cover instances in which the contractor's proposal is rejected for reasons set forth in paragraph E(1)(d) above, or to cover functionally nonessential ECP's submitted under provisions of paragraph E(3) below.

235. *Id.* at B-6.

236. *See id.* at C-4.

237. *Id.* at B-4.

238. *Id.* at F-4 to F-5. The following are the provisions in the Basic PPE clause related to Government responsibility changes:

D. Government Directed Engineering Changes.

1.a. Changes initiated or approved by the Government for the purpose of providing essential improvement in performance and reliability beyond that required by specification(s) cited in item 0001, except for correction of errors in that (those) specification(s) as provided in paragraph B(7), above.

b. Changes necessary for compatible interfacing with Government-furnished components if characteristics are other than as specified in the Technical Data Package.

c. Changes to the following items which are hereby excluded from Preproduction Evaluation provisions of paragraph B, above:

2. Code B (Interface).

Changes to external configuration or operating characteristics of the (Contract End Item) which may be required by the Government for compatibility with other components of the weapon system not covered by this contract.

3. Code S (Safety).

Changes required by the Government for correction of a personnel or equipment safety deficiency not covered by the end item specification.

4. Code O (Operational or Logistics Support).

a. Changes initiated by the Government for improvement of operability, maintainability, use of standard parts, interchangeability, replaceability, and electromagnetic interference.

239. *See id.* at B-4.

240. *Id.*

241. *Id.* at B-5 to B-8.

242. *Id.* at B-8.

243. *Id.* at B-7.

244. *Id.*

245. *Id.* at B-8.

246. *See id.* at B-3.

247. *See id.* at B-5 ("It is a highly questionable technical administration practice to actively or passively encourage any

expenditure of engineering effort by the contractor in the development of an Engineering Change Proposal which must be issued under the Changes article, and the Government is solely responsible for any delays and pertinent costs incurred in awaiting a proposal by the contractor").

248. *Id.* at A-12.

249. *Id.* at A-13.

250. *Id.* at A-13.

251. *Id.* at B-1. *See also* Dynamics Corp. of Am., B-165953, 48 Comp. Gen. 750, 756 (1969)("In view of the risks shifted to the contractor by the provisions of Article I, it is essential that the Government act promptly in its consideration of Category II change proposals as provided under Article I if the contractor's interests are not to be prejudiced").

252. AMC PAM 715-6, *supra* note 1, at B-1.

253. *Id.* at C-1.

254. *Id.* at iv.

255. *See* the list of appeals *supra* note 2.

256. The facts of each appeal exceed the scope of this article and will not be discussed for fear of prejudicing parties who have provided information for this analysis.

257. *See* Automated Services, Inc. GSBCA No. EEOC-2, 81-2 BCA ¶ 15,303.

258. *See* Nolan Sklute, *Government Misrepresentation and Nondisclosure of Superior Knowledge in Federal Procurement*, 6 PUB. CONT. L.J. 39 (1973).

259. 312 F. 2d 774, 778 (Ct. Cl. 1963).

260. AMC PAM 715-6, *supra* note 1, at B-13.

261. *See* list of claims *supra* note 2.

262. The elements of a superior knowledge claim are: 1) the presence of information relating to the work which is crucial to the proper estimation of the method or cost of performance; 2) the inability of the contractor to obtain the information through normal investigation; and, 3) the actual or imputed knowledge on the part of the Government that the contractor does not have the information. *See* Sklute, *supra* note ?.

263. AMC PAM 715-6, *supra* note 1, at B-13, states as follows:

> "The project engineer should stress [in the presolicitation conference] that the PPE contract is not a development contract or an Advanced Production Engineering contract; that redesign for nonessential purposes will be neither required nor encouraged, and will in fact not be permitted. . . .Although he should avoid unwarranted emphasis of the possibility of undiscovered problems, he should just as studiously avoid any implication that the Technical data Package is the essence of perfection. Offerors should be cautioned that some limited redesign may well be necessary, and that an assumption to the contrary would run counter to the letter and spirit of the PPE contract."

264. Varo, Inc., B-193789, July 18, 1980, 80-2 CPD ¶ 44, at 4.

265. Therm-Air Mfg. Co., Inc., ASBCA No. 15842, 17143, 74-2 BCA ¶ 10,818, at 51,431.

266. *Id.*

267. ASBCA No. 32834, 91-2 BCA ¶ 23,758, at 118,990.

268. *Id.*

269. *Id.*

270. *Id.*

271. *See* discussion *supra* p. 51.

272. *See* discussion *supra* p. 56.

273. ASBCA No. 34058, 91-1 BCA ¶ 23,323, at 116,984.

274. AMC PAM 715-6, *supra* note 1, at B-1.

275. *Id.* at iv.