

ARMED SERVICES BOARD OF CONTRACT APPEALS

Appeal of --)
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Stemaco Products, Inc.) ASBCA No. 51599
)
Under Contract No. SP0100-95-D-5098)

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Detroit, MI

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(DLA)
Philadelphia, PA

OPINION BY ADMINISTRATIVE JUDGE MOED

This appeal relates to a contract for the supply of combat vehicle crewman (CVC) helmets produced of molded, layered Kevlar fabric. The specification stated that the helmets were to contain “not less than 33 layers of fabric throughout any cross-sectional area” thereof. In compiling its offer for the contract, appellant (Stemaco) interpreted that provision as a representation that helmets conforming to the contract could be produced with exactly 33 layers of fabric. During performance, Stemaco found that up to 35 layers of fabric were needed in order to meet a performance requirement of the specification relating to ballistic resistance. Stemaco seeks a price increase for the added work principally on the basis that the specifications were defective in calling out 33 layers of fabric. Only entitlement is now to be decided.

FINDINGS OF FACT

1. This dispute relates to an indefinite quantity contract awarded to Stemaco on 27 July 1995 by the Defense Personnel Support Center (DPSC) (subsequently redesignated as the Defense Supply Center Philadelphia) for a supply of items described as “shell, combat vehicle crewman, helmet, DH-132B” (hereinafter CVC helmet). The contract stated minimum and maximum quantities, at stated firm, fixed unit prices, to be ordered during the initial year of the contract with options in the Government to order additional quantities within the same limits, at increased prices, during the two subsequent 12 month periods. The specification for the CVC helmet was MIL-H-44117A (Helmet, Combat Vehicle Crewman, Ballistic Shell, DH-132A) dated 22 December 1986, with Amendment No. 1, dated 6 March 1990 and certain interim changes set forth in the contract schedule.

All references herein to MIL-H-44117A are to the totality of the foregoing, unless otherwise stated.

2. The primary component of the CVC helmet was the shell which was described in § 3.4.1 of MIL-H-44117A, in part as follows:

The helmet shell shall be a laminated structure composed of resin coated reinforcing material compression molded by heat and pressure. The reinforcing material specified in [§] 3.3.1 shall be coated on both sides with equal amounts of the laminating resin specified in [§] 3.3.1.1 (see [§] 4.4.1.2).

3. The “reinforcing material” is described in § 3.3.1 of MIL-H-44117A as “aramid ballistic cloth” conforming to type II, class 1 of MIL-C-44050. So far as the record indicates, the only material meeting that description was fabric woven from Kevlar KM-2 yarn manufactured by E.I. Du Pont De Nemours Co., Inc., Wilmington, DE (Du Pont Co.).

4. MIL-H-44117A sets forth two alternate methods for construction of the shell. The first of these, as described in § 3.4.1.1.1, is “pinwheel preform construction” (pinwheel method). Under that method, pinwheel-shaped pieces of Kevlar KM-2 fabric are “superimposed over each other such that the gaps of each layer are offset from the gaps of all other layers.” Among the requirements for that method is that “[t]he pinwheel preforms shall be assembled with four crown plies . . . so that there are not less than 33 layers of fabric throughout any cross-sectional area of the shell.”

5. The other construction method, which was the one used under this contract, is the “combination pinwheel preform and rectangular panel construction” (the combination method). This method is described in § 3.4.1.1.2 as consisting of:

a single outer and a single inner fabric layer of pinwheel construction with rectangular panels sandwiched between. . . . In addition to rectangular panels, the crown may contain circular or oval-shaped plies The individual preform layers shall be superimposed over each other such that the gaps of any two adjacent layers are offset by a minimum of ½ inch.

6. As in the case of the pinwheel preform construction, § 3.4.1.1.2 requires, with respect to the combination method that the fabric “panels shall be laid up so that there are not less than 33 layers of fabric, including the inner and outer pinwheel layers, throughout any cross-sectional area of the shell.”

7. Section 3.5.1 of MIL-H-44117A requires that “[t]he V_{50} ballistic limit for each helmet shell shall not be less than 2,150 feet per second [fps] when tested as specified in

[§] 4.4.5.” MIL-STD-662 (Military Standard V₅₀ Ballistic Test for Armor) (R4, tab 62), which is one of the Government specifications listed in § 2 (Applicable Documents) of MIL-H-44117A, defines “V₅₀ ballistic limit” as the velocity at which complete and incomplete penetration of armor of given thickness and physical properties by a particular projectile are equally likely to occur. Consistent with the foregoing, satisfying the V₅₀ ballistic limit in the specification requires a V₅₀ ballistic result of 2,150 fps or higher. On that basis, the V₅₀ ballistic limit in the specification is sometimes referred to herein as the “V₅₀ ballistic minimum.”

8. Section 4.4.5 of MIL-H-44117A provides that attainment of the V₅₀ ballistic limit prescribed in § 3.5.1 was to be determined through testing in accordance with the method prescribed in § 4.5.2. The latter provision states that, with certain exceptions, the ballistic resistance test was to be conducted in accordance with MIL-STD-662 using a fragment simulating projectile (FSP), .22 caliber, type 2, weighing 17 grains ± 0.25 grain.

9. The present contract was Stemaco’s first experience in production of ballistic helmets from Kevlar KM-2 fabric (tr. 226). Previously, however, Stemaco had produced approximately 300,000 ballistic helmets from other types of Kevlar fabric. The largest portion of that quantity was 280,000 Personal Armor System Ground Troops (PASGT) helmets produced with Kevlar KV-29 fabric. MIL-H-44099, dated 23 March 1983, was the specification for the PASGT helmets.

10. In provisions analogous to those of MIL-H-44117A set forth above, § 3.3.1.1.2 of MIL-H-44099 stated, with respect to the combination method of construction chosen by Stemaco, that “[t]he panels shall be laid up so that there are not less than 19 layers of fabric, including the inner and outer pinwheel layers, throughout any cross-sectional area of the shell.” Section 3.4.3 of MIL-H-44099 prescribed a V₅₀ ballistic limit for the PASGT helmets of “not less than 2,000 feet per second.” Stemaco constructed the PASGT helmets of exactly 19 layers of Kevlar KV-29 fabric. These helmets surpassed the requirements as to ballistic resistance, attaining an average V₅₀ ballistic limit of 2,130 fps, which bettered the specification minimum requirement by approximately seven percent. (R4, tab 51 at 2)

11. Stemaco estimated the material costs for its offer for the CVC helmet contract on the basis of furnishing exactly 33 layers of Kevlar KM-2 material per helmet (tr. 134). That decision was based primarily on two considerations. The first was Stemaco’s interpretation of the phrase “not less than 33 layers of fabric” in §§ 3.4.1.1.1 and .2 of MIL-H-44117A. That interpretation was expressed as follows in the hearing testimony of Mr. Howard Stein, Stemaco’s president:

[A]nything less than that 33 plies would in all probability not give me the expected results. On the other hand, it’s also giving me reasonable assurance that if I do it as specified, some

engineer somewhere must have had some pretty conclusive evidence or they'd say, 34, 35 or 36. They would have said something else. There should be a basis for this.

(Tr. 122-23)

12. Stemaco's decision to bid on the basis of 33 layers of fabric was also derived from its belief that "if [we] use 33 layers of fabric and reasonable, accepted industrial processing, we are going to get the results that they spelled out, 2,150 feet per second" (tr. 121). That experience consisted of its success in producing the PASGT helmets under a similarly worded specification provision, using the minimum number of layers, and successfully meeting the specified V_{50} ballistic limit (finding 10) (tr. 121-22). Mr. Stein stated, further, that had §§ 3.4.1.1.1 and .2 of MIL-H-44117A not called out a particular number of layers, he would have viewed these provisions as constituting "a performance specification, that I had the responsibility to determine the number of layers to meet the desired ballistic results" (tr. 124). Stemaco had successfully carried out a pure performance specification in the case of a contract for supply of U.S. Navy phone-talker ballistic helmets in which it had the freedom to select the material and determine the number of layers needed to meet performance requirements (tr. 125).

13. There is no evidence that Stemaco had a reasonable basis for believing that it would be able to meet the specified V_{50} ballistic limit for the CVC helmet with the specified minimum of 33 layers simply because it had met that requirement under the PASGT contract with 19 layers of fabric which was the minimum number of layers specified in that contract.

14. After award of contract and initiation of production, Stemaco sent the first successfully molded CVC helmet, containing 33 layers of Kevlar KM-2 fabric, to the H.P. White Laboratory for ballistic testing in accordance with MIL-H-44117A (tr. 331). White conducted the tests and on 30 January 1996 reported back a V_{50} ballistic result of 2,145 fps, which was less than required by the specification (finding 7) (R4, tab 61 at 2, 3). The first shot, fired at the crown of the helmet, penetrated completely at a velocity of 2,136 fps. This was an area of solid plies of fabric affording no possibility of gaps of coverage. Stemaco's general manager testified at the hearing that this was "frightening, because . . . we had an absolute failure right in the area [where it was] unquestionable that there were 33 layers." (Tr. 333).

15. Mr. Philip Hudner served as the U.S. Army Natick Research, Development, and Engineering Center (hereinafter "Natick") project officer for Kevlar KM-2 PASGT and CVC helmet development from 1991 until approximately 1996. He testified to an experimental margin of error of five percent applied discretionarily by the Government in acceptance of ballistic test results. There is no mention of such a margin in MIL-H-44117A or elsewhere in the contract.

16. Stemaco undertook a detailed and wide-ranging investigation of the causes of the failure which was reported to the contracting officer in letters dated 2 and 27 February 1996 (R4, tabs 15, 16). While the matter was informally discussed with Government technical personnel during that period (tr. 513-14, 517), there is no evidence that Stemaco requested the Government's assistance in resolving the problem. On 12 February 1996, the contracting officer informed Stemaco by telephone that there was an urgent military requirement for the helmets and requested Stemaco "add a ply or two if necessary to meet ballistics" requirements (ex. A-33; tr. 344).

17. Lewcott Corp had resin-coated the fabric in the helmet which failed the initial ballistic test (tr. 577; finding 14). At the suggestion of the Du Pont Co., a quantity of the Kevlar KM-2 fabric was coated by a different subcontractor, the Westinghouse Co. (R4, tab 16; tr. 584). Subsequent ballistic testing of a CVC helmet molded of 33 layers of fabric coated by Westinghouse yielded a V_{50} ballistic result of 2,155 fps which exceeded the specification minimum of 2,150 fps (tr. 587).

18. Stemaco, however, did not wish to proceed with production on the basis of the improved V_{50} result obtained from fabric coated by Westinghouse because that result afforded practically no margin of safety. An adequate margin of safety was crucial to Stemaco because the failure of a single sample helmet to meet the required V_{50} ballistic limit would result in rejection of an entire lot pursuant to § 4.4.5 of MIL-H-44117A. This could cause a substantial financial loss to Stemaco. A production lot could contain as many as 2,200 pieces (tr. 262). The cost of the coated, woven Kevlar KM-2 fabric alone was \$75-\$90 per helmet, which was more than 50 percent of the initial unit price of \$133.54 (tr. 609). The solution arrived at by Stemaco was to increase the number of layers of Kevlar KM-2 fabric in each helmet. Increasing that number up to 35 layers was decided upon in order to provide a sufficient margin of safety (tr. 264).

19. On 8 April 1996, Mr. George Snyder, Stemaco's general manager, orally requested authorization from Mr. Hudner for the use of up to 35 layers. In Mr. Hudner's view, the request was appropriate because even though MIL-H-44117A did not prohibit using more than 33 layers of fabric, the additional layers would increase the weight of the helmet. The increased weight, however, was within acceptable limits and, on that basis, the Government concurred in the use of up to 35 layers for the CVC helmet. (R4, abs 21, 22)

20. On 2 May 1996, the White laboratory reported to Stemaco that two redesigned CVC helmets containing 34-35 layers of Kevlar KM-2 fabric had passed ballistic testing with V_{50} ballistic results of 2,270 and 2,285 fps (R4, tab 61 at 4-6). CVC helmets with the added layers were subsequently submitted for, and passed, required first article tests. By letter dated 8 May 1996, the contracting officer notified Stemaco that with the successful completion of first article testing, commencement of production was authorized (R4, tab

25). Stemaco thereafter successfully completed the contract with delivery and acceptance of a total of 31,720 CVC helmets (R4, tab 56).

21. Prior to submitting its offer for this contract, Stemaco had consulted with the Du Pont Co. concerning Kevlar KM-2 material. It was told by the Du Pont Co. that “the material was very similar to [the Kevlar KV-29 material] used in the PASGT helmet, however being thinner, but it responded to the molding process in the same way” (tr. 576-77). It would appear, however, that Stemaco was not informed at that time of the Du Pont Co.’s substantial prior experience as a prime contractor for the Government in the production of ballistic helmets from Kevlar KM-2 fabric.

22. During 1989, Natick began examining the feasibility of replacing Kevlar KV-29 with Kevlar KM-2 for use in PASGT helmets, primarily for the purpose of obtaining a reduction in the weight of that helmet (tr. 397). In 1991, Natick awarded a contract to the Du Pont Co. for development of a PASGT helmet made of Kevlar KM-2 (PASGT Kevlar KM-2 contract). The record contains results of ballistic testing of Kevlar KM-2 PASGT helmets conducted under that contract with 17 grain FSP projectiles (tr. 432, 434; R4, tab 66). These tests yielded V_{50} ballistic results in the range of 2,316 - 2395 fps (R4, tab 66).

23. All of the helmets produced under the PASGT Kevlar KM-2 contract contained 33 layers of fabric (R4, tab 64; tr. 406). Most were produced using the pinwheel method of construction. At the end of that contract, however, immediately prior to the submission of this type of helmet for type classification (*i.e.*, formal adoption of an equipment for use by U.S. armed services (tr. 397)), 12 such helmets were produced, using the combination method of construction (tr. 406). These helmets were then subjected to ballistic testing and met the prescribed V_{50} ballistic limit (tr. 406). Under the terms of MIL-H-44117A, the V_{50} ballistic limit prescribed in § 3.5.1 (finding 7) applies equally to the pinwheel and combination methods of construction. There is no evidence that the construction method affected V_{50} ballistic results as to any of the Kevlar ballistic shells.

24. The requirements of MIL-H-44117A for “not less than 33 layers of fabric” and a V_{50} ballistic limit of 2,150 fps were both derived from the results of the PASGT Kevlar KM-2 contract (tr. 441, 544). Although a V_{50} ballistic limit in the 2,300 fps range would have been justified by those results, it was set at 2,150 fps because a higher amount would have required treating the data as classified information under the pertinent security classification criteria, which Natick was reluctant to do (tr. 430-31). Using data from ballistic testing of the Kevlar KM-2 PASGT as the basis of the V_{50} ballistic limit for the Kevlar KM-2 CVC helmet under the present contract was appropriate because the fabrication processes for the two helmets were identical and their shapes were similar (tr. 441-42).

25. The Kevlar KM-2 PASGT helmet, however, was never put into production. Kevlar KM-2 fabric was made of 850 denier yarn, which weighed 6.8 ounces per square

yard when woven into fabric. This was lighter than Kevlar KV-29 fabric which was made of 1500 denier yarn which weighed 14 ounces per square yard when woven into fabric. (Tr. 315) The lighter weight of Kevlar KM-2, however, necessitated using a greater number of fabric layers in order to obtain the same ballistic performance as Kevlar KV-29. The weight reduction of five ounces gained from use of the Kevlar KM-2 fabric for a PASGT helmet was offset by the 30 percent greater cost of laying up 33 layers of Kevlar KM-2 fabric for that helmet versus 19 layers of Kevlar KV-29 fabric. (Tr. 400-01)

26. On 28 July 1992, Natick awarded Contract No. DAAK60-92-C-0063 (R4, tab 60) (hereinafter the 1992 Kevlar KM-2 CVC contract) to the Du Pont Co. for 300 Kevlar KM-2 CVC ballistic helmets, to be fabricated of Kevlar KM-2, either 850 or 1500 denier, at the fixed unit price of \$150. The contract required that the helmets meet stated V_{50} ballistic limits when tested with various types of projectiles, including 17 grain FSP. As to that projectile, the specified V_{50} ballistic limit was not less than 2,000 fsp when tested in accordance with § 4.4.5 of MIL-H-44117A. The V_{50} ballistic limits specified in that contract were those contained in the earlier contract for production of Kevlar KV-29 PASGT and the Kevlar KM-2 PASGT contract (tr. 419).

27. The specification in that contract was MIL-H-44117A, dated 22 December 1986, with certain exceptions. That version of MIL-H-44117A required “not less than 9 layers of fabric throughout any cross-sectional area of the shell” (R4, tab 1). The contractor, the Du Pont Co., however, took the view that the effective requirement was the number of fabric layers needed for meeting the specified ballistic limits (tr. 420). On that basis, the helmets were produced with 33 layers using both the pinwheel and combination methods of construction. The purpose of the 1992 Kevlar KM-2 CVC contract, as awarded, was to acquire helmets for field evaluation. During the course of performance, however, various operational needs, such as the Somalia mission, intervened, requiring the ordering and production of large additional quantities of the Kevlar KM-2 CVC helmets. (Tr. 416) The record does not contain the results of ballistic testing of the helmets produced under the 1992 Kevlar KM-2 CVC contract.

28. On 29 November 1996, while the present contract was still in performance, DPSC awarded Contract No. SP0100-97-C-5015 (1996 CVC contract) to Specialty Plastics Products of Pennsylvania (Specialty Plastics) for supply of 49,600 Kevlar KM-2 CVC helmets at the total firm, fixed price of \$6,243,648 (R4, tab 67). Specialty Plastics had considerable prior experience in the manufacture of Kevlar ballistic helmets, including production, as subcontractor to the Du Pont Co., of both the Kevlar KM-2 PASGT helmets (finding 22) and the Kevlar KM-2 CVC helmets (finding 26) (tr. 404, 413). Specialty Plastics had competed for the present contract and had lost the award to Stemaco by a difference of less than one cent in the unit price after application of the price evaluation factors set forth in the solicitation (tr. 225, 318).

29. The specifications in the 1996 CVC contract were the same as those in the present contract with Stemaco except for several additional changes which have not been addressed by the parties and as to which there is no indication of relevance to the present dispute.

30. The record contains reports of ballistic testing of first articles submitted under the 1996 CVC contract, conducted on 28 February and 3 March 1997. V_{50} ballistic results reported for the six helmets tested were: 2,233, 2,248, 2,256, 2,282, 2,287, and 2,288 fps, which surpassed the specified V_{50} ballistic limit of 2,150 fps (R4, tab 46; finding 7). Stemaco contends that the credibility of these results is diminished by the absence, from the test reports, of information as to projectile used, test conditions, and number of shots taken.

31. The tests were conducted by DLA Product Testing Center-Analytical, a division of DPSC. The test reports bear a certification, signed by Mr. Joseph J. Jaworski, that the tests “were performed under my supervision in accordance with the specification tests requirements and that the reported test results are true, valid and applicable to the samples tested” (R4, tab 46). Mr. Jaworski was a witness at the hearing of this appeal (tr. 657-726) and testified briefly as to the first article testing of these helmets (tr. 684). Stemaco could have, but did not, ask Mr. Jaworski about the above details of these tests. On that record, there is no basis for disbelieving Mr. Jaworski’s certification and accordingly, we find those results to be fact.

32. In May, 1998, at the request of the contracting officer, two helmets, which had been produced, delivered and accepted under the 1996 CVC contract, were subjected to ballistic resistance and other testing by the DLA Product Testing Center-Analytical. The V_{50} ballistic results for these helmets, identified as Nos. 1810 and 1811 (Board exs. 2, 3), were 2,256 fps and 2,218 fps, respectively, also exceeding the specified limit (ex. A-17). The basis of the V_{50} ballistic result attained for No. 1810 is fully documented as to instruments used, shots fired, velocities recorded, and whether penetrations were complete or partial. The V_{50} ballistic result attained for No. 1811 is only partially documented. There is undisputed testimony from Mr. Jaworski, however, that No. 1811 was tested in the same manner as No. 1810 (tr. 700). That makes it proper to give the V_{50} ballistic result for No. 1811 the same credence as the fully-documented result for No. 1810.

33. As an additional, special test, the DLA Product Testing Center-Analytical examined the 1996 CVC contract helmets for compliance with the requirement of § 3.4.1.1.2 of MIL-H-44117A that there be “not less than 33 layers of fabric, including the inner and outer pinwheel layers, throughout any cross-sectional area of the shell” (finding 6). The examination consisted of cutting each shell through a cross-sectional area, immersing each of the cut pieces in an organic solvent, methyl ethyl ketone (MEK), in order to facilitate the separation, and counting, of the layers of Kevlar KM-2 fabric in each cut piece. That examination is not provided for in MIL-H-44117A (ex. A-21).

Mr. Jaworski, who observed that examination, testified that only those layers found at the cut line were counted (tr. 711). Mr. Snyder agreed with that approach stating that “[a]ll you can do is count the layers at some specific point along the area where it’s cut” (tr. 376).

34. The written report of this examination prepared by the DLA Product Testing Center-Analytical states that Nos. 1810 and 1811 each contained exactly 33 layers. Examination of these pieces, which are physically part of the present record, confirms that count.

35. In its post-hearing brief, Stemaco contends that after the initial failure to meet the specified V_{50} ballistic limit of 2,150 fps (finding 7), it repeatedly sought information from the Government concerning the basis of that requirement (app. br. 38). The record shows that the first such request was made in a letter to the contracting officer, dated 27 November 1996. In that letter, Stemaco stated that it was seeking to determine how many layers of Kevlar KM-2 fabric were needed in order to meet the performance requirements of the contract, specifically, the V_{50} ballistic limit of 2,150 fps. For that purpose, Stemaco requested production, pursuant to the Freedom of Information Act (FOIA), of a copy of the 1992 Kevlar KM-2 CVC contract “with any and all technical amendments thereto, and all reports, technical in nature, that were required by or presented to the Government” (R4, tab 41). In the ensuing months, until 2 September 1997, there were further FOIA requests expanding the scope of desired documents relating to that contract (app. exs A-3,-5, -6, -8, -10, -12). Stemaco was provided with copies of that contract and numerous test reports in response to these requests.

36. In its post-hearing proposed findings of fact, Stemaco asks us to find that “[d]espite [its] repeated requests for help, data, prior test results or explanations concerning the creation of [the version of MIL-H-44117A included in the present contract], the Government failed to cooperate with Stemaco’s requests” (app. br. 36). On the record before us, the alleged failure of cooperation did not occur. Approximately six months prior to the first request for documents, the concerns as to compliance with the V_{50} ballistic requirement had been resolved through Stemaco’s own efforts and the first article had been submitted and approved (findings 20, 35).

37. On 3 October 1997, Stemaco submitted a written claim, duly certified pursuant to the Contract Disputes Act (CDA), 41 U.S.C. §§ 601-613, as amended, seeking a contract price increase in the amount of \$300,479.70 on the basis that the specification was defective in prescribing 33 layers of fabric for the CVC helmet which was insufficient for meeting the V_{50} ballistic limit of 2,150 fps prescribed in MIL-H-44117A. The claim sought to recover for the added costs of investigating the failure of the 33 layer helmet to meet that requirement; the redesign effort resulting in a 34-35 layer helmet which met that requirement; the added costs of producing the redesigned helmet; and costs of delay associated with the foregoing. (R4, tab 51)

38. On 24 March 1998, the contracting officer issued a written decision pursuant to the CDA denying the claim (R4, tab 56). Stemaco took a timely appeal from that decision which was docketed as ASBCA No. 51599.

DECISION

Stemaco chose to use the combination method for construction of the helmet shells. In relation to that method, § 3.4.1.1.2 of MIL-H-44117A requires that the fabric be “laid up so that there are not less than 33 layers of fabric, including the inner and outer pinwheel layers, throughout any cross-sectional area of the shell” (finding 6). Stemaco interprets that provision as a representation by the Government that “a properly designed 33 layer CVC helmet shell” would meet the V_{50} ballistic limit of 2,150 fps specified in § 3.5.1 of MIL-H-44117A (finding 7) (app. br. 42).

The clear import of “not less than 33 layers of fabric” was that 33 layers was the minimum amount of fabric to be furnished with the possibility that an additional amount might be needed in order to meet other requirements of the contract including the specified V_{50} ballistic limit. The view that this constituted a representation that exactly 33 layers were needed is contrary to the plain meaning of the provision itself and is, therefore, unreasonable. Stemaco’s belief that “not less than” 33 layers meant exactly that number was based also on its experience in performing the contract for the PASGT helmets. There too, the specification called for “not less than” a stated number of fabric layers. Stemaco was able to meet the V_{50} ballistic limit in the PASGT contract with the number of layers specified in the contract as the minimum quantity (finding 10). There is nothing in the record concerning the PASGT contract, however, which made it reasonable to bid for the present contract on the basis of furnishing no more than the specified minimum of 33 layers of fabric.

The V_{50} ballistic limit in the 1992 Kevlar KM-2 CVC contract was specified as not less than 2,000 fps (finding 26). Absent from the record are results of ballistic testing of the helmets produced under that contract (finding 27). Stemaco contends that lacking ballistic results from firing 17 grain FSP’s at a 33 layer shell produced under that contract, there was no basis for specifying a V_{50} ballistic limit exceeding 2,000 fps in the present contract. On that theory, Stemaco contends that the prescribed V_{50} ballistic limit of 2,150 fps was invalid, entitling it to reimbursement of costs of adding fabric layers to meet that requirement (app. br. 46-47). The record, however, shows that the specified V_{50} ballistic limit was readily attainable. The PASGT Kevlar KM-2 helmets, all containing 33 layers and produced with processes identical to those specified for the CVC helmet under this contract and possessing a shape similar to that helmet, had attained V_{50} ballistic results in the range of 2,316-2,395 fps (findings 22, 24). The same is true of the helmets, containing 33 layers, produced under the 1996 CVC contract under essentially the same specification as contained in the present contract. These showed V_{50} ballistic results in the range of 2,233-2,288 fps (finding 30).

Independent of the foregoing, the record shows that the added expense incurred and claimed by Stemaco for additional fabric layers was not proximately caused by any defect in the specification. In testing of a second CVC helmet, Stemaco had obtained a V₅₀ ballistic result of 2,155 fps which met and surpassed the specification requirement. The helmet contained 33 layers of fabric which had been resin-coated by a new subcontractor (finding 17). Stemaco, however, was not satisfied with that ballistic result. It was only slightly better than the specification minimum of 2,150 fps. As such, it was regarded by Stemaco as carrying an undue risk that a sample drawn from a large production lot would test below 2,150 fps, resulting in rejection of the entire lot and, possibly, a large financial loss to Stemaco (finding 18). To forestall that possibility, Stemaco decided to increase the number of fabric layers in the helmet up to 35 layers which would yield a higher V₅₀ ballistic result, thereby affording a margin of safety against rejection of helmets for failure to meet that requirement (finding 18). Disregarding a sufficient V₅₀ ballistic result in order to protect against financial risk was a business decision on the part of Stemaco which precludes recovery for the added fabric layers. The Government is not liable for added costs resulting from business decisions of the contractor. *Tasos Sylaidis*, ASBCA No. 29849, 86-3 BCA ¶ 19,156 at 96,801

For the reasons set forth above, the appeal is denied in its entirety.

Dated: 20 August 2001

PENIEL MOED
Administrative Judge
Armed Services Board
of Contract Appeals

I concur

I concur

MARK N. STEMLER
Administrative Judge
Acting Chairman
Armed Services Board
of Contract Appeals

EUNICE W. THOMAS
Administrative Judge
Vice Chairman
Armed Services Board
of Contract Appeals

I certify that the foregoing is a true copy of the Opinion and Decision of the Armed Services Board of Contract Appeals in ASBCA No. 51599, Appeal of Stemaco Products, Inc., rendered in conformance with the Board's Charter.

Dated:

EDWARD S. ADAMKEWICZ
Recorder, Armed Services
Board of Contract Appeals