

United States Court of Appeals for the Federal Circuit

01-1350

RAYTHEON COMPANY

(doing business as Raytheon Systems Company),

Appellant,

v.

Thomas E. White, SECRETARY OF THE ARMY,

Appellee.

Mitchell Y. Mirviss, Venable, Baetjer and Howard, LLP, of Baltimore, Maryland, argued for appellant. Of counsel on the brief were Thomas J. Madden and Rebecca E. Pearson, Venable, Baetjer, Howard & Civiletti, LLP, of Washington, DC.

Steve J. Gillingham, Senior Trial Attorney, Commercial Litigation Branch, Civil Division, Department of Justice, of Washington, DC, argued for appellee. With him on the brief were Robert D. McCallum, Jr., Assistant Attorney General; and David M. Cohen, Director. Of counsel on the brief was Craig Clarke, Deputy Chief Trial Attorney, Contract Appeals Division, Litigation Center, Department of the Army, of Arlington, Virginia.

Appealed from: Armed Services Board of Contract Appeals

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DECIDED: September 24, 2002

Before BRYSON, GAJARSA, and LINN, Circuit Judges.

BRYSON, Circuit Judge.

Following the termination of a military supply contract, appellant Raytheon Company sought an increase in the total price of the contract to provide a basis for a later claim of termination damages. Dissatisfied with the decision of the contracting officer, Raytheon appealed to the Armed Services Board of Contract Appeals. Before the Board, Raytheon argued that the total price of the contract should have been increased substantially. The

Board granted Raytheon's claim in part and denied it in part. Raytheon has appealed from the adverse portion of the Board's decision.

I

In 1982, Ford Aerospace & Communications Corporation was awarded a contract to develop the AN/DAW-2 Rosette Scan Seeker guidance section for use in the Army's Chaparral ground-to-air missile. As part of its contract, Ford Aerospace developed a Technical Data Package ("TDP"), a package of design and manufacturing information that defines the required design configuration and procedures to ensure that an item will perform as intended when it is produced.

In 1988, the Army requested proposals for production of the AN/DAW-2 guidance section by a second source. At that time, Ford Aerospace had not been awarded a contract for sustained production, and it had not demonstrated that the TDP was technically sufficient to allow mass production of the guidance sections. Nonetheless, the request for proposals specified that the guidance sections were to be constructed based on the TDP that Ford Aerospace had developed. In addition, the request for proposals stated that the AN/DAW-2 guidance section "is a build-to-print item." Both the Army and employees of Hughes Missile Systems Company (Raytheon's predecessor in interest) understood the term "build-to-print" to mean that if an item were built properly and in compliance with the TDP, it would work as intended without the need for additional development work.

Hughes submitted an initial proposal for the second source production contract in the amount of \$76,177,436, which represented an estimated cost of \$69,252,215 plus 10 percent for profit. While the initial proposals were being evaluated, the Army was attempting to have the TDP validated as suitable for production by a source other than the

developer. That attempt ended in failure when the validation contractor reported that it could not validate the TDP. The validation contractor noted that, along with other problems, engineering changes developed for the validation effort would require that portions of the guidance section be redesigned to meet specifications.

Ford Aerospace alerted the Army to problems with the AN/DAW-2 development effort. It explained that the TDP was still in an “immature status,” in part because 200 requests for engineering changes had not yet been incorporated into the TDP, some of which represented “significant” design changes. Although the request for proposals characterized the guidance section as a build-to-print item, the Army acknowledged a week before the request for proposals was issued that the TDP was “not fully mature.”

Unaware of the problems with the TDP, Hughes prepared its best and final offer for the second source production contract, estimating the total contract price for producing 1,171 units to be \$59,438,379, including \$5,329,667 profit. The price Hughes actually submitted as its best and final offer was lower, however, because senior management at Hughes directed that the offer be reduced by \$7.6 million. As a result, Hughes bid the contract at \$51,758,509. The Board found that the bid reduction was not based on a revision of the cost estimate, but simply reflected a decision by Hughes’s senior management to reduce the offered price.

Despite the failed validation effort, and in contravention of a directive from the Under Secretary of the Army that second source production contracts not be awarded until after validation of a TDP through sustained production by the product developer, the Army awarded the second source production contract to Hughes on September 22, 1988. The production contract for Ford Aerospace, which had been intended to prove that the

guidance section could be manufactured from the TDP before the competitive procurement of the second source, was not awarded until six months later.

The delivery schedule required Hughes to deliver 13 first article test units by May 31, 1990, and all 1,171 production units by April 30, 1992. Between award and termination of the contract, however, 379 engineering change proposals were incorporated into the contract to correct deficiencies in the TDP. Although 345 of those changes had no impact on contract price or schedule, the other 34 resulted in a total contract price increase of \$6,765,674 and a total schedule extension that delayed final delivery until October 29, 1993. The Board found that the contract modifications incorporating those changes addressed only the cost and schedule effects of implementing the changes, not the cost and schedule effects of the underlying deficiencies in the TDP that made the changes necessary.

The Board also found that in addition to the large number of changes that were necessary to correct specific deficiencies in the TDP, Hughes had very low production yields that were caused in part by those deficiencies. The expected yield on a build-to-print missile guidance section is approximately 95 percent. In April 1993, however, Hughes and Loral (the successor-in-interest to Ford Aerospace) reported yields on their AN/DAW-2 production contracts of 28 and 25 percent, respectively. The Board found that the low yields and increased costs experienced by Hughes were caused in part by the TDP deficiencies, but that problems with quality control and manufacturing processes for which Hughes and its subcontractors were responsible also contributed to the low yield and increased costs.

The Army terminated the AN/DAW-2 second source production contract for the convenience of the government on January 17, 1995, after accepting 576 guidance sections from Hughes. The remaining 595 units were in various stages of assembly at the time the contract was terminated. Hughes's total cost of performance at termination was \$82,983,697. The contract price at that time was \$60,374,361.

Hughes had previously entered into a separate contract with the government to produce 27 additional AN/DAW-2 guidance sections. The government referred to those sections as "spares," and they were to be built in accordance with the TDP and all the changes to the TDP that had been approved at that time. The Board found that the solicitation for the spares contract made no representation that it was for a "build-to-print" item. To the contrary, the Board found that when the final price negotiation for the spares contract was conducted in late April of 1991, Hughes was already 11 months behind schedule in delivery of the first article test units under the main contract, and 314 changes had been incorporated into the TDP for that contract. The Board found that when Hughes entered into the spares contract on May 22, 1991, Hughes was fully aware that the AN/DAW-2 was not a build-to-print item and knew that production under the spares contract would encounter problems similar to those that affected production under the second source contract.

B

Hughes submitted a certified claim requesting price adjustments on both of the guidance section contracts. The claim sought adjustment of the total contract price for the cost growth that Hughes had already incurred and for costs that Hughes would have

incurred if the contract had not been terminated, which are known as estimate-to-complete (“ETC”) costs.

Hughes advanced several theories in support of its claim, including a “discrete events” approach and a “modified total cost” approach. By a final decision on August 27, 1997, the contracting officer allowed \$13,577,360 on the discrete events claim. The amount allowed was solely for incurred costs; it did not include any ETC costs. The contracting officer did not allow Hughes a price adjustment on any of its other theories.

Hughes appealed the contracting officer’s decision to the Board. In proceedings before the Board, the government disputed Hughes’s entitlement to any additional contract price adjustments. Hughes filed a restated claim, which was audited by the Defense Contract Audit Agency (“DCAA”). Following a hearing, the Board held that, based on incorrect statements and nondisclosures by the government, Hughes was entitled to an additional contract price adjustment of \$7,421,271. The Board, however, rejected the remaining elements of Hughes’s claim.

II

A

As part of its discrete events claim, Raytheon argues that the Board erred by refusing to allow \$3,283,349 in direct material costs for 200 new and 411 reworked Refrigerated Detection Units (“RDUs”), parts used in the guidance sections. According to Raytheon, the Board improperly rejected its claim because the Board (1) failed to consider evidence that it would have been necessary to purchase 200 new RDUs in order to avoid production delays, (2) failed to make any adjustment for future failures of the RDUs during

production, and (3) used historical cost data for reworking RDUs rather than setting the cost of the RDUs based on the latest price quoted by the RDU vendor.

Raytheon's claims with regard to the RDUs implicate a dispute about the records used to assess those claims. Raytheon based its estimates on test failure information summary ("TFIS") reports, which are engineering reports prepared at the time of a test failure. The DCAA auditor relied instead on Raytheon's material cost accounting reports, which show actual material costs for repair or replacement of failed items. The auditor observed that whereas the TFIS reports are subjective written accounts, the material cost accounting reports are based on accounting records and data and provide a more accurate basis for estimating future costs.

The Board agreed with the auditor that the material accounting cost reports were more reliable than the TFIS reports for ascertaining both the incurred and the estimated costs associated with the RDUs. In the government's view, that is a sufficient answer to Raytheon's various RDU-related claims. We accept as supported by substantial evidence the Board's finding that the material accounting cost reports provided more reliable measures of the costs and reworking needs for the RDUs. As we indicate below, however, that finding is not sufficient, standing alone, to justify rejection of Raytheon's RDU-related claims.

Raytheon first contends that because of the large number of failures among the RDUs that were used in the guidance sections, Hughes would have had to purchase 200 new RDUs to avoid a break in production. Accordingly, Raytheon argues, the Board should have allowed an additional \$2,149,000 for the purchase of those RDUs. The government appears to contend that the material cost accounting data yielded higher

estimates of RDU production than did Hughes's data, and that under those higher estimates it would not have been necessary for Hughes to purchase the 200 new RDUs. That is because the RDUs that were already in existence (either units that were in rework after failing testing or units that were completed but not yet tested) could have been ready in time to prevent a break in production.

The problem with the government's position is that the Board does not appear to have addressed Raytheon's argument regarding the 200 new RDUs, at least not explicitly. Perhaps the Board meant its finding as to the respective reliability of the TFIS records and the material cost accounting reports to suggest agreement with the government's argument on this point, but we decline to make the leap the government suggests. Raytheon made a discrete argument that it needed to purchase 200 new RDUs, and it is entitled to a decision on that issue. We therefore remand that issue to the Board for a ruling.

Raytheon's second RDU claim is for \$1,133,949 in direct material costs for RDU rework that Raytheon estimates Hughes would have had to do if the contract had been completed. The DCAA auditor testified that he anticipated future RDU failures and that he expected future RDU rework costs due to failures to be approximately in line with the cost of such rework at the time of contract termination. Following the recommendation in the auditor's report, the Board awarded Raytheon \$412,620 as the cost of reworking 390 RDUs that had failed and required repair. Raytheon claims that amount does not account for any future failures and that the Board improperly relied on the DCAA auditor's assumption of a 100 percent future yield on reworked RDUs. That assumption, Raytheon contends, was entirely unrealistic in light of past experience with the units. The government argues that the auditor used Hughes's material cost accounting reports and the rework

rates at the time of termination to predict the average cost of future RDU repairs. Again, however, the Board did not address this issue, and we therefore have no basis for determining whether the Board agreed with the government's argument in declining to grant Raytheon a larger award on its rework claim. The absence of any finding on this issue makes it impossible for us to determine whether the Board's ruling is factually supportable and legally correct. We therefore remand for explicit findings on this issue as well.

Raytheon next contends that the Board improperly based the estimated cost of future RDU rework on historical costs rather than on a vendor quote. Raytheon argued before the Board that historical costs would not accurately reflect actual rework costs because the vendor had closed its production line. Raytheon also contends that the government had accepted the vendor's quote as the basis for pricing new RDU units. The auditor, however, explained that Raytheon's material cost accounting reports, on which he based his RDU rework cost estimates, relied on historical cost data. In addition, he explained that the vendor quote was merely a single quotation, and that typically a lower price could be negotiated with a vendor. Again, however, the Board did not expressly address the "vendor quote" argument. While rejection of that argument may be implicit in the Board's general finding regarding the repair of failed items, the Board's analysis focused on whether to rely on Hughes's TFIS reports or on its material cost accounting reports; there was no reference to the dispute about whether to rely on historical cost data or the vendor quote. In order to ensure that the Board has addressed that issue and in order to facilitate judicial review, we direct that the Board expressly address that issue as well on remand.

The government implies that the limited recovery that the Board allowed Raytheon on its RDU-based claims indicates that the Board rejected each of the arguments Raytheon has raised here. While one can infer from the amount of the price adjustment that the Board did not accept all of Raytheon's arguments, those arguments are very specific in nature and the government has sought to support the Board's ruling by contending that there was substantial evidence to support the specific findings that would be necessary to reject those claims. What is missing, however, is the findings themselves, against which to measure the sufficiency of the evidence. The Board must make the appropriate findings before we can determine on review whether such findings are supported by substantial evidence.

B

Raytheon asserts that the Board erroneously rejected its claim for \$3,293,676 in engineering and administration ("E&A") costs that were assigned to three cost pools. According to Raytheon, the Board improperly imposed a heightened recordkeeping standard, requiring Raytheon to trace claimed hours in three pooled accounts back to specific individuals. Neither party disputes the propriety of pool accounting in general, and the auditor accepted various aspects of Hughes's accounting system. However, the auditor, and in turn the Board, rejected the specific costs now claimed by Raytheon.

Raytheon attempts to turn the auditor's acceptance of the general practice of pool accounting into an admission that the specific cost accounts at issue here were proper. Specifically, Raytheon asserts that the auditor "admitted that [Hughes] pooled [the disputed charges] in accordance with its disclosed and approved accounting practice, that DCAA

was not challenging that allocation, and that the E&A costs were chargeable to the contract.” The testimony that Raytheon cites, however, does not support those assertions.

Raytheon challenges the Board’s finding that the hours claimed were insufficiently tied to TDP defects. The auditor, however, testified that the cost accounts did not reveal who was charging the accounts and that he could not discern from the information provided by Raytheon that the persons charging the accounts were actually working on issues related to TDP deficiencies. When challenged by counsel for Raytheon, the auditor explained that he was “uncomfortable with a \$2 million charge that I don’t have any references to who was working on what.” Later, the auditor testified that he could not determine from the information provided by Raytheon whether the allocation of hours was proper or not. Although the auditor explained his concerns about the particular cost accounts to Raytheon and made a formal request for more information, Raytheon never provided the additional information requested.

In response, Raytheon argues that the Army had already agreed that the additional costs were incurred due to TDP deficiencies. The evidence on which Raytheon relies, however, establishes only that the government agreed that additional personnel would be necessary due to TDP deficiencies and that their hours should be charged to the A1B account. That evidence does not support Raytheon’s contention that the particular hours disputed by the auditor were actually related to TDP deficiencies and thus properly charged to that account.

Raytheon next argues that there was no basis for the auditor’s concern about duplication of costs. The auditor testified that the lack of information about who was charging hours to the accounts in question and for what work they were charging those

accounts raised a concern about possible duplication of hours. Raytheon's recitation of the various charge numbers that were pooled into the three cost accounts in question does not resolve that concern.

Because there was substantial evidence supporting the Board's conclusion that Raytheon did not sufficiently tie the hours claimed to TDP deficiencies, the Board did not err in rejecting Raytheon's claim for engineering and administration costs.

C

Raytheon argues that the Board improperly rejected its "time extension impact" claim. It contends that the cost of performance must be increased to account for the increase in touch labor rates during the extended contract performance period attributable to program delays. The Board found that Raytheon's time extension impact claim duplicated the costs for repair of failed units that had already been allowed. Raytheon asserts that the Board's finding lacks substantial supporting evidence and that it rests on the auditor's mistaken belief that the claim was for additional labor costs caused by defects or changed work, rather than for higher labor costs for an unchanged amount of work.

The Board heard evidence from the auditor, who explained that he had identified the exact hours and costs associated with the extended period of performance. The audit report specifically notes that Raytheon had already been credited for the increased costs associated with higher labor rates. Raytheon argues that the auditor mistakenly believed the claim related to additional touch labor hours, but the auditor's reference to additional touch labor was given merely as an example, and even then he stated that Raytheon was given credit for labor at its future cost.

The Board also found that the time extension impact claim was a total cost calculation that failed to take into account the \$7.6 million reduction in the bid price directed by Hughes's management. By reducing the bid price, Hughes in effect underbid the number of labor hours necessary to complete the contract. As the contract performance period was stretched out due to program delays, those "missing" hours would be pushed farther into the future, and the labor costs for those hours would grow. The government contends that by claiming higher labor costs for those "missing" hours, Raytheon is improperly seeking to recapture ground lost due to a business decision by its management.

Raytheon responds that its calculations eliminated any effects of the management-ordered reduction from its claim. Raytheon notes that it used the number of labor hours from a March 1990 estimate at completion ("EAC") to calculate the cost of labor over both the original contract period and the extended contract period. Furthermore, it points out that the March 1990 EAC shows 34,076 fewer labor hours than did the best and final offer of September 1988, from which the management-ordered \$7.6 million reduction had already been subtracted.

The points Raytheon makes are correct, but they do not overcome the Board's objection. Raytheon has not rebutted the evidence that, as a result of the \$7.6 million management-ordered bid price reduction, the number of labor hours bid for assembly and testing was effectively reduced below the number in the March 1990 EAC. At a labor rate of \$14 an hour, the cost of 34,076 labor hours is \$477,064. Because the \$7.6 million bid reduction came off the total bid amount, rather than being allocated throughout the best and final offer, it is likely that at least \$477,064 of that reduction is allocable to the cost of labor,

thus reducing the number of labor hours effectively bid (as opposed to the number listed in the best and final offer) to fewer than the number used in the March 1990 EAC. In other words, Raytheon has failed to rebut the government's contention that it is seeking to recover for higher labor costs based on "missing" hours created by the management-ordered bid reduction.

Raytheon argues briefly that it should be compensated for the additional cost of the labor hours because contractors should be compensated for all cost increases on unchanged work caused by government delay. Again, however, Raytheon's argument fails to address the consequences of the bid reduction ordered by its management. Although the government may indeed be liable for the additional costs of an unchanged amount of labor when the cost of that labor has risen as a result of government delay, Raytheon failed to prove that the amount of labor was unchanged.

D

Raytheon next argues that the Board improperly subtracted \$617,748 from its claim for compliance with the contract's Preproduction and Production Evaluation Requirements ("PPE") clause. The PPE clause required the contractor, at no change in contract price or schedule, to identify, report, and correct as directed by the government all deficiencies in the TDP that were "necessary to permit quantity production." The clause defined 12 types of TDP deficiencies that were subject to "complete resolution" under its terms, including typographical errors, conflicts of technical data, problems with tolerance stackup, vendor exceptions to parts procurements, and "currently impossible" manufacturing, test, or inspection requirements. In its initial proposal for the second source production contract, Hughes included \$617,748 to cover the costs it expected to incur in

reporting and correcting TDP deficiencies, as provided by the PPE clause. The Board found that amount to be a reasonable estimate of the cost of performing the required PPE tasks for what was represented as a build-to-print item.

Raytheon argues that the deduction of that sum was inappropriate because DCAA did not identify a deduction for the PPE clause. Raytheon also asserts that the application of the deduction to the discrete events claim was inappropriate because the Board found that the government had misrepresented the contract as being for a build-to-print item, thus giving rise to the unexpected additional costs.

We disagree. The audit report expressly noted that it was qualified by the “impact and scope” of the PPE clause. The Board found that the PPE clause required Hughes, at no charge to the government and no delay in schedule, to “identify, report and correct” all “deficiencies associated with ‘currently impossible’ manufacturing, test or inspection requirements, and deficiencies associated with ‘increasing the percent yield or rate of production to meet quantity and schedule requirements.’” The government presented evidence that during performance the parties frequently invoked the PPE clause to make changes of the type at issue here. The government systems engineer who was responsible for determining whether the PPE clause applied to proposed engineering changes testified that Hughes had submitted more than 300 engineering change proposals under the PPE clause. According to the witness, many of the items included with the discrete events claim were for work covered by the PPE clause. Thus, there was substantial evidence to support the Board’s subtraction of \$617,748 from Raytheon’s claim for compliance with the contract’s PPE clause.

E

The Board did not award interest on the amounts the Board allowed as prospective costs. Raytheon contends that the Board erred in that regard. According to Raytheon, limiting the payment of interest to costs actually incurred contradicts the decisions in Servidone Construction Corp. v. United States, 931 F.2d 860 (Fed. Cir. 1991), and Caldera v. J.S. Alberici Construction Co., 153 F.3d 1381 (Fed. Cir. 1998).

Section 611 of the Contract Disputes Act provides that “[i]nterest on amounts found due contractors on claims shall be paid to the contractor from the date the contracting officer receives the claim pursuant to section 605(a) of this title from the contractor until payment thereof.” 41 U.S.C. § 611. In Servidone, the contractor had not yet incurred the total costs that it later recovered when it filed a proper claim. The court observed that section 611 requires interest to be awarded on any amounts later found due from the date the contracting officer received the claim. Servidone, 931 F.2d at 862. The statute “sets a single, red-letter date for interest on all amounts found due by a court without regard to when the contractor incurred the costs.” Id. In other words, interest runs from the date the claim was filed, regardless of when the costs were incurred.

In J.S. Alberici, the contractor filed a claim for costs resulting from a differing site condition before it had incurred the costs related to that condition. 153 F.3d at 1382. The Board awarded interest from the date the claim was filed, rather than from the date the costs were incurred, and the government appealed. Id. at 1382-83. We affirmed, holding that section 611 permits interest to accrue on a contractor’s costs before the contractor actually incurs them. Id. at 1383.

Raytheon asserts that under the principle established in Servidone and J.S. Alberici, it should be awarded interest on all amounts allowed by the Board, including prospective costs. Raytheon is correct that interest may not be denied merely because costs later found due had not been incurred at the time the claim was filed. In both Servidone and J.S. Alberici, however, the contractors completed their contracts and thus actually incurred the costs upon which interest was later awarded. We have never held that section 611 permits interest to accrue on costs that, because of the termination of the contract, were never actually incurred by the contractor.

The distinction is important because, as the government notes, the Board has not yet established an amount “found due” and did not limit its analysis of Raytheon’s claim to costs actually incurred before termination. The Board’s decision was instead focused on determining the correct theoretical “estimate to complete” cost. Raytheon will not be paid that amount; instead, that number will help establish how much money, if any, is due to Raytheon pursuant to the contract’s termination for convenience clause. The government agrees that once an amount is found due in that process, it will be subject to the interest provision of section 611. The Board’s ruling was correct.

III

Raytheon next challenges the Board’s rejection of its “modified total cost” claim and its “should have cost—material” claim. Under the total cost method, the measure of damages is the difference between the actual cost of the contract and the contractor’s bid. WRB Corp. v. United States, 183 Ct. Cl. 409, 426 (1968). The method has always been viewed with disfavor, in part because of concerns about bidding inaccuracies, which can reduce the contractor’s estimated costs, and performance inefficiencies, which can inflate

its actual expenditures. Servidone, 931 F.2d at 861-62. Moreover, the total cost method does not distinguish costs for which the government is responsible from costs that the contractor should bear. See Boyajian v. United States, 423 F.2d 1231, 1236 (Ct. Cl. 1970). In fact, our predecessor court noted that the total cost method has been used “only when no other mode was available and when the reliability of the supporting evidence was substantiated.” WRB Corp., 183 Ct. Cl. at 426.

The modified total cost methodology addresses some of the objections to the total cost method. See Teledyne McCormick-Selph v. United States, 588 F.2d 808, 810 (Ct. Cl. 1978). Raytheon asserts that it submitted a modified total cost claim based on an estimate of what the contract should have cost absent the deficiencies associated with the TDP.

In examining claims based on a total cost or a modified total cost methodology, we have always required safeguards to ensure, to the extent possible, that the burden of excess expenditures falls on the party responsible for them. See, e.g., Servidone, 931 F.2d at 862; Boyajian, 423 F.2d 1231, 1238-42; Great Lakes Dredge & Dock Co. v. United States, 96 F. Supp. 923, 926 (Ct. Cl. 1951). Thus, the plaintiff must prove that “(1) the nature of the particular losses make it impossible or highly impracticable to determine them with a reasonable degree of accuracy; (2) the plaintiff’s bid or estimate was realistic; (3) its actual costs were reasonable; and (4) it was not responsible for the added expenses.” WRB Corp., 183 Ct. Cl. at 426. The Board found that Raytheon failed to prove its modified total cost claim because it “ignore[d] the cost impact of the quality control and manufacturing process problems for which [Hughes] and its subcontractors were

responsible and which were not caused by the defective TDP.” Raytheon contends that that finding was not supported by substantial evidence.

We disagree. The Board heard extensive testimony on the issue of Hughes’s responsibility for increased production costs. Raytheon asserts that the evidence before the Board established that its claim fully accounted for “any process problems for which [Hughes] was responsible.” But the Board had before it conflicting evidence on that issue, and it accepted the government’s evidence rather than Raytheon’s. Raytheon’s recitation of the evidence that it offered on the issue does not establish that the evidence the government offered—and the Board accepted—was insubstantial. We are unable to conclude that the government’s evidence was unreliable or legally flawed, and we therefore uphold the Board’s ruling on the “modified total cost” issue as supported by substantial evidence.

Raytheon also asserts that the Board erred by refusing to approve its “should have cost—material” claim. That claim, which Raytheon presented as part of its discrete events claim, was a catch-all for smaller items not addressed elsewhere in the discrete events claim. The parties agree that it amounts to a modified total cost claim, and therefore that the same issues apply as for the general “modified total cost” claim. Raytheon asserts that the Board’s findings with respect to that claim are not supported by substantial evidence.

The Board rejected the “should have cost—material” claim on the ground that Raytheon had failed to prove (1) that it was impracticable to establish the material costs of the TDP deficiencies directly from the rework accounts, (2) that the adjusted bid on which the “should have cost” material claim was based was reasonable, or (3) that Raytheon was not responsible for any of the claimed costs. The Board’s findings rested in part on the fact

that Raytheon had prepared its claim estimates based on TFIS reports rather than on the material cost accounting reports. As noted, the auditor testified that the cost accounting records were more accurate than the TFIS reports, and there was substantial evidence to support the finding that it would not have been impracticable for Raytheon to calculate the actual costs related to the TDP deficiencies from those records.

Raytheon asserts that its claim does not include any costs for which it is responsible, but the Board heard testimony from the auditor that he objected to the “should have cost” material claim because that claim was premised on the assumption that all problems were the responsibility of the government, and that the claim did not make any adjustments for problems caused by the contractor. Raytheon also asserts that because Hughes’s subcontractors did not charge Hughes for costs for which they were responsible, such costs are not included in the “should have cost” material claim. The evidence Raytheon cites in support of that argument, however, merely refers to subcontractors replacing defective parts under warranty; it does not support Raytheon’s contention that its claim did not include any costs associated with deficient performance by subcontractors. The Board therefore did not err by denying Raytheon’s claim.

Raytheon argues in the alternative that the Board should have assessed its claims under the “jury verdict” method of calculating damages. The jury verdict method is designed to produce an approximation of damages based on the entire record. Before resorting to the jury verdict method, a court (or Board) must determine (1) that clear proof of injury exists; (2) that there is no more reliable method for calculating damages; and (3) that the evidence is sufficient to make a fair and reasonable approximation of the damages. WRB Corp., 183 Ct. Cl. at 425. We agree with the Board that the jury verdict method was

not appropriate, because a more reliable method for calculating damages was available; namely, the discrete events claim.

III

Finally, Raytheon challenges the Board's rejection of its claim that the second source production contract was commercially impracticable. A contract is commercially impracticable when performance would cause "extreme and unreasonable difficulty, expense, injury, or loss to one of the parties." Restatement (Second) of Contracts § 261 cmt. d (1981). A finding of impracticability excuses a party from performing unless the party has assumed the risk of the event. Id. In government contracting, impracticability has also been treated as a type of constructive change to the contract; because a commercially impracticable contract imposes substantial unforeseen costs on the contractor, the contractor is entitled to an equitable adjustment.

A contract is said to be commercially impracticable when, because of unforeseen events, "it can be performed only at an excessive and unreasonable cost," Int'l Elecs. Corp. v. United States, 646 F.2d 496, 510 (Ct. Cl. 1981), or when "all means of performance are commercially senseless," Jennie-O Foods, Inc. v. United States, 580 F.2d 400, 409 (Ct. Cl. 1978). Whether performance of a particular contract would be commercially senseless is a question of fact. Cf. Maxwell Dynamometer Co. v. United States, 386 F.2d 855, 870 (Ct. Cl. 1967). A contractor is not entitled to relief "merely because he cannot obtain a productive level sufficient to sustain his anticipated profit margin." Natus Corp. v. United States, 371 F.2d 450, 457 (Ct. Cl. 1967).

The Board held that the second source production contract was not commercially impracticable. It noted that despite all the difficulties occasioned by the deficiencies in the

TDP, Hughes delivered, and the government accepted, 576 of the 1,171 contracted-for units. The remaining units were in production when the contract was terminated, and the Board found that there was no reason to believe they would not have been completed had the contract continued. The Board observed that Hughes's estimated cost overrun was 57 percent of the contract price at the time of termination, but the Board found that the amount of the overrun was not sufficient, by itself, to render the contract commercially impracticable.

Raytheon argues that the Board erred in several respects. First, Raytheon asserts that the Board should have compared the estimated cost of completion to the original contract price at award, rather than to the contract price at the time of termination. Raytheon cites no legal authority to support its position, and we do not find its argument persuasive. When calculating an overrun for purposes of determining commercial impracticability, it is reasonable to compare the estimated cost of completion with the contract price at the time of termination. In a hypothetical situation in which all TDP deficiencies are resolved promptly and the contract price is adjusted accordingly, the contract would not be commercially impracticable, because the adjusted contract price would accurately reflect the cost of performing the entire contract as adjusted, rather than as awarded.

Hughes and the government had a mechanism to address problems with the government specifications, and Hughes made use of that mechanism. The contract price was adjusted continuously as TDP deficiencies were discovered and resolved. Indeed, the Board's use of the contract price at termination was favorable to Raytheon, because it made the overrun appear even larger than it actually was. Had the Board looked to the

contract price after the contracting officer and the Board made further adjustments, the percentage of the excess of cost over price would have been only about 24 percent.

Even assuming the cost overrun was 57 percent rather than 24 percent, an overrun of that size does not by itself establish commercial impracticability. See, e.g., Gulf & W. Indus. Inc., 87-2 B.C.A. (CCH) ¶ 19,881, at 100,575 (1987) (finding a contract with a claimed 70 percent overrun not commercially impracticable). Nor, as the Board recognized, were the delays and low yields associated with the guidance section production contract so extraordinary as to demonstrate impracticability of performance. See Soletanche Rodio Nicholson (JV), 94-1 B.C.A. (CCH) ¶ 26,472, at 131,774 (1993) (finding commercial impracticability when compliance with the specification would have taken more than 17 years at a cost of more than \$400 million, rather than 720 days and \$16.92 million); Numax Elecs., Inc., 90-1 B.C.A. (CCH) ¶ 22,280, at 111,916 (1989) (finding commercial impracticability when the contractor obtained a yield of only 300 acceptable units out of 8000, or 3.75 percent); Whittaker Corp., Power Sources Div., 79-1 B.C.A. (CCH) ¶ 13,805, at 67,688-89 (1979) (granting relief where what the parties thought would be a seven-month production contract turned into an unsuccessful four-year development effort with a 148 percent cost overrun).

Raytheon argues that performance of the second source production contract was impracticable because it was impossible to produce the guidance sections as build-to-print items. That argument improperly assumes that whenever a contract specification requires extensive changes, performance of the contract must be impracticable. Notwithstanding the need for numerous changes, for which Hughes was compensated, substantial evidence supports the Board's finding that the contract was not commercially

impracticable. Accordingly, we uphold the Board's refusal to grant relief to Raytheon on that theory.

* * * * *

While the government was at fault for a large portion of the increase in contract costs, the Board recognized the government's fault and required that the contract price be adjusted accordingly. In addition, there are aspects of Raytheon's claim that the Board will need to address more directly on remand. With respect to the remaining elements of Raytheon's claim, however, we are satisfied that Raytheon has failed to establish that the Board committed error that requires further adjustment of the contract price.

Each party shall bear its own costs for this appeal.

AFFIRMED IN PART and VACATED and REMANDED IN PART.