**Comptroller General**
**of the United States**

**Washington, D.C. 20548**

# Decision



**Matter of:** Aerospace Control Products, Inc.

**File:** B-274868

**Date:** January 9, 1997

Robert A. Brunette, Esq., for the protester.
Paul D. Olivier, for Flow Dynamics, Inc., an intervenor.
Marian E. Sullivan, Esq., John E. Lariccia, Esq., and Bradley A. Adams, Esq., Department of the Air Force, for the agency.
Charles W. Morrow, Esq., and James A. Spangenberg, Esq., Office of the General Counsel, GAO, participated in the preparation of the decision.

## DIGEST

Protest that procuring agency unreasonably determined the awardee's technical proposal was acceptable is denied where the record shows that, based upon the technical information contained in the awardee's proposal, the agency reasonably found that the proposal met each of the technical requirements that the protester alleges the proposal was noncompliant.

## DECISION

Aerospace Control Products, Inc. protests the award of a contract to Flow Dynamics, Inc. (FDI) under request for proposals (RFP) No. F33660-96-C-7009, issued by the Department of the Air Force, Newark Air Force Base, Ohio, for flow calibration system (FCS)-3A electronics. Aerospace contends that the Air Force improperly determined FDI's technical proposal to be acceptable.

We deny the protest.

This RFP was issued to procure under a firm, fixed-price contract 35 flow calibration system (FCS)-3A electronics units to upgrade the current FCS-3A system.[1] The FCS-3A is a combination of measuring devices utilized by the Air Force in its laboratories to calibrate any of a variety of flow meters designed to measure the flow rate of various gases. The components currently making up the FCS-3A are a differential pressure meter, absolute pressure meter, and a

[1]The RFP contained an option for an additional 103 units.

thermometer. To calibrate flow meters with the current FCS-3A, the technician is required to measure a gas flow rate by manually recording the differential pressure, the absolute pressure, and temperature of the gas as it passes through a particular laminar flow element (LFE),[2] and then calculating the flow rate in standard cubic feet by resorting to a chart of values to be used with that LFE. This procurement was to acquire the "necessary computational electronics to automatically perform the flow computations."

To this effect, the RFP's purchase description requires the contractor to provide FCS-3A electronics that "will remotely measure laminar elements' differential pressure, absolute pressure, and temperature[,] and automatically calculate and display the resulting flow rate in user specified units." The contractor is also to provide a software utility program to download flow coefficients automatically to the FCS-3A electronics. The purchase description set forth in detail the performance, design, functional, and environmental requirements of the required FCS-3A electronics.

Section 3.1 of the purchase description contains the performance requirements to be met by the FCS-3A electronics unit. The FCS-3A electronics must be able to measure and/or provide calculations for oxygen, nitrogen, air, carbon dioxide, helium, hydrogen, and argon gases. The electronics unit is to include an absolute pressure transducer with an uncertainty[3] of 0.020 percent of full scale or better, and a differential pressure transducer with an uncertainty of 0.30 percent or better. The FCS-3A electronics must also be capable of compensating for pressure ranges of 10 to 50 pounds per square inch absolute (psia). The electronics must include a temperature device to measure the absolute temperature of the flow gas with an uncertainty of 0.050 percent of reading or better. This section further requires the FCS-3A, with its computational electronics, to have an uncertainty of .755 percent of full scale or better for each LFE, and that all proposals include an uncertainty analysis demonstrating their compliance with this requirement. Subsection 3.1.4, entitled Measurement Ready, states in pertinent part:

> "FCS-3A electronics will monitor operating conditions and provide an operator signal after determination of steady state conditions are such that data can be accumulated/recorded."

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[2]An LFE is a flow meter that has been calibrated to the National Institute of Standards and Technology standard designed to analyze the accuracy of the flow meter being tested by the FCS-3A.

[3]A measurement of deviation from absolute accuracy.

The design requirements of the FCS-3A electronics are stated in section 3.2. For example, subsection 3.2.2 stated that the electronics shall correct the flow rate in accordance with certain specified equations, and that:

> "The electronics operator will input the data for [temperature, pressure] as well as type of flow gas to determine [specific gravity] as read from test instrument label. After selecting the flow calibration gas [nitrogen, oxygen or air], the FCS electronics shall be ready to calculate the flow equation. All other data shall be recorded/calculated by the FCS-3A."

Under subsection 3.3.4, entitled Remote, sub-subsection 3.3.4.1, entitled computer program, requires the contractor to provide a software utility program to download calibration coefficients from a personal computer to the FCS-3A indicator. Sub-subsection 3.3.5.1, entitled standardization, requires that the FCS-3A electronics "shall be standardized without the need of any ancillary hardware including prom burners or external computers."

Section 3.4 contains the environmental requirements of the FCS-3A electronics. Sub-subsection 3.4.1.1 states:

> "FCS-3A electronics shall meet the requirements of section 3.1 over the operating gas temperature range of 30-100 degrees F [fahrenheit]. Flow must be compensated for within this temperature range without the use of tables and/or manual calculations."

Subsection 3.4.3 requires the FCS-3A electronics to meet the requirements of section 3.1 over an operating pressure range of 10 psia to 50 psia without the use of tables and/or manual calculations.

The RFP advised offerors that proposals must show evidence that the proposed electronics met the mandatory requirements set forth in the RFP, including the purchase description. Award was to be made to the offeror with the lowest-priced, technically acceptable proposal.

Two firms submitted proposals; FDI submitted the lowest-priced proposal of $1,812,228 and Aerospace submitted a basic proposal priced at [DELETED].[4] FDI proposed FCS-3A electronics units consisting of FDI's model FC20A flow computer, a Mensor Series 4000 differential pressure transducer, a Mensor Series 4000 absolute pressure transducer, and a Thermistor temperature amplifier. Aerospace

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[4][DELETED]

proposed [DELETED]. The Air Force determined both proposals to be acceptable and made award to FDI as the lowest-priced offeror, leading to this Aerospace protest that FDI's proposal should have been determined technically unacceptable for a variety of reasons.

The procuring agency has the primary responsibility for evaluating the technical information supplied by an offeror and determining the technical acceptability of the offeror's proposal. This is true because the agency is responsible for defining its needs, as well as the best method of accommodating them, and thus must bear the consequences of any difficulties resulting from a defective evaluation. The agency's evaluation, however, must be reasonable and consistent with applicable statutes, the regulations, and the terms of the RFP. Intelligent Env'ts, B-256170.2, Nov. 28, 1994, 94-2 CPD ¶ 210. A protester's mere disagreement with the agency's technical judgment does not establish that the evaluation was unreasonable. Id.

The record does not reflect that the Air Force prepared adequate contemporaneous written documentation of the evaluation. In determining the rationality of an agency's evaluation and award decision, however, we do not limit our review to contemporaneous evidence, but consider all the information provided, including the parties' arguments, explanations, and hearing testimony. Southwest Marine, Inc.; American Sys. Eng'g Corp., B-265865.3; B-265865.4, Jan. 23, 1996, 96-1 CPD ¶ 56. Here, the Air Force metrology engineer who evaluated the proposals prepared a memorandum after the protest was filed outlining the steps that the Air Force undertook to evaluate proposals, and verifying and documenting that FDI's and Aerospace's proposals met each requirement of the purchase description. In addition, we held a hearing to elicit oral testimony from the engineer (and representatives from FDI and Aerospace) as to FDI's proposed FCS-3A electronics' compliance with the purchase description requirements. On the basis of this record, and as discussed below, we find no basis to object to the reasonableness of the agency's evaluation of FDI's proposal.

Aerospace first contends that the language in the purchase description under subsections 3.1.4 and 3.2.2 referring to the electronics' capability to accumulate, record, and calculate data, coupled with the sub-subsection 3.3.4.l requirement for a software program to download coefficients from a personal computer and the sub-subsection 3.3.5.l requirement to standardize the electronics without the need for ancillary hardware, required the FCS-3A electronics to include a notebook (laptop) or personal computer because an extended memory is required to "accumulate/record" data. Aerospace asserts that FDI's proposal was noncompliant with this requirement because, in contrast to Aerospace's FCS-3A electronics, FDI's proposal did not include a notebook computer.

The agency engineer testified that the sections of the purchase description cited by the protester in support of this contention do not require a notebook computer, but

were performance specifications that only required the FCS-3A electronics to perform certain functions. Hearing Transcript (Tr.) at 31, 45-47, 51. The engineer explained that the various sections involved separate functions to be performed by the FCS-3A electronics unit, which cannot reasonably be read in concert to require a notebook computer. Tr. at 31-52. For example, the engineer testified that the ability to accumulate/record data after steady state conditions referred to in subsection 3.1.4 meant that the technician would have the ability to record the data generated by the electronics, not that the electronics would permanently store the data. Tr. at 35. With regard to section 3.2.2, the engineer testified that the reference to the language "recorded/calculated" simply reiterated the requirement that the FCS-3A electronics automatically perform the flow computations, so that the technician need not manually calculate the flow rate. Tr. at 131-132. The engineer explained that pursuant to sub-subsection 3.3.4.1, a software program was required that would contain the calibration data for each of its LFEs, so that the information could be reloaded into the electronics in the event the information in the electronics is inadvertently lost. Tr. at 39-43. Finally, the engineer explained that sub-subsection 3.3.5.1 describes the requirement that the electronics unit be able to change calibration coefficients through a software program, rather than removing and modifying the prom (computer chip) externally, as is currently done on the existing FCS-3As. Tr. at 49-50.

We agree with the agency's interpretation that none of these requirements individually and read together requires a notebook computer. As indicated above, the purchase description required electronics and software to measure differential pressure, absolute pressure, and temperature, and to automatically calculate and display the resulting flow rate, and a software program to change calibration coefficients. While some sort of computing capability is obviously required as part of the electronics in order to satisfy these requirements, there is no mention anywhere in the specifications of a requirement for a notebook or personal computer. The protester does not cite to any language where the term notebook computer appears in the purchase description, but argues that such a requirement is implied. Based upon our review, we find no such implicit requirement, inasmuch as each of the referenced requirements can, as explained by the agency, be otherwise satisfied. Thus, we have no basis to disagree with the Air Force's interpretation of the specifications or with its conclusion that FDI's FCS-3A electronics unit, which contained a computer but not a notebook computer, met the specification requirements. Tr. at 35-39.

Aerospace next contends that FDI's proposed Mensor Series 4000 absolute pressure transducer will not function with or measure oxygen as required or accurately measure pressure over the entire 30 to 100 degrees F. temperature range.

With regard to the ability to measure oxygen, the engineer testified that FDI's technical proposal stated that the FCS-3A electronics--including the Mensor Series

4000--is capable of measuring and providing calculations for oxygen. Tr. at 73. In this regard, the engineer testified that the intent of the purchase description was not to require that the FCS-3A electronics actually operate with the use of oxygen, but have the capability to measure oxygen by converting gas values. Tr. at 67-68. The engineer explained that the Air Force laboratories do not actually use oxygen as a test gas because it is an explosive substance, but require that the electronics unit be capable of converting a gas other than oxygen, such as air, to oxygen values when the test item is designed to operate with oxygen. Tr. at 68. Further, the engineer testified that neither FDI's nor Aerospace's electronics units are normally intended to operate by actually using oxygen with their transducers, but are designed to measure oxygen by converting gas values. Tr. at 70-73. Based on our review, we find that FDI's proposed absolute pressure transducer meets specification requirements.

With regard to the operating temperature range of FDI's FCS-3A electronics unit, FDI's proposal states that the FCS-3A electronics will meet the "uncertainty" requirements of paragraph 3.1 over the operating gas temperature range of 30 to 100 degrees F. Aerospace nevertheless argues that FDI's proposal is noncompliant in this area because the manufacturer's commercial literature on the Mensor Series 4000 absolute pressure transducer specifies the compensated temperature range of the transducer to be 15 to 45 degrees centigrade, which converts to 59 to 113 degrees F., and that the offered transducer therefore does not meet the 30 to 100 degrees F. requirement.

The engineer testified, however, that the temperature restriction in the manufacturer's commercial literature refers to the environment in which the transducer will operate, not to the transducer's capability to meet the uncertainty requirements measuring the pressure of the flow of gases at temperatures in the required 30 to 100 degrees F. operating gas temperature range.[5] Tr. at 66-67, 164-165. That is, the purchase description relates to the temperature of the stream of gas flowing through the LFE, while the referenced commercial literature referred to the operating environment of the transducer. Further, FDI has submitted a letter from Mensor that confirms the engineer's interpretation of the manufacturer's commercial literature that "the compensated temperature range is the ambient temperature in which the transducer may be used without correction." Thus, the record does not support Aerospace's assertion that the Air Force incorrectly

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[5]The engineer testified that there are two temperature variables. The temperature of the operating gas that is flowing through the LFE, which never comes into direct contact with the transducers, and the temperature of the laboratory where the calibration takes place. The engineer testified that all of the Air Force's laboratories require temperature to be maintained near 70 degrees before any calibration of flow meters can take place.

determined that FDI's transducer would meet the operating gas temperature requirements.

Aerospace further contends that FDI's proposal did not demonstrate that the Mensor Series 4000 absolute pressure transducer of its FCS-3A electronics met the requirement to operate over a 10 to 50 psia range. However, FDI's proposal stated:

> "The FCS-3A electronics will meet the requirements of paragraph 3.1 over an operating pressure range of 10 psia to 50 psia. Flow will be compensated for within this pressure range without the use of tables and/or manual calculations."

Additionally, the manufacturer's commercial literature specifically states that the transducer can be customized to operate within ranges that fall between .36 psi to 5000 psi, which, according to the agency, would more than exceed the purchase description requirement. Tr. 76-77. The engineer also testified that he has had specific experience with the Mensor Series 4000 absolute pressure transducer and that it will meet these requirements. Tr. at 76-78. While Aerospace argues that FDI did not offer a technical solution to operating the Air Force's existing LFEs over the entire psia range, inasmuch as the LFEs generally operate only at 20 psia, the engineer explained that the purchase description required only that the FCS-3A electronics have the ability to compensate for pressure over the entire psia range--which FDI proposed to do with the use of software--and that the concerns in this regard presented by the LFEs were problems to be addressed by the Air Force, since the Air Force is responsible for the LFEs, not the contractor. Tr. at 78-79.[6]

Aerospace finally asserts that FDI's proposal did not meet the 0.050 percent accuracy requirement for the temperature probe with regard to the bottom 10 degrees (30 to 40 degrees F.) of the operating gas temperature range of 30 to 100 degrees F. FDI's proposal stated that a properly calibrated Thermistor temperature amplifier (probe) will be provided to meet the Air Force's temperature requirements, and provided calculations to demonstrate compliance. Tr. at 80-81. Aerospace nevertheless claims that FDI's proposal was noncompliant with this requirement because it contained several equations that showed that FDI only

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[6]At the hearing, for the first time, and in its comments after the hearing, Aerospace raised the question of whether the Mensor Series transducer would fail due to overpressurization. The engineer and FDI's representative both testified that this was not a concern given the Air Force's intended use of the transducer. Tr. at 211-212. In any event, this concern is not timely raised since Aerospace had been provided a copy of FDI's proposal in the agency report almost 2 months before the hearing. Bid Protest Regulations, section 21.2(a)(2), 61 Fed. Reg. 39039, 39043 (1996) (to be codified at 4 C.F.R. § 21.2(a)(2)).

calculated the accuracy of the temperature probe at certain temperatures, and when temperatures within the bottom 10 degrees of the temperature range are inserted in the equations, FDI's proposal is demonstrably noncompliant with the 0.050 percent accuracy requirement.

FDI's representative testified that Aerospace has misinterpreted its proposal; that FDI's proposal clearly discussed the parameters, temperature and flow rate, as well as the relationship between these parameters; and that Aerospace, in making the calculations to support the protest contention here, has confused the accuracy calculations in FDI's proposal regarding flow rate with the accuracy calculations regarding temperature. The agency engineer testified that the relationship between temperature and accuracy is not the linear relationship on which Aerospace's simple calculation is premised, so that Aerospace's calculations lack validity to demonstrate precise accuracy, and that because the relationship of these parameters is not linear, both offerors proposed a technique called curve fitting, in which their electronics' software makes appopriate adjustments to ensure accuracy in the bottom and top of the required temperature range. Tr. at 81-90. Aerospace has not rebutted FDI's and the agency's explanations. Accordingly, we conclude that the Air Force reasonably determined that FDI's proposal complied with the temperature probe accuracy requirement.

The protest is denied.[7]

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[7]Aerospace also argued that FDI's technical proposal was deficient allegedly because FDI did not discuss the equivalent gas flow calculation corrections for viscosity involving helium, hydrogen and carbon dioxide. The record also belies this contention, Tr. at 55-56, 214, and since Aerospace neglected to pursue this argument in its comments on the hearing, we consider the issue to be abandoned. Hadley Exhibits, Inc, B-274346, Nov. 5, 1996, 96-2 CPD ¶ 172.