



Comptroller General
of the United States

Washington, D.C. 20548

Decision

Matter of: Maxwell Laboratories, Inc.

File: B-249102

Date: October 27, 1992

Sheldon I. Matzkin, Esq., Wachtel, Ross & Matzkin, for the protester.

David C. Rickard, Esq., Defense Nuclear Agency, for the agency.

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DIGEST

Contracting agency properly excluded from the competitive range a proposal for research and development of electromagnetic launcher science and technology which the agency properly concluded had no reasonable chance for award because it did not include an approach which the agency believed would meet its needs, and because the proposal would need major revisions to become acceptable.

DECISION

Maxwell Laboratories, Inc. protests the exclusion of its proposal from the competitive range under request for proposals (RFP) No. DNA001-91-R-0054, issued by the Defense Nuclear Agency (DNA) for continuing research, development and demonstration of innovative electromagnetic launcher (ELM) science and technology.

We deny the protest.

The solicitation contemplates the award of a cost-reimbursement contract to continue research and development on the Thunderbolt EML, a ground-based demonstrator. An EML, which is sometimes referred to as an electromagnetic railgun, uses electricity to propel a projectile. The solicitation states that the goal of the Thunderbolt program is to continue development of the Thunderbolt EML to enable the Strategic Defense Initiative Organization (SDIO) to deploy a spaced-based kinetic energy weapon system.

An EML typically consists of two parallel "rails," which are made from a material that conducts electricity, and which are attached with a narrow space between them to form a

barrel, similar to the barrel of a typical gun. The projectile that is propelled from an EML has attached to the back of it an "armature," which is made from a material that conducts electricity.

DNA explains that an EML propels a projectile as follows: a very high electric current is applied to one of the rails, and the current arcs across the rear of the projectile causing all or part of the armature to vaporize into a high temperature gas or "plasma." A magnetic field created by the plasma interacts with the current in the armature and exerts a force on the rear of the projectile, driving it to the length of, and out of, the barrel.

The existing Thunderbolt EML is fired by injecting the projectile by means of a single-stage light gas gun. A gas gun is used because it reduces the barrel erosion that occurs when the projectile is electromagnetically accelerated. When the projectile enters the EML from the gas gun, it is traveling at about 1 kilometer per second. At the entry point into the barrel, current is applied as described above and the projectile is electromagnetically accelerated. In previous EML experiments, the maximum velocity attained after electromagnetic acceleration has been 6 kilometers per second. The focus of this particular contract is to determine why there is a 6 kilometers per second ceiling after electromagnetic acceleration and to design or redesign the Thunderbolt EML to 10-kilometers per second velocity.

The solicitation states that award is to be made primarily on the basis of technical superiority and management superiority with cost realism also a consideration. Under the technical criterion, the solicitation included the following factors to be used in judging the technical merits of the proposals, listed in descending order of importance:

"Are hypotheses proposed with appropriate experimental packages to test the hypotheses? The Contractor should propose possible solutions.

"Is the research approach multifaceted? We want a synergistic, maximum marginal return approach; we do not want to pursue a 'magic bullet' or 'pet theory.'

"Is the research approach innovative? We want something that explores new ideas; we do not want the 'cure all bore material' or to 'just add more power and barrel length.'

¹Maxwell does not dispute this explanation.

"Are hypotheses proposed clearly stated and show soundness and quality of forethought to meet stated objectives?"

"Is a work breakdown structure presented, showing subsystems, subsystem performance improvement goals, and research needed to attain those goals?"

"Is a systems engineering management approach used?"

"Does the technical plan have an acceptable level of risk versus reward, considering a balance of investment and probability of success?"

"Does Technical Plan integrate other EML efforts? We want Thunderbolt to become the national testbed or centerpiece for hypervelocity research; thus, it needs to play a more important role with respect to other EML research."

Seven firms submitted proposals. After the proposals were evaluated and the solicitation was amended, a number of offerors, including Maxwell, were permitted to submit revised proposals. Based on the reevaluation, Maxwell's proposal as revised was excluded from the competitive range. Four proposals remain in the competitive range and award has been withheld pending our resolution of the protest.

Maxwell's proposal received a technical score of 56.25 out of a possible 100 points. A memorandum prepared by the chairman of the evaluation board stated that Maxwell's proposal lacked "clear hypothesis, solutions, and innovations. Its Research Approach was singularly focused." In this respect, the agency explains that Maxwell's proposed approach was to inject the projectile into the EML at 6 kilometers per second to achieve a 10-kilometer per second velocity. According to the agency, this would not satisfy the solicitation requirement of accelerating the projectile electromagnetically to 10 kilometers per second. As the agency explains, "achieving hypervelocity by injecting at hypervelocity is not a demonstration of innovative EML science." The evaluators noted that while Maxwell also proposed to change the shape of the electrical pulse used to power the Thunderbolt they questioned whether this was an innovative approach, since all offerors should have proposed to tailor and distribute the pulse.

In addition, the evaluators stated that Maxwell's use of work breakdown structure was incorrect as was its use of systems engineering. Although the memorandum stated that Maxwell's research team was good, it lacked breadth and scope. According to the evaluation board, Maxwell's proposal was excluded from the competitive range because it

offered no clear solution to the problem of increasing performance of the Thunderbolt EML, and the proposal could not become acceptable without a complete rewrite.

Maxwell argues that the agency's technical evaluation panel failed to understand its proposal and that failure was a result of a lack of knowledge regarding concepts set forth in its proposal. In its protest submissions, Maxwell has explained the background of its proposed approach. In this regard, the protester states that the 6-kilometers per second ceiling experienced in the Thunderbolt EML is caused by erosion of material from the inner walls of the barrel that occurs when the projectile is electromagnetically accelerated. As Maxwell explains, "the ablated mass adds to the plasma mass already present and reduces the projectile acceleration . . . because of the extra mass and drag of this material." Maxwell notes that there is a debate within the EML community over the cause of this erosion. Maxwell states that it believes that the erosion is caused by "convective ablation," which is essentially a "scouring" of the inner walls of the barrel caused by the high velocity and turbulence of the plasma. According to Maxwell, others ascribe the erosion of the inner surface of the barrel to radiation from the plasma.

Maxwell states that its proposed approach was to change the shape of the electrical pulse used to power the Thunderbolt and to use a more powerful two-stage light gas gun that would inject the projectile into the barrel at 6 kilometers per second instead of at 1 kilometer per second. According to Maxwell, changing the shape of the pulse would allow more efficient use of the power supplied to the barrel. Maxwell also explains that use of the more powerful light gas gun would allow the projectile to reach 6 kilometers per second with no plasma involved and therefore no opportunity for ablation products to accumulate. According to Maxwell's proposal, a second benefit of the more powerful light gas gun is that ablation has less of an opportunity to occur than at lower velocities.

Maxwell maintains that its proposal was based on its study of the various possible approaches to attaining high velocities in EMLs and that based on this study, the firm concluded that its proposed approach was most likely to be successful. Maxwell argues that its proposal included appropriate data and other support to back up its theory and that the proposal was excluded from the competitive range solely because the evaluators were unable to understand it.

The evaluation of technical proposals and the resulting determination of whether a proposal is in the competitive range is primarily a matter within the contracting agency's discretion, which we will not question unless the record

shows that the determination is unreasonable or inconsistent with the RFP's evaluation criteria, Microwave Solutions, Inc., B-245963, Feb. 10, 1992, 92-1 CPD ¶ 169. Mere disagreement with the agency does not render the evaluation unreasonable particularly where, as here, the procurement concerns proposed approaches to improve sophisticated experimental equipment, Litton Sys., Inc., B-239123, Aug. 7, 1990, 90-2 CPD ¶ 114. Here, we conclude that DNA evaluated Maxwell's proposal in accordance with the stated evaluation criteria and that agency evaluators exercised their technical judgment in a reasonable manner.

In response to the protester's submissions, the agency explains that a primary goal of the Thunderbolt program is the development of EML science and technology to eventually enable the deployment of a spaced-based weapon system. According to the agency, Maxwell's proposed approach of injecting the projectile into the barrel at 6 kilometers per second would not contribute to this goal since this approach is not "weaponizable." In other words, the evaluators determined that Maxwell's proposed use of a more powerful light gas gun to achieve a higher projectile velocity would not contribute to the goal of creating a spaced-based weapon system, since such a weapon system could not include the proposed light gas gun.

DNA agrees with Maxwell that there is a debate within the EML community over whether the 6-kilometers per second ceiling is caused by convective ablation, "radiative ablation," or some other mechanism. While Maxwell argues that the problem is convective ablation, the agency states that research on various EMLs supports the hypothesis that radiative ablation is a significant factor as well. Accordingly, the evaluators believed that an appropriate proposed approach should effectively determine the relative order of magnitude of the various possible causes of the ceiling. When they reviewed Maxwell's proposal, the evaluators concluded that Maxwell's approach, which in their view placed too much emphasis on convective ablation to the omission of other causes, would not accomplish this goal.

Maxwell disparages the agency's judgment in this regard and argues that its proposal was rejected because it included an innovative approach that challenged conventional thinking by attributing barrel erosion to convective ablation. This is not supported by the record. The record shows that, while some of the evaluators expressed their own views as to the cause of the problem, the evaluators sought an approach that offered the promise of determining the relative order of importance of the various possible causes. The evaluators were simply not satisfied that Maxwell's approach, which stressed convective ablation as the dominant cause of the problem, would satisfy that goal.

Maxwell now argues that its proposed approach would in fact allow a determination of the relative magnitude of the various possible causes of barrel erosion. In this respect, Maxwell explains that its approach of injecting the projectile into the barrel at 6 kilometers per second would allow it to study the physics of higher (6 to 10 kilometers per second) projectile velocity and to redesign the Thunderbolt based on what it learns is the cause of the ceiling.

It may be that Maxwell intended its proposal to show that its approach of injecting the projectile into the EML at 6 kilometers per second would allow the firm to identify whether convective ablation, radiative ablation, or some other factor was the cause of the 6-kilometer per second ceiling. Nonetheless, this aim was not clear to the evaluators based upon the material included in the firm's proposal, and therefore they were unable to give Maxwell credit for it. From our review of the record, we find nothing unreasonable about the evaluators' view of Maxwell's proposal--the proposal simply did not provide a clear basis for the evaluators to find that Maxwell's approval would meet program goals. An offeror is responsible for demonstrating affirmatively the merits of its proposal and runs the risk of rejection if it fails to do so. Microwave Solutions, Inc., supra. Maxwell's subsequent amplification in its protest submissions does not provide a basis to conclude that DNA improperly evaluated the material which Maxwell actually submitted in its proposal.

Maxwell also argues that two of the four members of the evaluation panel were not knowledgeable about EML science and technology and therefore could not understand the concepts set forth in the firm's proposal. For example, Maxwell argues that in comments in the evaluation record, the chairman of the evaluation panel misrepresented Maxwell's proposed approach by the use of "emotive, nonscientific terms," such as "brute force approach" and "lacks innovation." Maxwell also argues that the "extraordinarily low" scoring of the panel chairman was responsible for removing Maxwell's proposal from the competitive range and that there were several changes in the original scoring entries of two evaluators that suggest that the scoring was manipulated.

These allegations provide no basis to challenge the evaluation and exclusion of Maxwell's proposal from the competitive range. First, evaluator qualifications are within the contracting agency's sound discretion and we will not object to the agency's use of particular evaluators unless there is a showing that the agency abused that discretion. Cajar Defense Support Co., B-237426, Feb. 16, 1990, 90-1 CPD ¶ 286. We see none here. While the record includes a number of imprecise comments about Maxwell's proposal, we

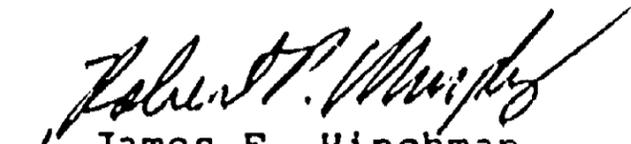
think that Maxwell has selectively focused on those particular comments and we do not think that the record as a whole indicates that any member of the evaluation panel was unqualified. Rather, the record suggests to us that the evaluators may not have understood Maxwell's proposed approach to be what the firm now explains it to be. As we explained above, it was Maxwell's responsibility to demonstrate the merits of its proposal.

With respect to the comparatively low scores given to Maxwell's proposal by the panel chairman, it is not unusual for individual evaluators to reach different conclusions, and assign different scores when evaluating proposals, since both objective and subjective judgments are involved. Cybernated Automation Corp., B-242511.3, Sept. 26, 1991, 91-2 CPD ¶ 293. The decision to exclude Maxwell's proposal from the competitive range was made by the evaluation panel as a whole and the fact that some members of the panel scored the proposal lower than the others does not mean that the overall evaluation was flawed. In addition, although Maxwell argues that the scoring was "manipulated" because some of the individual scores assigned by two of the evaluators were written over, the allegedly manipulated scores were very few in number and had no effect on the decision to exclude Maxwell since that decision was based on the consensus of the evaluation panel.

Finally, Maxwell argues that in spite of a solicitation requirement that the proposals be anonymous for evaluation purposes, the record shows that the evaluators were able to identify offerors by their proposals. We do not agree that the solicitation required that the evaluators not know the identity of each offeror when they were evaluating the proposals. The solicitation required that technical proposals be submitted "without any reference(s) to the offeror (corporate or personnel). Any reference to individual by name or organization, the proposal offeror, or any other means of identification of the offeror may be considered grounds to deem the entire proposal as non-responsive." While this provision suggests that the agency would attempt to evaluate the technical proposals anonymously, we are unaware of any legal requirement that it do so. In any event, we have carefully reviewed the

evaluation record and conclude that the agency's technical judgment has a reasonable basis. We therefore have no reason to think that the evaluators' conclusions were the result of bias against Maxwell as the protester suggests.

The protest is denied.


for James F. Hinchman
General Counsel