118439

DECISION

THE COMPTROLLER GENERAL
OF THE UNITED STATES
WASHINGTON, D.C. 20548

FILE: B-205073 DATE: May 14, 1982

MATTER OF: International Harvester Company

DIGEST:

1. In negotiated procurements, both statute and regulations require that proposals be solicited from the maximum number of qualified sources consistent with the nature and requirements of supplies or services being procured. For this reason, GAO closely scrutinizes sole-source procurements, although it will uphold them if they are reasonably or rationally based.

2. When item being procured is technologically complex, stems from a research and development contract, and is urgently needed for national defense or safety, the most recent developer's familiarity with work to be performed may justify a sole-source award of an initial production contract, since developer may be uniquely able to implement design changes required for mass production.

3. When proposed contract for initial production calls for testing only six of 25 vehicles to be procured, GAO recommends that the agency reevaluate to determine the minimum number needed to validate production design.

4. When, due to long development period and piecemeal funding, an agency has not obtained a technical data package suitable for competitive procurement, GAO recommends that, concurrent with first production run, the agency take all necessary steps to obtain such a data package.

This is a protest against the Army's proposed sole-source award of the first production contract for the M9 armored combat earthmover (the ACE), a lightweight, high-speed (30 miles an hour), amphibious bulldozer which, among other things, will accompany and dig-in the M1 tank.

The U.S. Army Mobility Equipment Research and Development Command on May 18, 1981, issued a "single source" request for quotations, No. DAAK 70-81-Q-0422, to Pacific Car and Foundry Company (PACCAR) of Renton, Washington, which since 1971 has developed and hand-built four prototypes of this vehicle. Protesting the noncompetitive procurement is International Harvester Company, which seeks an opportunity for prior developers of the ACE to compete for the contract.

We deny the protest, but believe that the noncompetitive procurement should be kept to the absolute minimum number of vehicles. We therefore recommend that the Army reevaluate whether it can meet its objectives--to complete production engineering and to validate a technical data package--with fewer than the 25 vehicles that it now proposes to obtain from PACCAR.

Background:

The ACE has been in development for more than 25 years. Beginning in 1955, when the Army first sought a vehicle of this type to support airborne engineer construction units, International Harvester designed, manufacturered, and tested four generations (a total of nine vehicles) of what became known as the Universal Engineering Tractor. In 1965 International Harvester turned its drawings and specifications over to the Army, and Caterpillar Tractor Company continued development efforts. In 1971, following a limited competition in which International Harvester did not participate, the Army awarded an advanced production engineering contract to PACCAR.

In 1977, PACCAR's version of the ACE was designated the M9 and was type classified standard.[1] The following year, the Army issued a sole-source solicitation to PACCAR to produce 75 vehicles, with an option for an additional 155; however, the solicitation was canceled when Congress deleted the necessary funds from the 1978 budget. PACCAR continued to perform contracts which, according to the Army, were primarily for product improvement and engineering support until fiscal 1982, when $40,400,000 was appropriated for production of the ACE under Public Law 94-114.[2]

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The Protested Solicitation:

Under the protested solicitation, the Army originally sought PACCAR's cost proposal to produce 36 vehicles in fiscal 1982 and an additional 51 in 1983; it subsequently requested an alternate proposal for 87 vehicles on a multi-year basis. Now, however, the Army advises us that it intends to hold the first production run to 25 vehicles, eliminate the option quantity, and conduct a competitive procurement for full production in late 1984, a year earlier than planned. The Army ultimately expects to procure more than 1,200 vehicles. In addition to the 25 vehicles, under the protested solicitation the Army seeks a system support package, training materials and classes, and other engineering and technical support. The solicitation originally also called for the preparation of a technical data package; however, under a contract awarded in September 1981, PACCAR is modifying and further testing one of the prototypes and will update data accordingly.

Sole-Source Justifications:

The Army has advanced numerous justifications for the proposed award to PACCAR; International Harvester disputes them all. The major arguments center on PACCAR's familiarity with the ACE, which the Army asserts makes it the only firm currently capable of making the transition from development to production, and on the type of technical data package required for a competitive procurement. The Army also asserts that because of the ACE's combat capabilities, not currently available in any other military vehicle, it is urgent to field it as soon as possible. The Army believes only PACCAR can meet its schedule for delivery beginning 570 days after award.

A. Familiarity with the ACE:

International Harvester argues that the proposed sole-source award ignores its role in development of the ACE (it holds patents on the commercial version) as well as its present capability as a manufacturer of heavy-duty construction equipment. According to the protester, except for revisions to components such as the engine and transmission, which any production contractor (including PACCAR) must obtain from approved sources, the current generation of the ACE is virtually identical to the last generation that International Harvester built.

The Army, however, states that more than 200 design and engineering changes were made to the vehicle by Caterpillar and an additional 700 by PACCAR; these include allegedly design-critical changes in the engine, the drive train (including transmission), the hull assembly, and the hydraulic, suspension, and electrical systems. Some of these changes, the record indicates, were made to overcome deficiencies found in testing the prototypes built by PACCAR. The Army states that others were required because components became obsolete and had to be replaced, and still others are product-improvement changes which have not been fully tested due to lack of funds. One engine, for example, was discontinued because it did not meet Environmental Protection Agency standards.

An additional number of priority changes have been identified and will be implemented before and during initial production, the Army states; some of these are geared to reducing the cost of production, while others are in response to changed battlefield requirements. The final version of the ACE will have such sophisticated capabilities as chemical/biological warfare protection, smoke launchers, and night vision.

The significance of the numerous changes, the Army states, is that they must be properly integrated into the vehicle design. Their impact on existing components is uncertain, the Army continues, but it is crucial that the changes be made in a manner that does not adversely affect other design parameters. The developer having the most current experience with the total design is the only one qualified to resolve potential difficulties without undue technical risk, the Army asserts.

A large number of the problems experienced with all generations of the ACE are rooted in manufacturing methods, the Army further states. In its judgment, the lessons learned by PACCAR cannot effectively be transferred to the operations of another manufacturer and cannot be reflected in the technical data package before completion of initial production. The Army admits that this is a subjective judgment which reflects a conservative approach. However, it states, the basis for it is the need for any other contractor--including prior developers--to become acquainted or reacquainted with the entire vehicle design and the possibility that a new contractor will overlook critical changes. Thus, the Army states, far more is required than merely purchasing components from approved sources.

In this regard, the Army states that PACCAR has coordinated with subcontractors to solve persistent problems in the ACE's complex hydraulic and suspension systems. A change in the transmission has been mutually developed by PACCAR and Clark Equipment Company; in the Army's opinion, it would be difficult and time-consuming for another prime contractor to repeat this development effort, since the drawings and specifications for the transmission are not included in the current technical data package. Further, International Harvester's commercial patent is not relevant, the Army asserts, since the firm has neither produced the vehicle in quantity nor subjected it to the periodic reevaluation and reengineering which the ACE has undergone.

The Army concludes that only PACCAR has the expertise required to implement the changes to the ACE during production. While acknowledging International Harvester's role as a developer of the ACE, the Army does not agree that this experience is sufficient to overcome the firm's lack of experience with the current design.

The Army also points out that both Defense Acquisition Regulation § 3-108(b) (1976 ed.) and Army Regulation (AR) 1000-1 (May 1, 1981) indicate that it is generally in the Government's best interest to place initial production contracts for technical and specialized supplies with the development contractor. The rationale for this policy, the Army states, is to permit the Government to retain the expertise gained by the development contractor through the first production run. It allows incorporation of all "first-build" changes into the technical data package before competitive purchase of a large quantity of the item, and is standard Army policy for complex procurements.

International Harvester's response is that in this case there are three developers of the ACE. If the Army correctly has described all the changes which have been made or proposed since International Harvester last was involved with the ACE, the firm continues, neither PACCAR nor any other developer has built the vehicle which will be produced under this contract, although they have built its predecessors. If changes yet to be made are significant, International Harvester continues, the ACE should not be allowed to move into the production stage; if they are insignificant, then any of the prior developers should be allowed to produce it.

Moreover, International Harvester argues, the Army is reneging on a promise, made in 1971, when it specifically

stated that the advanced production engineering contractor was not guaranteed award of the first production contract because the contract would be awarded competitively.

B. The Technical Data Package:

International Harvester also argues that the Army either has or should have obtained a technical data package for the ACE; the firm estimates that the Army has spent nearly $1.5 million (of a total of $7.7 million in contracts awarded to PACCAR since 1971) for such data. If this information is updated, International Harvester argues, it can go into production as quickly and as well as PACCAR.

The Army, however, states that due to the long development period, piecemeal funding, and changes in Army policy concerning what is suitable for competitive procurement, data delivered under its earlier contracts with PACCAR must not only be updated but also "validated" by being used successfully in a first production run. According to the Army, this requires a configuration audit in which the vehicles are tested and compared with drawings and specifications. Until this is done, the Army indicates, it cannot warrant the data package to other bidders as adequate for mass production. In this regard, the Army rejects International Harvester's proposal that competition should be limited to prior developers of the ACE. A validated technical data package will enable all experienced manufacturers to compete for the full production contract, the Army concludes.

PACCAR, in comments to our Office, supports the Army's position that currently available data is incomplete and states that it never was authorized to produce a complete data package. Drawings, for example, were revised only when they related to the specific tasks covered by its earlier contracts, PACCAR states; the firm estimates that only 100 of approximately 1,200 drawings meet current military standards. Other elements of the technical data package still to be formalized, according to PACCAR, include specifications and data for packaging, quality assurance, inspection, and acceptance.

The overriding purpose of this procurement, the Army states, is to complete the research and development cycle by assembling and validating the technical data package. Under its current contract, PACCAR is fabricating and installing modifications on one of the four prototypes, and after testing and Government approval of the changes, will update the technical data package before first production. But the data package cannot be validated, the Army

contends, through modification and testing of a handbuilt prototype; nothing short of actually producing the vehicles and thereby verifying the data will do. The Army also argues that potential disputes over the adequacy of technical data, inherent in award to any non-design developer, could take time to resolve, resulting in postponement of full production to a later fiscal year and increased costs due to inflation.

C. Urgency:

International Harvester also challenges the Army's other sole-source justifications, particularly urgency. The firm questions whether "time is of the essence" when the Army has no definite schedule for fielding the ACE. The fact that the vehicle was not funded between 1977 and 1982, International Harvester continues, demonstrates that it is not urgently needed and that there is adequate time for competitive procurement.

The Army acknowledges that it has no timetable for fielding the ACE. However, it states, the vehicle is designed to fill a mission which currently exists--not only to support the M1 tank but also for heavy digging of survivable positions for tank and infantry weapons, anti-tank ditches, and other mobility, countermobility, and survivability tasks.

There currently is no alternative to the ACE, since commercially available bulldozers are essentially road-bound, the Army adds, and do not have the ACE's ability to move across country at high speeds; they also lack armor and protection against chemical-biological warfare. The Army argues that the ACE's combat capabilities make it essential to field the vehicle as soon as possible and that an award to any contractor other than PACCAR will cause delays of at least one year in manufacturing and fielding and will increase costs by an estimated $6 million.

Delays which have occurred thus far have been due to funding constraints, not to lack of immediate need, the Army further argues. With unlimited capital and an infinite time for performance, any manufacturer of related equipment could successfully validate the technical data package, the Army concludes, but neither is available.

GAO Analysis--Sole-Source Procurements:

A. General Rules

When a procurement is negotiated, proposals must be solicited from the maximum number of qualified sources consistent with the nature and requirements of the supplies or services being procured. 10 U.S.C. § 2304(g) (1976). DAR §§ 1-300 and 3-101(d) also require competition to the maximum extent practicable. For this reason, our Office closely scrutinizes sole-source procurements. We will, however, uphold such procurements if there is a reasonable or rational basis for them. Precision Dynamics Corporation, 54 Comp. Gen. 1114 (1975), 75-1 CPD 402.

Presumably, no contracting activity will make a sole-source award without believing such action is in the Government's best interest. However, an award may not be justified merely on the belief that the awardee is best qualified. Aero Corporation, 59 Comp. Gen. 146 (1979), 79-2 CPD 430. Thus, when an agency has information which clearly indicates that a second source may be capable of filling its needs, it must investigate further before making a sole-source award. Aerospace Research Associates, Inc., B-201953, July 15, 1981, 81-2 CPD 36.

Mere familiarity with the goods or services being procured, or prior experience which the agency believes will facilitate performance and enable a contractor to anticipate problems, do not, of themselves or even coupled with urgency, justify a sole-source award, nor do potential increases in cost due to changing contractors. Accordingly, we have sustained protests against sole-source awards of contracts to repair an underground heating system for Army housing when the agency failed to show that the installer was the only firm which could complete the work before winter, Titan Atlantic Construction Corp., B-200986, July 7, 1981, 81-2 CPD 12; and for an energy management control system when the agency believed that the offeror was so well acquainted with existing equipment that it could install a new system in less time and at a lower cost than any other contractor. Electronic Systems U.S.A., Inc., B-200947, April 22, 1981, 81-1 CPD 309.

We also have disapproved sole-source awards for collection of delinquent Medicare, Medicaid, and Group Health accounts, justified on the basis of the contractor's familiarity with the accounts and demonstrated ability to collect, Systems Group Associates, Inc., B-195392, January 17, 1980, 80-1 CPD 56; and for upgrading an audiovisual system and

refurbishing an auditorium, when the awardee had manufactured the major components and was considered able to perform without detailed specifications. Techniarts, B-193263, April 9, 1979, 79-1 CPD 246. See also Environmental Protection Agency sole-source procurements, 54 Comp. Gen. 58 (1974), 74-2 CPD 59; Kent Watkins & Associates, Inc., B-191078, May 17, 1978, 78-1 CPD 377.

B. Awards to Development Contractors:

When, however, the item being procured is technologically complex and/or has had its genesis in a research and development contract, the developer's familiarity with the work to be performed may justify a sole-source award for an initial production run, since the developer may be uniquely able to implement changes required for mass production. This exception to the general rule requiring competition is particularly applicable when for reasons of national defense or safety, full scale production must be achieved at the earliest practicable date.

Thus, we have upheld sole-source awards for the "Seafox," a Naval warfare craft, to the firm which constructed the prototype, The Willard Company Incorporated, B-199705, February 18, 1981, 81-1 CPD 102, and for modification of radar for use on various aircraft to the firm which had developed and had proprietary rights to data on the basic item, although the Air Force was entitled to data on improvements. Applied Devices Corporation, B-187902, May 24, 1977, 77-1 CPD 362.

Even when, as in this case, a prior developer's work will be incorporated into the item being procured, if substantial changes have been made or if the work contemplated goes beyond that of the developer, the most recent contractor may have unique knowledge or capability, justifying a sole-source award. For example, Vega Precision Laboratories, Inc., B-191432, June 30, 1978, 78-1 CPD 467, involved a sole-source award by the Marine Corps to the most recent supplier of transponder sets, used to enable attacking aircraft to "home in" on ground targets under all weather conditions. Due to urgency, the agency planned to waive first article testing and use unaudited drawings. The protester, under earlier contracts, had produced a model which was the acknowledged forerunner of that being procured. In addition, the firm had kept pace with technical developments; reviewed information made available to it by the agency and believed it could produce the sets; planned to conduct first article testing simultaneously with production in order to

meet delivery schedules; agreed to be contractually bound to duplicate the item if it was furnished only one unit; and offered to assist in auditing and revising drawings. Because the protester's work had been done seven years previously, we found it unnecessary to consider whether it had met performance requirements at that time. We held that the agency's assessment of unacceptable technical risk and potential delay in award to any firm other than the incumbent was reasonable, and we denied the protest.

Similarly, in Engineered Systems, Inc., B-195237, December 14, 1979, 79-2 CPD 408, involving a contract for support of an aircraft system used to collect scientific and technical intelligence, the Air Force proposed a sole-source award to the contractor who, during the previous four years, had modified the aircraft substantially. A prior contractor protested. We noted that due to time and funding constraints, drawings and engineering data on the modifications had been kept to an absolute minimum and had been augmented by the incumbent's own specifications, manufacturing processes, and engineering notes, which were not available to any other firm. We upheld the award but recommended that options not be exercised if a competitive data package could be assembled. See also Frequency Engineering Laboratories Corporation, B-202202, December 15, 1981, 81-2 CPD 468; North Electric Company, B-182248, March 12, 1975, 75-1 CPD 150; BioMarine Industries; General Electric Company, B-180211, August 5, 1974, 74-2 CPD 78; B-173063, September 22, 1971; and B-161031, June 1, 1967.

General Accounting Office Conclusions:

We find that the ACE is a complex, state-of-the-art combat vehicle, and that PACCAR is not only the most recent developer, but also the only company which has worked on it for more than 10 years. We believe the Army has reasonably determined that PACCAR's current familiarity with the vehicle, the lead time which would be required for any other contractor to become familiar with it, and the urgency involved combine to make PACCAR the only available source for the proposed procurement.

We reach this conclusion, first, because the solicitation issued to PACCAR does not call for the production of large quantities of the vehicle for operational use. Rather, it calls for PACCAR to provide various types of engineering support for a limited production run. Specifically, the firm is to insure:

> "* * * that the mechanical, hydraulic, and electrical design of the equipment is such that when produced in quantity * * * there will be no degradation of performance from that demonstrated and established on the developmental hardware and that quantity production can be effected with minimum * * * problems * * *."

In so doing, PACCAR is required by the specifications to perfect, to the extent possible, the manufacturing processes to be used in follow-on full scale production, and to make inspection, assembly, and interchange of parts as easy as possible. In short, what is involved is production engineering.

Second, as the Army has indicated, the engineering methods developed by PACCAR must be tested through production. In this regard, we find it reasonable to require that the technical data package be validated. The protested solicitation lists numerous deficiencies found in 1976 testing of the vehicle at Aberdeen Proving Ground, Maryland. For example, at that time it failed to start consistently in temperatures below zero degrees Fahrenheit. In addition, it failed to meet requirements that 88 percent of all units be able to complete a 10-hour mission successfully and that 50 percent of all units be able to operate 650 hours between replacement or overhaul of major components. Also, when unballasted, the vehicle could not maintain required speeds of 30 miles an hour on dry, level terrain or 3 miles an hour while afloat, and the latches securing the dozer blade were not adequate to insure its retention during cross country movement.

It appears that extensive testing will be required to determine whether these and other problems, which appear to have been solved only on paper or at best through testing of modifications to the prototypes, have been resolved. This is consistent with a 1978 audit report in which we stated that the vehicle (still referred to as the Universal Engineering Tractor) was outstanding when it performed properly, but was "plagued with durability and reliability problems." We noted that test officials believed that although existing prototypes were being used to correct as many deficiencies as possible before a technical data package was finalized, the vehicles were so old and had been modified so many times that they would not be an accurate indicator of deficiency corrections. See Letter Report to the Chairman, House Appropriations Committee, PSAD 78-99, May 1, 1978.

Further, we believe the Army is justified in its belief that it must proceed immediately with a limited production run order to meet its urgent need for full scale production. The ACE will fill military needs which are not being met by any other equipment, either in Army inventory or available commercially, and obviously these needs will remain unsatisfied until the production units are fielded. International Harvester's contention that production is not urgent because the ACE was not funded for several years fails to recognize that the lack of prior funding logically leads to a greater urgency now and that the Congress provided funds this year after the Army explained its immediate need for the ACE.

The fact that only PACCAR's and its subcontractors' engineering personnel are currently familiar with the ACE's design data, consisting of some 1,200 drawings, numerous technical specifications, and a history of some 900 changes made in the past 16 years, leads us to conclude that it is the only firm that can reasonably assure that the contract will be performed as promptly as possible. Moreover, as the Army points out, if problems arise during production which require recalculation or adjustment of dimensions and tolerances, PACCAR appears uniquely qualified to resolve them without undue technical risk.

Finally, we find no evidence that the Army is attempting to avoid its obligation to compete full scale production of the ACE. The Army at this point is seeking only to produce a limited number of vehicles to insure, in its words, "That a [later] competitive solicitation is not conducted without a technical data package proven adequate to build a vehicle in a full production mode."

International Harvester's protest therefore is denied.

Number of Vehicles to Be Procured:

Although we have no legal objections to a sole-source award to PACCAR, we believe that the contract should be for the absolute minimum number of vehicles required to support production engineering and to validate the technical data package. The Army has presented us with only conclusionary statements as to what this minimum is. In 1978, as indicated above, it planned to procure 230 vehicles under a first production contract, if options were exercised. In this procurement, the Army initially argued that 87 vehicles

were needed; it now states that it will limit initial production to no more than 25 vehicles. In none of these cases did the Army explain how it arrived at these figures.

The solicitation indicates that the first four vehicles delivered will be subject to first article testing. The fifth will be subjected to a physical configuration audit, in which an "as-built" vehicle is examined against the technical documentation; the sixth will be physically torn down to evaluate maintainability. What the remainder of the 25 vehicles will contribute to the process of validation is not clear from the record. In other words, the Army does not appear to have made a technical judgment that a minimum of 25 vehicles need to be produced by PACCAR before it will be in position for a competitive procurement.

While the many decisions cited above support sole-source procurements under the circumstances present here, they do not support such procurements when they involve more than a minimum quantity or when they continue for more than a minimum time. What is justifiable initially may soon cease to be justifiable, particularly in light of the obvious advantages to be gained from competitive pricing and the wisdom, from a managerial point of view, of developing more than one source. For example, see Aero Corporation, supra, and Aero Corporation v. Department of the Navy, No. 79-2944 (D. D.C., February 18, 1982) involving a proper sole-source award to the original manufacturer of the C-130 of a contract for extending the service life of the aircraft but also a U.S. District Court order to the Navy to develop maintenance kits suitable for future competition between the manufacturer and other experienced C-130 contractors. See generally Less Sole-source, More Competition Needed on Federal Civil Agencies' Contracting, PLRD 82-40, April 7, 1982.

We therefore are recommending that the Army reevaluate whether it actually needs 25 vehicles under this contract and that, concurrent with the first production run, it take all necessary steps to insure that a complete and validated technical data package is obtained, so that this noncompetitive procurement will not be extended. See H. Koch & Sons, B-202875, December 14, 1981, 81-2 CPD 463; Aerospace Research Associates, Inc., supra; Applied Devices Corporation, supra.

In addition, to the extent that the 25-vehicle figure reflects the Army's assessment of what is practical to

defray tooling costs, we suggest the Army consider whether the Government's interests would be better served if it were to acquire and furnish under follow-on contracts any special production tooling which may be needed.

for Milton J. Socolar
Comptroller General
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The significance of the numerous changes, the Army states, is that they must be properly integrated into the vehicle design. Their impact on existing components is uncertain, the Army continues, but it is crucial that the changes be made in a manner that does not adversely affect other design parameters. The developer having the most current experience with the total design is the only one qualified to resolve potential difficulties without undue technical risk, the Army asserts.

A large number of the problems experienced with all generations of the ACE are rooted in manufacturing methods, the Army further states. In its judgment, the lessons learned by PACCAR cannot effectively be transferred to the operations of another manufacturer and cannot be reflected in the technical data package before completion of initial production. The Army admits that this is a subjective judgment which reflects a conservative approach. However, it states, the basis for it is the need for any other contractor--including prior developers--to become acquainted or reacquainted with the entire vehicle design and the possibility that a new contractor will overlook critical changes. Thus, the Army states, far more is required than merely purchasing components from approved sources.

In this regard, the Army states that PACCAR has coordinated with subcontractors to solve persistent problems in the ACE's complex hydraulic and suspension systems. A change in the transmission has been mutually developed by PACCAR and Clark Equipment Company; in the Army's opinion, it would be difficult and time-consuming for another prime contractor to repeat this development effort, since the drawings and specifications for the transmission are not included in the current technical data package. Further, International Harvester's commercial patent is not relevant, the Army asserts, since the firm has neither produced the vehicle in quantity nor subjected it to the periodic reevaluation and reengineering which the ACE has undergone.

The Army concludes that only PACCAR has the expertise required to implement the changes to the ACE during production. While acknowledging International Harvester's role as a developer of the ACE, the Army does not agree that this experience is sufficient to overcome the firm's lack of experience with the current design.

The Army also points out that both Defense Acquisition Regulation § 3-108(b) (1976 ed.) and Army Regulation (AR) 1000-1 (May 1, 1981) indicate that it is generally in the Government's best interest to place initial production contracts for technical and specialized supplies with the development contractor. The rationale for this policy, the Army states, is to permit the Government to retain the expertise gained by the development contractor through the first production run. It allows incorporation of all "first-build" changes into the technical data package before competitive purchase of a large quantity of the item, and is standard Army policy for complex procurements.

International Harvester's response is that in this case there are three developers of the ACE. If the Army correctly has described all the changes which have been made or proposed since International Harvester last was involved with the ACE, the firm continues, neither PACCAR nor any other developer has built the vehicle which will be produced under this contract, although they have built its predecessors. If changes yet to be made are significant, International Harvester continues, the ACE should not be allowed to move into the production stage; if they are insignificant, then any of the prior developers should be allowed to produce it.

Moreover, International Harvester argues, the Army is reneging on a promise, made in 1971, when it specifically

stated that the advanced production engineering contractor was not guaranteed award of the first production contract because the contract would be awarded competitively.

B. The Technical Data Package:

International Harvester also argues that the Army either has or should have obtained a technical data package for the ACE; the firm estimates that the Army has spent nearly $1.5 million (of a total of $7.7 million in contracts awarded to PACCAR since 1971) for such data. If this information is updated, International Harvester argues, it can go into production as quickly and as well as PACCAR.

The Army, however, states that due to the long development period, piecemeal funding, and changes in Army policy concerning what is suitable for competitive procurement, data delivered under its earlier contracts with PACCAR must not only be updated but also "validated" by being used successfully in a first production run. According to the Army, this requires a configuration audit in which the vehicles are tested and compared with drawings and specifications. Until this is done, the Army indicates, it cannot warrant the data package to other bidders as adequate for mass production. In this regard, the Army rejects International Harvester's proposal that competition should be limited to prior developers of the ACE. A validated technical data package will enable all experienced manufacturers to compete for the full production contract, the Army concludes.

PACCAR, in comments to our Office, supports the Army's position that currently available data is incomplete and states that it never was authorized to produce a complete data package. Drawings, for example, were revised only when they related to the specific tasks covered by its earlier contracts, PACCAR states; the firm estimates that only 100 of approximately 1,200 drawings meet current military standards. Other elements of the technical data package still to be formalized, according to PACCAR, include specifications and data for packaging, quality assurance, inspection, and acceptance.

The overriding purpose of this procurement, the Army states, is to complete the research and development cycle by assembling and validating the technical data package. Under its current contract, PACCAR is fabricating and installing modifications on one of the four prototypes, and after testing and Government approval of the changes, will update the technical data package before first production. But the data package cannot be validated, the Army

contends, through modification and testing of a handbuilt prototype; nothing short of actually producing the vehicles and thereby verifying the data will do. The Army also argues that potential disputes over the adequacy of technical data, inherent in award to any non-design developer, could take time to resolve, resulting in postponement of full production to a later fiscal year and increased costs due to inflation.

C. Urgency:

International Harvester also challenges the Army's other sole-source justifications, particularly urgency. The firm questions whether "time is of the essence" when the Army has no definite schedule for fielding the ACE. The fact that the vehicle was not funded between 1977 and 1982, International Harvester continues, demonstrates that it is not urgently needed and that there is adequate time for competitive procurement.

The Army acknowledges that it has no timetable for fielding the ACE. However, it states, the vehicle is designed to fill a mission which currently exists--not only to support the M1 tank but also for heavy digging of survivable positions for tank and infantry weapons, anti-tank ditches, and other mobility, countermobility, and survivability tasks.

There currently is no alternative to the ACE, since commercially available bulldozers are essentially road-bound, the Army adds, and do not have the ACE's ability to move across country at high speeds; they also lack armor and protection against chemical-biological warfare. The Army argues that the ACE's combat capabilities make it essential to field the vehicle as soon as possible and that an award to any contractor other than PACCAR will cause delay of at least one year in manufacturing and fielding and will increase costs by an estimated $6 million.

Delays which have occurred thus far have been due to funding constraints, not to lack of immediate need, the Army further argues. With unlimited capital and an infinite time for performance, any manufacturer of related equipment could successfully validate the technical data package, the Army concludes, but neither is available.

GAO Analysis--Sole-Source Procurements:

A. General Rules

When a procurement is negotiated, proposals must be solicited from the maximum number of qualified sources consistent with the nature and requirements of the supplies or services being procured. 10 U.S.C. § 2304(g) (1976). DAR §§ 1-300 and 3-101(d) also require competition to the maximum extent practicable. For this reason, our Office closely scrutinizes sole-source procurements. We will, however, uphold such procurements if there is a reasonable or rational basis for them. Precision Dynamics Corporation, 54 Comp. Gen. 1114 (1975), 75-1 CPD 402.

Presumably, no contracting activity will make a sole-source award without believing such action is in the Government's best interest. However, an award may not be justified merely on the belief that the awardee is best qualified. Aero Corporation, 59 Comp. Gen. 146 (1979), 79-2 CPD 430. Thus, when an agency has information which clearly indicates that a second source may be capable of filling its needs, it must investigate further before making a sole-source award. Aerospace Research Associates, Inc., B-201953, July 15, 1981, 81-2 CPD 36.

Mere familiarity with the goods or services being procured, or prior experience which the agency believes will facilitate performance and enable a contractor to anticipate problems, do not, of themselves or even coupled with urgency, justify a sole-source award, nor do potential increases in cost due to changing contractors. Accordingly, we have sustained protests against sole-source awards of contracts to repair an underground heating system for Army housing when the agency failed to show that the installer was the only firm which could complete the work before winter, Titan Atlantic Construction Corp., B-200986, July 7, 1981, 81-2 CPD 12; and for an energy management control system when the agency believed that the offeror was so well acquainted with existing equipment that it could install a new system in less time and at a lower cost than any other contractor. Electronic Systems U.S.A., Inc., B-200947, April 22, 1981, 81-1 CPD 309.

We also have disapproved sole-source awards for collection of delinquent Medicare, Medicaid, and Group Health accounts, justified on the basis of the contractor's familiarity with the accounts and demonstrated ability to collect, Systems Group Associates, Inc., B-195392, January 17, 1980, 80-1 CPD 56; and for upgrading an audiovisual system and

refurbishing an auditorium, when the awardee had manufactured the major components and was considered able to perform without detailed specifications. Techniarts, B-193263, April 9, 1979, 79-1 CPD 246. See also Environmental Protection Agency sole-source procurements, 54 Comp. Gen. 58 (1974), 74-2 CPD 59; Kent Watkins & Associates, Inc., B-191078, May 17, 1978, 78-1 CPD 377.

B. Awards to Development Contractors:

When, however, the item being procured is technologically complex and/or has had its genesis in a research and development contract, the developer's familiarity with the work to be performed may justify a sole-source award for an initial production run, since the developer may be uniquely able to implement changes required for mass production. This exception to the general rule requiring competition is particularly applicable when for reasons of national defense or safety, full scale production must be achieved at the earliest practicable date.

Thus, we have upheld sole-source awards for the "Seafox," a naval warfare craft, to the firm which constructed the prototype, The Willard Company Incorporated, B-199705, February 18, 1981, 81-1 CPD 102, and for modification of radar for use on various aircraft to the firm which had developed and had proprietary rights to data on the basic item, although the Air Force was entitled to data on improvements. Applied Devices Corporation, B-187902, May 24, 1977, 77-1 CPD 362.

Even when, as in this case, a prior developer's work will be incorporated into the item being procured, if substantial changes have been made or if the work contemplated goes beyond that of the developer, the most recent contractor may have unique knowledge or capability, justifying a sole-source award. For example, Vega Precision Laboratories, Inc., B-191432, June 30, 1978, 78-1 CPD 467, involved a sole-source award by the Marine Corps to the most recent supplier of transponder sets, used to enable attacking aircraft to "home in" on ground targets under all weather conditions. Due to urgency, the agency planned to waive first article testing and use unaudited drawings. The protester, under earlier contracts, had produced a model which was the acknowledged forerunner of that being procured. In addition, the firm had kept pace with technical developments; reviewed information made available to it by the agency and believed it could produce the sets; planned to conduct first article testing simultaneously with production in order to

meet delivery schedules; agreed to be contractually bound to duplicate the item if it was furnished only one unit; and offered to assist in auditing and revising drawings. Because the protester's work had been done seven years previously, we found it unnecessary to consider whether it had met performance requirements at that time. We held that the agency's assessment of unacceptable technical risk and potential delay in award to any firm other than the incumbent was reasonable, and we denied the protest.

Similarly, in Engineered Systems, Inc., B-195237, December 14, 1979, 79-2 CPD 408, involving a contract for support of an aircraft system used to collect scientific and technical intelligence, the Air Force proposed a sole-source award to the contractor who, during the previous four years, had modified the aircraft substantially. A prior contractor protested. We noted that due to time and funding constraints, drawings and engineering data on the modifications had been kept to an absolute minimum and had been augmented by the incumbent's own specifications, manufacturing processes, and engineering notes, which were not available to any other firm. We upheld the award but recommended that options not be exercised if a competitive data package could be assembled. See also Frequency Engineering Laboratories Corporation, B-202202, December 15, 1981, 81-2 CPD 468; North Electric Company, B-182248, March 2, 1975, 75-1 CPD 150; BioMarine Industries; General Electric Company, B-180211, August 5, 1974, 74-2 CPD 78; B-173063, September 22, 1971; and B-161031, June 1, 1967.

General Accounting Office Conclusions:

We find that the ACE is a complex, state-of-the-art combat vehicle, and that PACCAR is not only the most recent developer, but also the only company which has worked on it for more than 10 years. We believe the Army has reasonably determined that PACCAR's current familiarity with the vehicle, the lead time which would be required for any other contractor to become familiar with it, and the urgency involved combine to make PACCAR the only available source for the proposed procurement.

We reach this conclusion, first, because the solicitation issued to PACCAR does not call for the production of large quantities of the vehicle for operational use. Rather, it calls for PACCAR to provide various types of engineering support for a limited production run. Specifically, the firm is to insure:

> "* * * that the mechanical, hydraulic, and electrical design of the equipment is such that when produced in quantity * * * there will be no degradation of performance from that demonstrated and established on the developmental hardware and that quantity production can be effected with minimum * * * problems * * *."

In so doing, PACCAR is required by the specifications to perfect, to the extent possible, the manufacturing processes to be used in follow-on full scale production, and to make inspection, assembly, and interchange of parts as easy as possible. In short, what is involved is production engineering.

Second, as the Army has indicated, the engineering methods developed by PACCAR must be tested through production. In this regard, we find it reasonable to require that the technical data package be validated. The protested solicitation lists numerous deficiencies found in 1976 testing of the vehicle at Aberdeen Proving Ground, Maryland. For example, at that time it failed to start consistently in temperatures below zero degrees Fahrenheit. In addition, it failed to meet requirements that 88 percent of all units be able to complete a 10-hour mission successfully and that 50 percent of all units be able to operate 650 hours between replacement or overhaul of major components. Also, when unballasted, the vehicle could not maintain required speeds of 30 miles an hour on dry, level terrain or 3 miles an hour while afloat, and the latches securing the dozer blade were not adequate to insure its retention during cross country movement.

It appears that extensive testing will be required to determine whether these and other problems, which appear to have been solved only on paper or at best through testing of modifications to the prototypes, have been resolved. This is consistent with a 1978 audit report in which we stated that the vehicle (still referred to as the Universal Engineering Tractor) was outstanding when it performed properly, but was "plagued with durability and reliability problems." We noted that test officials believed that although existing prototypes were being used to correct as many deficiencies as possible before a technical data package was finalized, the vehicles were so old and had been modified so many times that they would not be an accurate indicator of deficiency corrections. See Letter Report to the Chairman, House Appropriations Committee, PSAD 78-99, May 1, 1978.

Further, we believe the Army is justified in its belief that it must proceed immediately with a limited production run in order to meet its urgent need for full scale production. The ACE will fill military needs which are not being met by any other equipment, either in Army inventory or available commercially, and obviously these needs will remain unsatisfied until the production units are fielded. International Harvester's contention that production is not urgent because the ACE was not funded for several years fails to recognize that the lack of prior funding logically leads to a greater urgency now and that the Congress provided funds this year after the Army explained its immediate need for the ACE.

The fact that only PACCAR's and its subcontractors' engineering personnel are currently familiar with the ACE's design data, consisting of some 1,200 drawings, numerous technical specifications, and a history of some 900 changes made in the past 16 years, leads us to conclude that it is the only firm that can reasonably assure that the contract will be performed as promptly as possible. Moreover, as the Army points out, if problems arise during production which require recalculation or adjustment of dimensions and tolerances, PACCAR appears uniquely qualified to resolve them without undue technical risk.

Finally, we find no evidence that the Army is attempting to avoid its obligation to compete full scale production of the ACE. The Army at this point is seeking only to produce a limited number of vehicles to insure, in its words, "That a [later] competitive solicitation is not conducted without a technical data package proven adequate to build a vehicle in a full production mode."

International Harvester's protest therefore is denied.

Number of Vehicles to Be Procured:

Although we have no legal objections to a sole-source award to PACCAR, we believe that the contract should be for the absolute minimum number of vehicles required to support production engineering and to validate the technical data package. The Army has presented us with only conclusionary statements as to what this minimum is. In 1978, as indicated above, it planned to procure 230 vehicles under a first production contract, if options were exercised. In this procurement, the Army initially argued that 87 vehicles

were needed; it now states that it will limit initial production to no more than 25 vehicles. In none of these cases did the Army explain how it arrived at these figures.

The solicitation indicates that the first four vehicles delivered will be subject to first article testing. The fifth will be subjected to a physical configuration audit, in which an "as-built" vehicle is examined against the technical documentation; the sixth will be physically torn down to evaluate maintainability. What the remainder of the 25 vehicles will contribute to the process of validation is not clear from the record. In other words, the Army does not appear to have made a technical judgment that a minimum of 25 vehicles need to be produced by PACCAR before it will be in position for a competitive procurement.

While the many decisions cited above support sole-source procurements under the circumstances present here, they do not support such procurements when they involve more than a minimum quantity or when they continue for more than a minimum time. What is justifiable initially may soon cease to be justifiable, particularly in light of the obvious advantages to be gained from competitive pricing and the wisdom, from a managerial point of view, of developing more than one source. For example, see Aero Corporation, supra, and Aero Corporation v. Department of the Navy, No. 79-2944 (D. D.C., February 18, 1982) involving a proper sole-source award to the original manufacturer of the C-130 of a contract for extending the service life of the aircraft but also a U.S. District Court order to the Navy to develop maintenance kits suitable for future competition between the manufacturer and other experienced C-130 contractors. See generally Less Sole-source, More Competition Needed on Federal Civil Agencies' Contracting, PLRD 82-40, April 7, 1982.

We therefore are recommending that the Army reevaluate whether it actually needs 25 vehicles under this contract and that, concurrent with the first production run, it take all necessary steps to insure that a complete and validated technical data package is obtained, so that this noncompetitive procurement will not be extended. See H. Koch & Sons, B-202875, December 14, 1981, 81-2 CPD 463; Aerospace Research Associates, Inc., supra; Applied Devices Corporation, supra.

In addition, to the extent that the 25-vehicle figure reflects the Army's assessment of what is practical to

defray tooling costs, we suggest the Army consider whether the Government's interests would be better served if it were to acquire and furnish under follow-on contracts any special production tooling which may be needed.

for Milton J. Socolar
Comptroller General
of the United States