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**THE APPLICATION OF QUANTITY
DISCOUNTS IN ARMY PROCUREMENTS
(FIELD TEST)**



**U.S. ARMY
INVENTORY
RESEARCH
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APRIL 1980

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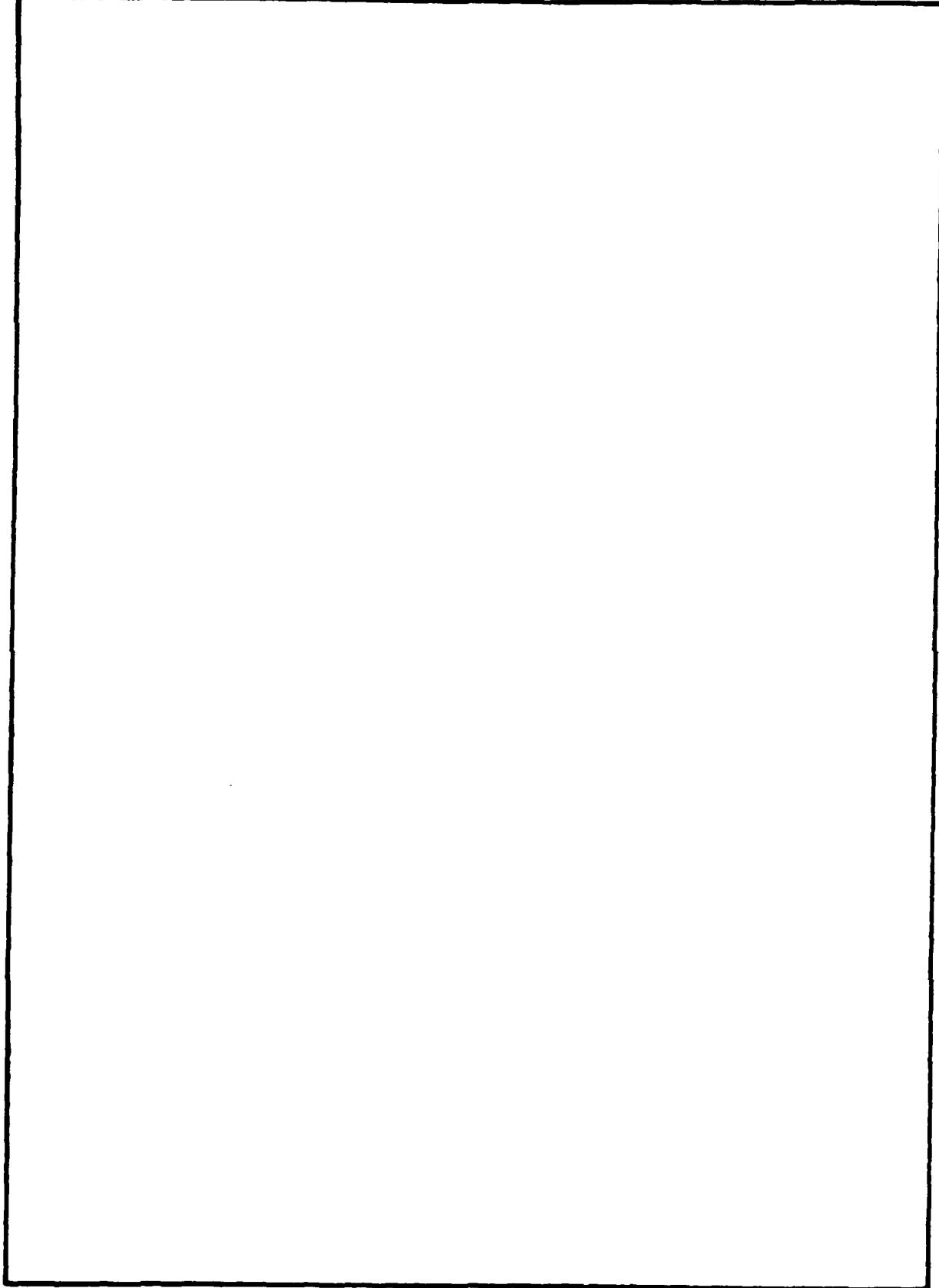
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SUMMARY

1. Background

The Department of Defense (DoD) has directed the use of basic Economic Order Quantity (EOQ) principles in the acquisition of secondary items. One of the assumptions that the EOQ model makes is that there is no control over acquisition price; yet it has been established that if vendors were asked to submit offers on an EOQ and larger alternate quantities, then savings could be gained by acquisition of more material at a reduced unit cost. Furthermore, procurement workload would be reduced and supply availability improved.

DARCOM approved a joint US Army Inventory Research Office/US Army Procurement Research Office (IRO/APRO) study of the application of quantity discount (QD) concepts in Army Procurements in July 1977.

The study developed a proposed QD program for DARCOM. A test of the proposed program was approved by DARCOM on 9 August 1978. MICOM and TARCOC participated in the test and the results are reported here.

2. Test Objectives

The test objectives were twofold:

- a. To provide data needed to evaluate the proposed QD program with respect to meeting its objectives (i.e. reduce acquisition cost, permanently reduce procurement workload, and improve stock availability).
- b. To provide experience which can be used as basis for implementing specific procedures.

3. Scope

The QD program is limited to Army Stock Fund procurements.

Testing was conducted at MICOM and TARCOC. However, conclusions and recommendations with respect to the feasibility of the QD program can be applied to all Materiel Readiness Commands.

4. Methodology for Evaluating the QD Program

Test data in conjunction with Army Stock Fund catalog data were analyzed to make projections of costs and benefits. Feasibility of a QD program in

DARCOM procurements was evaluated on the basis of the projections and test experience.

5. Conclusions and Recommendations

A one time investment of about 11.3% of the combined MICOM and TARCOM ASF budget will be required to fund a QD program. This investment will be recovered in about three years; thereafter, recurring net annual savings of about \$1.1 million for MICOM and \$5.7 million for TARCOM are projected. Stock availability will improve by at least one percentage point. Procurement workload will decrease significantly.

The proposed QD program is feasible for implementation and it will meet the objectives for which it was designed provided it is fully automated. It is recommended that a short term study be done to develop specifications for automation and to develop the cost to implement.

6. Report Organization

Chapter I provides background discussion of the pre-test phase of the study. Chapter II outlines the test implementation and provides test results. Chapter III presents projections of required funding and savings. Chapter IV discusses issues related to implementation. Chapter V summarizes the results via conclusions and recommendations. Formula for evaluating QD bids is given in Appendix A. Full details relative to the methodology used for projecting costs and savings are given in Appendix B. Appendix C is an example of an actual QD solicitation used in the test.

ACKNOWLEDGEMENT

The test required a great deal of cooperation from many people in the Procurement and Materiel Management Directorates at MICOM and TARCOM. Without their efforts and cooperation the test would have failed.

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CHAPTER I

BACKGROUND DISCUSSION OF THE PRE-TEST PHASE OF THE STUDY

1.1 Economic Order Quantity (EOQ) and Quantity Discount (QD) Theory

The Department of Defense (DoD) has directed the use of basic EOQ principles in the acquisition of secondary items. DoD Instruction (DoDI) 4140.39, Procurement Cycles and Safety Levels of Supply for Secondary Items, dated 17 July 1970, establishes policies for determining procurement cycles (EOQ's) and safety levels of supply at Inventory Control Points (ICP's) for secondary items, and illustrates the basic mathematical functions and their application in an inventory model. One of the assumptions that the EOQ model makes is that acquisition cost remains constant whatever the purchase quantity; yet it has been established that the unit price of an item is not always independent of the quantity procured. The QD theory is that if vendors were asked to submit offers on an EOQ and larger alternate quantities, then savings could be gained by acquiring a larger quantity of materiel at a reduced unit cost. This saving would be realized not only through decreased materiel cost but also through reduced procurement workload.

1.2 Air Force (AF) QD Program

The US Air Force developed a QD program for use at its Air Logistics Centers. The AF QD program received DoD approval and was documented in Air Force Logistics Command (AFLC) Regulation 70-23, dated 30 June 1976. The prime motivation for the AF program is to obtain lower prices and thus reduce acquisition costs. The QD program is applicable only to items with low reorder periods (approximately six months or less) and for this reason includes only those items with an average annual demand dollar value in excess of \$50,000. (Dollar value in this context refers to annual sales at the wholesale level of management). The program is limited to stable stock fund items and excludes small purchases. Negotiated procurements are limited to an EOQ value of less than \$60,000 to preclude the need for cost and pricing data. Solicitations for QD candidate acquisitions are based on the following three quantities: the EOQ; 1.5 x EOQ; and 2.0 x EOQ.

1.3 Proposed DARCOM QD Program

At the time of the pre-test phase of our QD study, the US Army Development and Materiel Readiness Command (DARCOM) was very much concerned with the upward trend in the DARCOM Materiel Readiness Command (MRC) procurement workload and upper echelon restrictions on personnel resources. DARCOM wanted a solution that would permanently reduce procurement workload to a level that the MRCs could cope with without degradation of stock availability.

Analysis of the AF QD program indicated that a simple duplication of the AF procedures would not provide sufficient assistance in solving a workload problem at the MRC's. However, analysis revealed that a suitable program could be developed by expanding the perimeters of the AF program. Thus, a proposed DARCOM QD program was developed with the following objectives:

- a. Realize acquisition savings.
- b. Permanently reduce procurement workload.
- c. Improve stock availability.

The expansion of perimeters consists of:

- a. Applying QD to small purchases as well as large purchases.
- b. Soliciting incrementally up to 4.0 x EOQ in lieu of limiting the program to a maximum of 2 x EOQ.
- c. Applying QD to stocked stable Low Dollar Value (LDV), Medium Dollar Value (MDV), and High Dollar Value (HDV) items in lieu of limiting the program to HDV items only.

The proposed program and related analysis are documented in [5].

1.4 Proposed DARCOM QD Program (Test)

Because of the uniqueness of this concept, as well as anticipated difficulty of implementation, a decision was made to test the proposed QD program at selected Materiel Readiness Commands (MRC's). Testing was conducted on a voluntary basis at the US Army Missile Command (MICOM) and the US Army Tank-Automotive Materiel Readiness Command (TARCOM).

The purpose of the test was to provide experience which can be used as basis for implementing specific procedures and to provide data needed to evaluate the proposed QD program with respect to its objectives. To amplify the latter point, we wanted data which would be the basis for projecting -

- a. additional funding.
- b. reduction in PWD volume.
- c. savings on hardware (i.e. materiel)
- d. savings on order cost.
- e. losses due to additional excess inventory.
- f. expected improvement in availability.

CHAPTER II

TEST IMPLEMENTATION AND RESULTS

2.1 Test Implementation

The test of the proposed DARCOM QD program was initiated at MICOM in November 1978, and TARCOM was phased into the test in February 1979. The test was completed at both Commands in September 1979.

2.2 Test Procedures at MICOM

a. The Item Manager (IM) is responsible for a review of the supply control study output for selection of candidates for QD processing based upon demand stability. Items which pass this screening criterion are referred to maintenance engineers.

b. Maintenance engineers review the candidate items for technical stability and furnish the results of their review to the IM.

c. Candidate items which failed the technical stability screening are processed under normal procedures. Those items which pass the technical stability screening are processed by the IM under special QD procedures. The IM coordinates the funding for the maximum quantity to be solicited and prepares input to amend the Procurement Work Directive (PWD).

d. The amended PWD is forwarded to the Procurement and Production (PP) control where quantity increments and delivery schedules are structured.

e. The assigned buyer structures the solicitation document based on the data received from PP control and releases the solicitation to suppliers. An actual solicitation document is included as Appendix C to this report. The reader can refer to the appendix for an example of the various provisions which are pertinent to QD treatment. MICOM and TARCOM solicitations are similar except that TARCOM included the bids evaluation formula in the actual solicitation whereas MICOM did not. No conclusion can be drawn about the value of including the evaluation formula in the solicitation; however, it is notable that neither Command received a single protest of a QD acquisition.

f. The buyer receives and reviews the vendor bids or proposals and prepares a disposition form (DF) to the IM in order to verify current requirements.

g. The IM returns the DF to the buyer with advice as to the current requirements.

h. The buyer coordinates for transportation data if appropriate and prepares an abstract of information needed as input data for the automated QD bid evaluation program. The abstract is forwarded to the pricing branch for evaluation.

i. The assigned price analyst extracts the data from the abstract and executes the QD evaluation program. Subsequent to a review of the results, the computer printout is forwarded to the buyer. Incidentally, the QD bids evaluation program was developed by IRO for mini-computer application and provided to the test commands. The formula for evaluating the QD bids is in Appendix A.

j. The contracting officer makes an award decision based on the evaluation results, and the buyer then prepares Commodity Command Standard System (CCSS) input relative to the award quantity prior to execution of the award document.

2.3 Test Procedures at TARCUM

The test procedures followed at TARCUM were the same as those followed at MICOM except for three differences:

a. To expedite the test, PP personnel at TARCUM initially nominated candidate items upon receipt of a PWD. They would refer the proposed candidate item to the IM for approval and appropriate funding action. This routine was subsequently changed to correspond to the procedure followed at MICOM.

b. Buyers at TARCUM were responsible for structuring of quantity increments and delivery schedules in lieu of PP control. This practice remained unchanged throughout the test.

c. Technical stability review was not done by the maintenance engineers. Branch Chiefs in Materiel Management approved or disapproved a procurement for QD solicitations based on knowledge of the weapon system.

2.4 Overall Test Results

Overall test results are given in Table 1. MICOM solicited quantity discounts on 97 Army Stock Fund small purchases (less than \$10,000) and received

TABLE 1: TEST RESULTS

	MICOM		TARCOM	
	SMALL PURCHASES	LARGE PURCHASES	SMALL PURCHASES	LARGE PURCHASES
SAMPLE	97	45	16	32
COST EFFECTIVE HITS	46(47.4%)	27(60.0%)	4(25.0%)	9(28.1%)
AVERAGE DISCOUNT	13.8%	7.8%	26.7%	11.4%
AVERAGE DISCOUNT (\$ WEIGHTED)	14.9%	8.2%	25.2%	9.4%
AVERAGE BUY MULTIPLE	1.75	2.6	4.3	3.7
SAVING ON HARDWARE	\$41,305	\$75,669	\$3,771	\$65,417

cost effective discounts on 46 or 47.4% of them. The average award quantity for these 46 procurements was 1.75 x EOQ and the average discount was 13.8%. When the discounts are weighted in proportion to the dollar value of the procurement, the average discount increased to 14.9%. The saving on the materiel procured amounted to \$41,305. That is, if the same quantity of materiel were procured, paying the lowest prices quoted for the EOQ, the materiel would cost \$41,305 more. The reader can similarly inspect the results for TARCUM and the large purchases (at least \$10,000) category for MICOM.

What follows is not tabulated but may be of interest to some readers. The obligations for the 142 MICOM procurements for which quantity discounts were solicited were \$1,757,000. Without QD they would have been \$1,382,000, or \$375,000 less. The saving on materiel was about \$117,000. If the benefits of improved availability and lower PWD volume are sufficient to offset the extra holding cost, then the \$117,000 saving amounts to a 32% immediate return on the \$375,000 investment. For TARCUM, the obligations were \$1,579,000 at QD and \$1,229,000 at EOQ for a difference of \$350,000. The saving on materiel was about \$69,000 which amounts to about a 20% immediate return.

Some discounts were offered in more than 90% of the QD solicitations at MICOM and more than 95% of the QD solicitations at TARCUM. However, in computing discounts we used only the lowest price quoted for the EOQ and each QD increment. Consequently, if the lowest bidder offered no discounts but all other bidders offered significant discounts, this was counted as a solicitation with no discounts. Similarly, if there was a discount but the computed annualized cost for the QD increment was larger than the computed annualized cost for the EOQ, this was not a cost effective discount. For more technical details in this area see [5].

2.5 Selected Results

Table 2 gives test results for all NSNs that received discounts over 30%. Inspection shows that a good cross section of procurements with respect to the number of bidders and dollar value of the procurement is included in this group. Note that the QD increment need not be a very large multiple of the EOQ to get a big discount. Also note that the number of bidders did not affect the magnitude of the discount.

TABLE 2: EXAMPLES OF THE LARGEST DISCOUNTS RECEIVED DURING TEST

<u>COMMAND</u>	<u>NSN</u>	<u>NAME</u>	<u>NO. OF BIDDERS</u>	<u>BUY MULTIPLE</u>	<u>\$ BUY</u>	<u>% DISCOUNT</u>
MICOM	1430-842-5424	ELECTRON TUBE SUPPORT	2	1.9	6389	45.5
	6145-403-9458	ELECTRICAL WIRE	1	1.9	7252	36.8
	4140-939-6873	SHELL ASSEMBLY	8	3.3	31112	30.6
	1430-775-9963	ELECTRICAL LEAD	4	2.0	2105	30.5
TARCOM	2930-008-1770	RADIATOR FUNNEL	1	2.3	944	35.9
	2540-031-4326	DUCT ASSY	4	3.5	23617	34.0
	5340-027-2069	ANGLE BRACKET	10	3.3	291	31.9

2.6 Results by Industry Groupings

The results were analyzed to determine if there were specific industry groupings for which the percent of cost effective discounts and the magnitude of the discounts were significantly greater. We found no significant differences but did observe that no discounts were offered for tires.

We examined two other groupings: procurements that had only one bidder versus procurements that had more than one bidder, and procurements from Federal Prison Industries versus procurements that were not from FPI. There were no significant differences.

CHAPTER III

PROJECTIONS OF COST AND B'NEFITS

3.1 Methodology

Catalog type data suitable for budget stratification and stock availability analysis were used for the MICOM and TARCUM Army Stock Fund catalog to compute budget and PWD related statistics as well as stock availability statistics. Two sets of statistics were computed: one set assumed operation under the EOQ concept (this is the current world); the other set assumed operation under the QD concept. The statistics computed properly reflect the contribution of items that are not QD eligible (i.e. insurance and provisioning type items and those reparable and non-reparable items that experience low annual demand frequency).

Test data results (Table 1) were applied to the statistics mentioned above for the MICOM projections. For the TARCUM projections, only the TARCUM test data results for the percent of cost-effective hits and their holding and ordering costs were used. MICOM values instead of the TARCUM values were used for the average discount (\$ weighted) and the average buy multiple because the MICOM results are more conservative and more supportive since they are comparable to the Air Force QD results (over three years experience) and are based on a larger sample.

QD procurements should not be made for items that experience large demand variations. The average yearly frequency (AYF) of demand is used as a tool to exclude these items. Items with AYF of demand of 5 or higher usually exhibit reasonably low demand variance and would be suitable for QD procurements (assuming they are not being phased out in the near future). On the other hand, items with AYF equal to 10 or higher exhibit even lower demand variance and are even better candidates. Either value would be reasonable for use in screening items for QD eligibility. Since use of 5 would qualify more QD candidates than use of 10, the AYF screen could be set to 5 when resources are plentiful and to 10 when resources are lean. Projections in this chapter are given for both values.

Mathematical details on the methodology for projections, as well as more extensive discussion on the methodology are included in Appendix B.

3.2 Profile of ASF Catalog

Projections depend on several factors: (1) the percent of cost-effective discounts for QD solicitations, (2) average percent discount, (3) percent of items in ASF catalog that are QD eligible, (4) percent of buys for ASF items that are due to the QD eligible items, and (5) percent of the ASF procurement dollars due to the QD eligible items. These percentages are given below because they are helpful in understanding the difference between the MICOM and TARCOM projections given in Tables 3 and 4. The items in the ASF catalog excluded all items with average yearly demand that is less than .05. The number of procurements and the dollar value of procurements for these items are negligible.

PROFILE FOR AYF \geq 10

	MICOM		TARCOM	
	< \$10,000	\geq \$10,000	< \$10,000	\geq \$10,000
Number of Items in ASF Catalog	18159	402	23930	2038
% of Items that are QD Eligible	17.6	77.1	45.0	91.6
% of Buys Due to QD Eligible Items	40.8	85.5	70.4	93.6
% of Procurement Dollars Due to QD Eligible Items	57.8	89.6	81.4	95.7

PROFILE FOR AYF \geq 5

	< \$10,000	\geq \$10,000	< \$10,000	\geq \$10,000
Number of Items in ASF Catalog	18159	402	23930	2038
% of Items that are QD Eligible	31.7	87.1	60.2	95.2
% of Buys Due to QD Eligible Items	59.1	92.3	80.8	96.3
% of Procurement Dollars Due to QD Eligible Items	74.8	94.3	88.7	97.4

3.3 Projections Based on AYF Screen Set to 10

Table 3 gives projections when QD solicitations are used only for stocked items (excluding insurance and provisioning type items) that experience ten or more demands per year.

Buying more than the EOQ, raises the procurement cycle months. Consequently, if the QD program is implemented, a one time increase in the ASF capitalization will be required to finance the higher level. This, of course, can be done all at once or in increments over, say, 2-3 years. Either way, the required increase in funding is projected to amount to 17.8% of the MICOM ASF budget and 8.9% of the TARCUM ASF budget, or 11.3% of the combined budget.

The annual PWD volume for ASF items procured by large purchases is projected to decrease 31.6% for MICOM and 16.2% for TARCUM relative to the PWD volume just prior to implementation. For small purchases of ASF items, the PWD volume is projected to decrease 8.3% for MICOM and 7.5% for TARCUM. These reductions will be achieved gradually as is discussed in the paragraph below. These reductions are permanent. That is, the PWD volume will eventually drop by the projected percentage and remain at the lower level as long as the QD program is active and the environment remains otherwise the same.

The projected annual savings is the sum of savings on the equipment and savings on the administrative costs to procure minus excess cost loss. Excess cost loss is the projected additional dollar value of materiel that will be excessed due to the larger inventories. The cost is based on a 10% rate of obsolescence, 1% rate for storage cost and 2% rate for deterioration losses. The annual savings will be realized as long as the QD program is active.

The increases in availability are projected to be no less than 1.1 percentage point for TARCUM and 1.2 percentage point for MICOM. We were very conservative in computing these projections due to the uncertainties in the delivery cycles. See Appendix B for more details on this.

3.4 Projections Based on AYF Screen Set to 5

Table 4 gives projections when QD solicitations are used only for

TABLE 3: PROJECTIONS BASED ON DEMAND FREQUENCY 2 10

	NICOM	TARCOM
REQUIRED INCREASE IN ASF CAPITALIZATION (ONE TIME INCREASE)	\$6,060,000	\$27,510,000
	(17.8%)	(8.9%)

BENEFITS:

REDUCTION IN PWDs OVER \$10,000	31.6%	16.2%
REDUCTION IN PWDs UNDER \$10,000	8.3%	7.5%
PROJECTED ANNUAL SAVINGS (RECURRING)	\$1,111,000	5,772,000
HARDWARE COST SAVINGS	\$1,456,000	7,046,000
ORDER COST SAVINGS	320,000	966,000
EXCESS COST LOSS	665,000	2,240,000

EXPECTED INCREASE IN AVAILABILITY

OVER 1.2 POINTS OVER 1.1 POINTS

NUMBER OF QO ELIGIBLE ITEMS:

SMALL PURCHASE ITEMS	3196 (17.6%)	10780 (45.0%)
LARGE PURCHASE ITEMS	310 (77.1%)	1866 (91.6%)

TABLE 4: PROJECTIONS BASED ON DEMAND FREQUENCY > 5

	MICOM	TARCOM
REQUIRED INCREASE IN ASF CAPITALIZATION (ONE TIME INCREASE)	\$6,950,000 (20.4%)	28,270,000 (9.1%)

BENEFITS:

REDUCTION IN PWDs OVER \$10,000	34.1%	16.7%
REDUCTION IN PWDs UNDER \$10,000	12.0%	8.7%
PROJECTED ANNUAL SAVINGS (RECURRING)	\$1,259,000	\$5,885,000
HARDWARE COSTS SAVINGS	\$1,670,000	\$7,232,000
ORDER COST SAVINGS	\$ 395,000	\$1,021,000
EXCESS COST LOSS	\$ 806,000	\$2,368,000
EXPECTED INCREASE IN AVAILABILITY	OVER 1.5 POINTS	OVER 1.2 POINTS

NUMBER OF QD ELIGIBLE ITEMS:

SMALL PURCHASE ITEMS	5766(31.7%)	14412(60.2%)
LARGE PURCHASE ITEMS	350(87.1%)	1941(95.2%)

stocked items (excluding insurance and provisioning type items) that experience five or more demands per year. Inspection of the results and comparison with results in Table 3 is left to the reader.

3.5 Expected Transient Behavior

The projections given in Tables 3 and 4 are for a stabilized system (i.e. steady state). Following implementation of the QD program, the system should stabilize in about three years as follows:

a. In the first year of implementation, the ASF budget will increase as projected. The change in PWD volume for small purchases will not be noticeable. The PWD volume for large purchases will decrease by about 60% of the projected value.

b. In the second year of implementation, the ASF budget will actually decrease about 1.4% or \$502,000 for MICOM and 3.5% or \$11,782,000 for TARCOM relative to the pre-implementation budgets. This is because large purchase QD procurements average 2.6 x EOQ. Consequently, QD procurements in the third and fourth quarters on items with procurement cycles greater than 7 and 6 months, respectively, will not be procured in the second year. This saving in funds will exceed the additional cost of QD procurements on LDV/MDV items that will come up for a buy initially during the second year of implementation. The difference will amount to the values stated. The PWD volume for small purchases will decrease by about 67% of the projected value. The PWD volume for large purchases will decrease to the projected value.

c. In the third year of implementation and thereafter, the ASF budget will stabilize at the pre-implementation level. The PWD volume for both the small purchases and large purchases will stabilize at the full projected level.

The above outline for the transient behavior does not include impact of inflation or significant changes in demand. For example, comparing the budget in the second year of implementation to the pre-implementation budget will not show a decrease if inflation is significant. It also assumes that required one time increase in the ASF capitalization will be provided in one lump sum. If the required funding is provided in increments over several years, a corresponding delay in reaching steady state will occur.

3.6 Time to Recover Investment

From Table 3 the required one time increase in ASF capitalization is \$6,060,000 for MICOM and \$27,510,000 for TARCOM, or a sum of \$33,570,000 for the two commands. The combined projected annual saving comes to \$7,144,000 or \$21,144,000 in three years. In Section 3.5, a one time reduction in the ASF budget equal to 1.4% for MICOM and 3.5% for TARCOM is projected in the second year of implementation for reasons explained in that section. This amounts to about \$502,000 for MICOM and \$11,280,000 for TARCOM or a combined value of \$11,782,000. Adding this to the \$21,144,000 savings that will be realized over a 3-year period gives \$32,926,000 or about 98% of the required \$33,570,000 investment. Thus, the investment will be recovered in about three years. Note that there are additional benefits (i.e. improved stock availability and reduced inflationary impact) that some readers may want to consider in computing the time to recover investment. We will not consider these here.

CHAPTER IV

IMPLEMENTATION CONSIDERATIONS

4.1 Technical Stability Review

The main objection to a QD program is the fear of excessive generation of long supplies. Long supplies occur in two ways: significant reduction in demand, and surprise obsolescence. The use of the average yearly frequency rule (see Chapter III) in screening for QD eligibility is an adequate control to prevent long supplies due to significant demand reduction. Procedures were established at the two test commands to screen items for technical stability prior to QD solicitations.

Because of organizational differences, the technical stability review procedures were different at the two commands. They were simple at TARCOM because the branch chief was given the authority to approve or disapprove QD nominations based on his knowledge of the weapon system (TARCOM is organized by weapon system). The procedures were involved at MICOM and required considerable effort on the part of materiel management and maintenance personnel and in some instances required contractual effort. For example, a list of HAWK parts that were nominated for QD procurements was sent to Raytheon for review.

TARCOM experienced no technical stability rejects on the QD nominations. MICOM reject rate was 17% for HAWK parts, 23% for FARR parts and 0.5% for all other parts. The HAWK and FARR rejects were mostly for LDV items because MICOM has an ongoing program for screening HDV items routinely so that HDV items that were unstable were not even nominated for QD.

The LDV items that would be QD eligible comprise about 11% of the ASF budget for MICOM. Test data indicates that about half of them will receive cost-effective discounts and the average award quantity for LDV QD buys is 1.75 x EOQ. Thus, if procurements for HAWK and FARR parts accounted for as much as 33% of all MICOM ASF buys, the cost avoidance due to technical stability review of QD nominations is less than one-third of one percent (i.e. $.11 \times .5 \times .75 \times .33 \times .23$) of the MICOM ASF budget. Thus, technical stability review is not cost-effective and is not critical.

4.2 Processing Amended PWDs Within CCSS

Presently CCSS has PWD control programs that prevent the award of a quantity that is different from the quantity shown in a CCSS data file. Both MICOM and TARCOM experienced many difficulties in this area to stay within the CCSS system, which was necessary because other procurement systems (e.g. MILSCAP) interface with CCSS. If a QD program is implemented, CCSS changes will be required.

Item managers experienced difficulties and significant delays in amending PWDs as required by CCSS in order to effect QD solicitations. CCSS changes will be required in this area as well.

4.3 Communication

Special coordination and communication relative to QD procurements was required both within and between directorates. Test revealed that the manual effort required in this area was extensive and that large scale implementation would not be feasible without automation.

4.4 Commitment Authority

Since bids were solicited up to 4 x EOQ, required increases in the commitment authority were substantial. Due to various delays experienced in processing the procurement actions, funds could not be released for other procurements when they were needed.

This condition was due primarily to deficiencies in CCSS as described in 4.2 above and use of manual procedures. The condition should not exist if QD procedures are automated and CCSS deficiencies corrected. However, establishment of limits on the maximum dollars committed would serve as a good control to preclude unexpected funding problems. An example would be to authorize commitment in the first two fiscal quarters up to 75% of the annual C/A. A policy change will be required.

CHAPTER V

CONCLUSIONS AND RECOMMENDATIONS

5.1 Conclusions

The test provided the desired data to assess the feasibility of introducing a QD program into the Army acquisition procedures. Analysis of the test data in conjunction with the Army Stock Fund Catalog data for MICOM and TARCOM revealed that objectives of the tested DARCOM QD program will be met: significant permanent reductions in the PWD volume will be achieved; appreciable acquisition savings will be achieved; recurring net annual savings will result; and stock availability will increase. A one-time increase in the ASF budget amounting to a sum of about \$33-\$35 million (depending on the AYF criterion selected) will be required to fund the QD program at MICOM and TARCOM. Based on the projected recurring savings and on the one time saving due to the reduction in the ASF budget projected for the second year following implementation (this is due to the transient effect), this \$33-\$35 million investment will be recovered in about three years.

The test experience revealed that use of manual QD procedures on an expanded scale would not be feasible because neither the materiel management nor the procurement personnel could cope with the volume of QD eligible PWD's. The QD program will accomplish its objectives but to be feasible it must be automated. Whether this is designed as a stand-alone system or as a module within CCSS, changes to existing CCSS PWD control programs will be required.

Policy changes relative to commitment authority will be required.

The Air Force limits its QD program to HDV items, procurements over \$10,000, and the solicitation quantities to 2 x EOQ. With these limits the AF receives cost effective discounts in 47% of the QD solicitations and the discounts average 6.5%. Expansion to 4 x EOQ as was tested in this study increased the cost effective hit rate for MICOM to 60% and the average discount to 8.2%. The average award quantity was 2.6 x EOQ. TARCOM results were significantly lower, indicating that results may depend on the commodity. However, this is inconclusive because the TARCOM test sample was very small. Expansion to small purchases proved to be very

successful.

5.2 Recommendation

Implementation of a standard QD program for DARCOM is warranted if it can be automated. It is recommended that a short term study be done to develop specifications for an automated QD program and to develop the cost to implement.

BIBLIOGRAPHY

1. Air Force Logistics Command Regulation 70-23, "Quantity Discount Procedures for Economic Order Quantity (EOQ) Items," 30 June 1976.
2. Austin, Larry M., "Project EOQ: A Success Story in Implementing Academic Research," Interfaces, Volume 7 - Number 4, August 1977.
3. Austin, Larry M., et al, "Project EOQ (Economic Order Quantity): Feasibility of Price Discounts in Procurement of Non-Reparable Spares," Air Force Academy, Colorado, September 1974, AD/A-000039.
4. Department of Defense Instruction 4140.39, "Procurement Cycles and Safety Levels for Secondary Items," July 17, 1970.
5. Zabel, W. V. and Gajdalo, S., "The Application of Quantity Discounts in Army Procurements," March 1979, AD-A066583.
6. Kruse, W. K., "Economic Procurement Cutback Rule," October 1977, US Army Inventory Research Office, Phila., PA 19106, AD-A046617.

APPENDIX A

BIDS EVALUATION FORMULA

1. The following formula was programmed for a mini-computer application and was used to evaluate bids:

$$\text{TOTAL ANNUAL COST} = \text{ACQUISITION COST} + \text{ORDER} + \text{HOLD COST} \\ + \text{PENALTY COST.}$$

Total annual cost was computed for each quantity on the QD solicitation. The most economical quantity is the quantity for which the corresponding total annual cost is the lowest.

2. Acquisition Cost (A)

$$A = (\text{AYD})(\text{EP}), \text{ where}$$

AYD = average yearly demand for the item

EP = effective unit price considering the offered unit price and, if applicable, transportation cost, first article cost, and prompt payment discount prorated over the quantity for which the price bid is being evaluated.

3. Order Cost (O)

$$O = (C)(\text{AYD})/Q, \text{ where}$$

C = administrative cost to order. For MICOM we used \$360 and \$1000 for small purchases and large purchases respectively. For TARCOM we used \$400 and \$1400 respectively.

Q = quantity for which the price bid is being evaluated

AYD = as defined above

4. Hold Cost (H)

$$H = (R)(\text{EP})(Q/2), \text{ where}$$

R = holding cost rate. R was set to .23 both for MICOM and TARCOM because this was the value actually used by both commands in the supply control studies during the test period.

EP and Q were previously defined.

5. Penalty Cost (P)

$$P = C + (.25)(EP)(R)(Q + (.125)(AYD))$$

if cross-over occurs.

$$P = 0(\text{zero}) \text{ otherwise.}$$

All symbols have been previously defined.

A cross-over cannot occur for procurements of \$10,000 or greater. Consequently, P is always zero for large purchases. The penalty cost appears in the total annual cost equation because cross-over can occur for small purchase solicitations. The reason is that it is possible to receive price quotations for certain quantities on the small purchase QD solicitations that would result in a procurement dollar value for those quantities of \$10,000 or greater. When this happens, the small purchase solicitation must be invalidated and large purchase solicitation initiated instead. Consequently, an extra administrative cost equal to C (which is \$1000 for MICOM and \$1400 for TARCOM) will be incurred. In addition, an extra administrative lead time will also be incurred and this increases the risk of backorders. The second term in the equation for P costs out these additional backorders. The expression is not exact but is an approximation which is adequate for our use. The derivation follows:

Kruse of IRO derived the following expression (Economic Procurement Cut-Back Rule, Oct 77) for the additional backorder cost:

$$B = (\lambda/S)(U)[(Q)(T) + (T^2)(AYD)/2], \text{ where}$$

B = additional backorder cost

λ = penalty cost for backorder as is used in CCSS for computing safety level.

S = average quantity requisitioned

Q = EOQ

T = additional time over which backorders are to be considered.

AYD = average yearly demand, and

U = minimum $[\frac{(EP)(R)}{\lambda/S}, 0.5]$, where the symbols in U are as previously defined.

We now make the following approximations:

1. $T = 0.25$ (i.e. 3 months). In our instance T is the administrative lead time to process a procurement via Invitation for Bid (IFB). Three months is a representative value.

2. $\frac{(EP)(R)}{\lambda/R}$ is less than 0.5. Since we are dealing with small purchases, this is a reasonable assumption and is true for the majority of LDV items.

With the above approximations, the equation for B reduces to

$$B = (.25)(EP)(R)(Q + (0.125)(AYD))$$

APPENDIX B

METHODOLOGY FOR PROJECTIONS

1. General

Working with the ASF catalog for MICOM and TARCOM, two distinct runs were made to simulate procurements over a two year period (apportionment year and budget year). The program used was similar to but simpler than the CCSS budget stratification program for projecting the number and the dollar value of buys.* The first run was the "EOQ" run which duplicated the DoDI 4140.39 methodology. The second run was the "QD" run which included two modifications to reflect use of QD procurements. The modifications were the following:

a. For QD eligible items, the procurement quantity was not the EOQ. Instead, it was set to 1.75 x EOQ if the dollar value of the EOQ was less than \$10,000 and 2.6 x EOQ if the dollar value of the EOQ was \$10,000 or greater. Items were coded QD eligible if they were reparable or non-reparable ASF items (i.e. the second position of the Financial Inventory Accounting (FIA) code was 1 or 2 and third position of FIA code was 2) and passed the average yearly demand frequency (AYF) screen.

b. For purposes of computing stock availability, the reorder cycle quantity for QD eligible Low Dollar Value items was multiplied by 1.75. For all other items, the procurement cycle quantity equal to EOQ was retained.

c. For each run and each of the two AYF values (i.e. 5 and 10) used to screen for QD eligibility, the aggregate values for the obligational authority for each year, the dollar value of the ending inventory, and stock availability were computed and printed. Other output included statistics for computing the catalog profile (e.g. proportion of QD eligible items when the AYF screen is set to 10; percent of total ASF buys that are under \$10,000 and are for QD eligible items; percent of procurement dollars used for small purchases, etc.).

2. Required Increase in ASF Capitalization

The obligational authority for the apportionment year for the EOQ run

*Karl Kruse of IRO wrote the original program. Sally Frazza of IRO assisted in modifying the program for our use.

was subtracted from the corresponding value for the QD run. This was done separately for procurements under \$10,000 and procurements of \$10,000 or greater. The difference was multiplied by the corresponding percent of cost effective discounts experienced in the test (Table 1, Chapter 2). The bottom line is the sum of this result for the two groups (i.e. buys under \$10,000 and buys \geq \$10,000).

The above computations were also done for the budget year. The result was that for QD the ASF budget is lower than for EOQ by about \$11 million for TARCUM and by about \$0.5 million for MICOM. This was applied against the required increase in ASF capitalization to estimate the time to recover this investment.

3. Reduction in PWDs

For a given procurement group (i.e. buys under \$10,000 or buys of at least \$10,000) and a given Average Yearly Frequency screening rule (i.e. 5 demands or 10 demands per year), let

P_S = Proportion of buys subject to QD procedures as computed from the ASF catalog during the EOQ run

P_C = Proportion of cost effective QD solicitations computed from the test data (see Table 1 in Chapter 2).

M = Average buy multiple computed from the test data, excluding shortage to the reorder point.

ΔPWD = % change in PWD volume when QD is used instead of EOQ.

Then

$$\Delta PWD = 1 - (1 - P_S) + P_S(1 - P_C) + (P_S)(P_C)/M$$

This reduces to

$$\Delta PWD = (P_S)(P_C)\left(\frac{M-1}{M}\right)$$

4. Hardware Cost Savings

For a given procurement group and a given AYF rule, let

B = Average annual procurement dollars as computed in the EOQ run.

K = Percent of B due to QD eligible items as computed in the EOQ run.

d = Average dollar weighted discount computed from the test data
(Note: for TARCOM projections of hardware cost savings
the MICOM value for d was used to be conservative)

H = Hardware Cost Savings

Then

$$H = (B)(K)(P_C)(d)$$

where

P_C is defined in 3 above.

5. Order Cost Savings

For a given procurement group and a given AYF rule, let

ΔPWD = % change in PWD volume as computed in 3 above.

N = Average number of procurements per year as computed in the
EOQ run.

C = Administrative Cost to Order. For TARCOM we used \$400 for
small purchases and \$1400 for large purchases. For MICOM
we used \$360 for small purchases and \$1000 for large
purchases.

O = Average order cost savings per year

Then

$$O = (\Delta PWD)(N)(C)$$

6. Excess Cost Loss

For a given procurement group and a given AYF rule, let

R = Average excess rate. We used 0.13 which is the sum of 0.10
for investment cost, 0.01 for storage cost and 0.02 for
losses in storage.

E_{EOQ} = Dollar value of ending inventory computed in the EOQ run.

E_{QD} = Dollar value of ending inventory computed in the QD run.

L = Excess cost loss

Then

$$L = (R)(E_{QD} - E_{EOQ})(1-d)(P_C)$$

where d and P_C are as defined in the previous paragraphs.

Note: d and P_C are applied here because they were not applied in the runs described in paragraph 1.

7. Expected Increase in Availability

The increase in stock availability is the difference between the availability computed in the QD run and the EOQ run. The difference reflects improvement due to QD buys for LDV items for reasons explained in paragraph 1.b. of this appendix.

APPENDIX C

SAMPLE QD SOLICITATION

QD related data are on the cover sheet, and on solicitation page numbers 9, 12, 13, 15 and 16. The various QD pages and clauses are tied in by referencing. Note the capitalized isolated phrase on the cover sheet to alert the supplier that this is a different kind of solicitation. Also note the structure of the delivery schedule (pages 15 and 16).

27897

INFORMATION TO OFFERORS OR QUOTERS (Section A - Cover Sheet)	SOLICITATION NUMBER 79 B 0588 <input type="checkbox"/> ADVERTISED (AFR) <input type="checkbox"/> NEGOTIATED (RFP) <input checked="" type="checkbox"/> UNADVERTISED (IFR) <input type="checkbox"/> NEGOTIATED (RFO)
--	---

MAILING OFFICE (Complete mailing address including Zip Code)
 USA Missile Materiel Readiness Command
 ATTN: DRSMI-ICBA/HAWK/Trotter/las
 Redstone Arsenal, AL 35809
 205-876-7291

ITEMS TO BE PURCHASED (Brief description)
 NOUN: Shell Assy
 NSN: 4140-00-939-6873
 APN: 9096772
 QTY: 345 ea.

THIS PROCUREMENT IS:
 UNRESTRICTED SET-ASIDE (This is a 100% set-aside for Small Business, Labor Surplus Area Concerns or Combined Small Business/Labor Surplus Area Concerns.) (See Section C of the Table of Contents in this solicitation for details of the set-aside)

NOTE THE AFFIRMATIVE ACTION REQUIREMENT OF THE EQUAL OPPORTUNITY CLAUSE WHICH MAY APPLY TO THE CONTRACT RESULTING FROM THIS SOLICITATION.

You are cautioned to note the "Certification of Non-Segregated Facilities" in the solicitation. Failure to agree to the certification will render your reply nonresponsive to the terms of solicitations involving awards of contracts exceeding \$10,000 which are not exempt from the provisions of the Equal Opportunity clause.

"Fill ins" are provided on the face and reverse of Standard Forms 18 and 33, or other solicitation documents and Sections of Table of Contents in this solicitation and should be examined for applicability.

See the paragraph of this solicitation entitled "Late Bids, Modifications of Bids or Withdrawal of Bids" or "Late Proposals, Modifications of Proposals and Withdrawals of Proposals".

The envelope used in submitting your reply must be plainly marked with the Solicitation Number, as shown above and the date and local time set forth for bid opening or receipt of proposals in the solicitation document.

If NO RESPONSE is to be submitted, detach this sheet from the solicitation, complete the information requested on reverse, fold, affix postage, and mail. NO ENVELOPE IS NECESSARY.

Replies must set forth full, accurate, and complete information as required by this solicitation (including attachments). The penalty for making false statements is prescribed in 18 U.S.C. 1001.

ADDITIONAL INFORMATION

Solicitation No. DAAH01-79-B-0588 should be used for any additional questions and/or correspondence.

QUANTITY DISCOUNT SOLICITATION, SEE CLAUSE C-16

FOR INFORMATION ON THIS PROCUREMENT WRITE OR CALL:

USA Missile Materiel Readiness Command ATTN: DRSMI-ICBA/HAWK/Trotter/las Redstone Arsenal, AL 35809	TELEPHONE (Area Code, No. & Ext.) (205) 876-7291	NO COLLECT CALLS
---	---	------------------

NO RESPONSE FOR REASONS CHECKED

<input type="checkbox"/>	CANNOT COMPLY WITH SPECIFICATIONS	<input type="checkbox"/>	CANNOT MEET DELIVERY REQUIREMENT
<input type="checkbox"/>	UNABLE TO IDENTIFY THE ITEM(S)	<input type="checkbox"/>	DO NOT REGULARLY MANUFACTURE OR SELL THE TYPE OF ITEMS INVOLVED

OTHER (Spec. #):

<input type="checkbox"/>	WE DO	<input type="checkbox"/>	WE DO NOT, DESIRE TO BE RETAINED ON THE MAILING LIST FOR FUTURE PROCUREMENT OF THE TYPE OF ITEM(S) INVOLVED
--------------------------	-------	--------------------------	---

NAME AND ADDRESS OF FIRM (Include Zip Code)

SIGNATURE

TYPE OR PRINT NAME AND TITLE OF SIGNER

FROM:

OFFICE
STAMP
HERE

TO: USA Missile Materiel Readiness Command
 ATTN: DRSMI-ICBA/HAWK/TROTTER/DRSMI-ECBA
 Redstone Arsenal, AL 35809

SOLICITATION NO DA4101-79-B-0588

DATE AND LOCAL TIME 5/29/79 11:00AM CT

STANDARD FORM 33, NOV. 1969 GENERAL SERVICES ADMINISTRATION FD-100 (Rev. 1-16-1981)		SOLICITATION, OFFER, AND AWARD J		3. CERTIFIED FOR NATIONAL DEFENSE UNDER DOSA REG. 2 AND/OR DMS REG. 1 RATING DO-A2	4. PAGE 1	OF 25
1. CONTRACT (Proc. Inv. Ident.) NO		2. SOLICITATION NO. DAAG01-79-B-0588 <input checked="" type="checkbox"/> ADVERTISED (IFB) <input type="checkbox"/> NEGOTIATED (RFP)		5. DATE ISSUED 1 MAY 79	6. REQUESTION/PURCHASE REQUEST NO D1923893	
7. ISSUED BY Commander USA Missile Materiel Readiness Command ATTN: DRSMI-ICBA/RAWK/Trotter/las Redstone Arsenal, AL 35809				8. ADDRESS OFFER TO (If other than Block 7) If handcarried, please place in Bid Box in lobby of Bldg. 4488		

SOLICITATION

9. Sealed offers in original for furnishing the supplies or services described in the Schedule will be received at the place specified in block 8, OR IF HAND-CARRIED, IN THE DEPOSITORY LOCATED IN lobby of Bldg. 4488 until 29 MAY 79 11:00 A.M. CT. (Time, Zone, and Date). If this is an advertised solicitation, offers will be publicly opened at that time. CAUTION-LATE OFFERS. See para C-1 of Solicitation Instructions and Conditions.

All offers are subject to the following:
 1. The attached Solicitation Instructions and Conditions, SF 33-A.
 2. The General Provisions which are incorporated herein by reference.
 3. The Schedule included below and/or attached hereto.
 4. Such other provisions, representations, certifications, and specifications as are attached or incorporated herein by reference. (Attachments are listed in the Schedule.)

FOR INFORMATION CALL (Name and Telephone No.) (No collect calls)

(1) **TABLE OF CONTENTS**

The following checked sections are contained in the contract.

(X)	Sec.	Page	(X)	Sec.	Page
	PART I - GENERAL INSTRUCTIONS		X	G	Packaging and Marking
X	A	Cover Sheet	X	H	Deliveries or Performance
	B	Contract Form and Representations, Certifications, and Other Statements of Offeror.	X	I	Inspection and Acceptance
			X	J	Special Provisions
X			1-5	X	K
	C	Instructions and Conditions, and Notices to Offerors.		PART III - GENERAL PROVISIONS	
X			6-9	X	L
X	D	Evaluation and Award Factors		PART IV - LIST OF DOCUMENTS AND ATTACHMENTS	
	PART II - THE SCHEDULE				
X	E	Supplies, Services and Prices		M	List of Documents, Exhibits, and Other Attachments.
X	F	Description/Specifications	X		

NOTE: Reverse Must Also Be Fully Completed (Rev. 11-77)

In compliance with the above, the undersigned offers and agrees, if this offer is accepted within 60 calendar days ~~from the date of receipt of offers specified above, to furnish any or all items upon which prices are offered, at the price set opposite each item, delivered at the designated point(s), within the time specified in the Schedule~~ **SEE C-12**

16. DISCOUNT FOR PROMPT PAYMENT (See Par. 9 on SF 33-A)
 _____ % 10 CALENDAR DAYS, _____ % 20 CALENDAR DAYS, _____ % 30 CALENDAR DAYS, _____ % CALENDAR DAYS

17. OFFEROR NAME & ADDRESS (Street, city, county, state, & ZIP Code)
 Area Code and Telephone No.
 Check if Remittance Address Is Different From Above - Enter Such Address in Schedule

18. NAME AND TITLE OF PERSON AUTHORIZED TO SIGN OFFER (Type or Print)

19. SIGNATURE

20. OFFER DATE

AWARD (To Be Completed By Government)

21. ACCEPTED AS TO ITEMS NUMBERED	22. AMOUNT	23. ACCOUNTING AND APPROPRIATION DATA	
24. SUBMIT INVOICES (4 copies unless otherwise specified) TO ADDRESS SHOWN IN BLOCK _____	25. NEGOTIATED PURSUANT TO	<input checked="" type="checkbox"/> 18 U.S.C. 2304(a)(1) O1B0	<input type="checkbox"/> 41 U.S.C. 232(c)(1)
26. ADMINISTERED BY (If other than Mark 7) CODE _____ SCD ADPP PAS	27. PAYMENT WILL BE MADE BY CODE _____		
28. NAME OF CONTRACTING OFFICER (Type or Print)	29. UNITED STATES OF AMERICA BY: _____ (Signature of Contracting Officer)	30. AWARD DATE	

REPRESENTATIONS, CERTIFICATIONS, AND ACKNOWLEDGMENTS

The Offeror represents and certifies as part of his offer that (Check or complete all applicable boxes or blocks.)

1. SMALL BUSINESS (See par. 14 on SF 33-A)

He is is not a small business concern. If offeror is a small business concern and is not the manufacturer of the supplies offered, he also represents that all supplies to be furnished hereunder will, will not, be manufactured or produced by a small business concern in the United States, its possessions, or Puerto Rico.

2. REGULAR DEALER—MANUFACTURER (Applicable only to supply contracts exceeding \$10,000)

He is a regular dealer in, manufacturer of, the supplies offered.

3. CONTINGENT FEE (See par. 13 on SF 33-A)

(a) He has has not, employed or retained any company or person (other than a full time bona fide employee working solely for the offeror) to solicit or secure this contract, and (b) he has, has not, paid or agreed to pay any company or person (other than a full time bona fide employee working solely for the offeror) any fee, commission, percentage, or brokerage fee contingent upon or resulting from the award of this contract, and agrees to furnish information relating to (a) and (b) above, as requested by the Contracting Officer (for interpretation of the representation, including the term "bona fide employee," see Code of Federal Regulations, Title 41, Subpart 1-1.5.)

4. TYPE OF BUSINESS ORGANIZATION

He operates as an individual, a partnership, a nonprofit organization, a corporation, incorporated under the laws of the State of _____

5. AFFILIATION AND IDENTIFYING DATA (Applicable only to advertised solicitations)

Each offeror shall complete (a) and (b) if applicable, and (c) below:

(a) He is, is not, owned or controlled by a parent company (See par. 16 on SF 33-A)

(b) If the offeror is owned or controlled by a parent company, he shall enter in the blocks below the name and main office address of the parent company.

Name of Parent company and main office address _____

(include ZIP Code) _____

(c) Employer's identification number (See par. 17 on SF 33-A.) _____

(Offeror's E.I. No.) _____

(Parent Company's E.I. No.) _____

6. PREVIOUS CONTRACTS AND COMPLIANCE REPORTS (1973 APR)

He has, has not, participated in a previous contract or subcontract subject either to the Equal Opportunity clause herein or the clause originally contained in section 301 of Executive Order No. 10925, or the clause contained in section 201 of Executive Order No. 11114, that he has, has not, filed all required compliance reports, and that representations indicating submission of required compliance reports, signed by proposed subcontractors, will be obtained prior to subcontract awards. (The above representation need not be submitted in connection with contracts or subcontracts which are exempt from the clause.)

7. BUY AMERICAN CERTIFICATE

The offeror hereby certifies that each end product, except the end products listed below, is a domestic source end product (as defined in the clause entitled "Buy American Act") and that components of unknown origin have been considered to have been mined, produced, or manufactured outside the United States.

EXCLUDED END PRODUCTS

COUNTRY OF ORIGIN

8. CERTIFICATE OF INDEPENDENT PRICE DETERMINATION - SEE Sections B and C.

9. CERTIFICATION OF NONSEGREGATED FACILITIES

(Applicable to (1) contracts, (2) subcontracts, and (3) agreements with applicants who are themselves performing federally assisted construction contracts, exceeding \$10,000 which are not exempt from the provisions of the Equal Opportunity clause.)

By the submission of this bid, the bidder, offeror, applicant, or subcontractor certifies that he does not maintain or provide for his employees any segregated facilities at any of his establishments, and that he does not permit his employees to perform their services at any location, under his control, where segregated facilities are maintained. He certifies further that he will not maintain or provide for his employees any segregated facilities at any of his establishments, and that he will not permit his employees to perform their services at any location, under his control, where segregated facilities are maintained. The bidder, offeror, applicant, or subcontractor agrees that a breach of this certification is a violation of the Equal Opportunity clause in this contract. As used in this certification, the term "segregated facilities" means any waiting rooms, work areas, rest rooms and wash rooms, restaurants and other eating areas, time clocks, locker rooms and other storage or dressing areas, parking lots, drinking fountains, recreation or entertainment areas, transportation, and housing facilities provided for employees which are segregated by explicit directive or are in fact segregated on the basis of race, color, religion or national origin, because of local custom, or otherwise. He further agrees that (except where he has obtained identical certifications from proposed subcontractors for specific time periods) he will obtain identical certifications from proposed subcontractors prior to the award of subcontracts exceeding \$10,000 which are not exempt from the provisions of the Equal Opportunity clause; that he will retain such certifications in his files, and that he will forward the following notice to such proposed subcontractors (except where the proposed subcontractors have submitted identical certifications for specific time periods):

Notice to prospective subcontractors of requirement for certifications of nonsegregated facilities:
A Certification of Nonsegregated Facilities must be submitted prior to the award of a subcontract exceeding \$10,000 which is not exempt from the provisions of the Equal Opportunity clause. The certification may be submitted either for each subcontract or for all subcontracts during a period (i.e., quarterly, semiannually, or annually.) NOTE: The penalty for making false statements in offers is prescribed in 18 U.S.C. 1001.

ACKNOWLEDGMENT OF AMENDMENTS	AMENDMENT NO.	DATE	AMENDMENT NO.	DATE
The offeror acknowledges receipt of amendments to the Solicitation for Offers and related documents numbered and dated as follows:				

NOTE—Offers must set forth full, accurate, and complete information as required by this Solicitation (including attachments). The penalty for making false statements in offers is prescribed in 18 U.S.C. 1001.

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Solicitation Number _____ Page Number 3 Contract Number _____

B-10 AFFIRMATIVE ACTION PROGRAM (1973 APR)

ASPR 7-2003.14(b)(2)

(The following representation shall be completed by each offeror whose offer is \$50,000 or more and who has 50 employees or more.)

The offeror represents that he has, has not, developed and maintained at each of his establishments: Equal Opportunity Affirmative Action Programs, pursuant to 41 CFR 60.2.

B-11 PLACE OF CONTRACT PERFORMANCE AND SHIPPING POINT

Any contractor receiving an award on the basis of the following information agrees that no change will be made in the place of manufacture or shipping point without the written approval of the contracting officer:

Place of Manufacture:

Shipping Point:

Name of Facility _____

Street Address _____

City, State, Zip Code _____

B-12 RESERVED

B-13 USE OF GOVERNMENT PRODUCTION AND RESEARCH PROPERTY

FAILURE OF AN OFFEROR TO COMPLETE THE APPLICABLE BLOCKS SHALL CONSTITUTE BASIS FOR REJECTION OF OFFER AS NONRESPONSIVE.

- (a) Offeror and/or his subcontractor will will not use Government production and research property in performance under this proposed procurement.
- (b) If use of Government production and research property is proposed, offeror or his subcontractor has rental agreement proposes rent-free use.
- (c) The offeror certifies that to his knowledge this procurement does does not involve the acquisition of Government production and research property, the disposal of which may be restricted by patent or other rights (see ASPR 13-307(b)).

B14 PREFERENCE FOR LABOR SURPLUS AREA CONCERNS (1978 JUN)

ASPR 7-2003.13

This procurement is not set aside for labor surplus area concerns. However, the offeror's status as such a concern may affect entitlement to award in case of tie offers or offer evaluation in accordance with the Buy American clause of this solicitation. In order to have his entitlement to a preference determined if those circumstances should apply, the offeror must identify below the labor surplus area in which the costs he will incur on account of manufacturing or production (by himself or his first-tier subcontractors) amount to more than fifty percent (50%) of the contract price. Failure to identify the locations as specified above will preclude consideration of the offeror as a labor surplus area concern. Offeror agrees that if, as a labor surplus area concern, he is awarded a contract for which he would not have qualified in the absence of such status, he will perform the contract or cause it to be performed, in accordance with the obligations which such status entails.

NAME OF OFFEROR
OR CONTRACTOR _____

B-19 FIRST ARTICLE INFORMATION

Offerors are advised that this solicitation requires approval testing of _____ first article(s).

For items from suppliers which are identical or similar to items previously furnished to the Government, which were acceptable in respects, first article may will be waived by the Government.

Offerors having evidence which they believe to substantiate a Government waiver of the first article requirement should furnish the following information with the offer:

Contract Number _____

Part Number _____

Date of Article Approved _____

B-20 HANDICAPPED ORGANIZATIONS

The following certification is applicable to all solicitations which impose partial or total small business set-aside procedures pursuant to ASPR 1-706.5 and 1-706.6 or which are combined small business-labor surplus area set-aside procurements pursuant to ASPR 1-706.7 and which will result in award of a contract during FY 1978.

HANDICAPPED ORGANIZATIONS

The offeror certifies that he is is not an organization eligible for assistance under Section 7(h) of the Small Business Act (15 USC 636). An offeror certifying in the affirmative is eligible to participate in any resultant contracts hereunder or any part thereof as if it were a small business concern as elsewhere defined in the solicitation. An organization, to be eligible under Section 7(h) of the Small Business Act must be one which is organized under the laws of the United States or any state, operated in the interest of handicapped individuals, the net income of which does not inure in whole or part to the benefit of any shareholder or other individual; which complies with any applicable occupational health and safety standard prescribed by the Secretary of Labor; which, during the fiscal year in which it bids upon a set-aside, employs handicapped individuals for not less than 75 percent of the manhours required for the production or provision of commodities or services, and can qualify under the additional criteria prescribed in Section 118.11, SBA Rules and Regulations, 13 CFR 118.11.

NOTE: A handicapped individual, to be eligible for assistance under Section 7(h) of the Small Business Act (15 USC 636) must remain a small business concern during the term of the ensuing contract. Such eligible handicapped individuals offering on this procurement need only certify under paragraph 1, SF 33.

B-21 WOMAN OWNED BUSINESS (1978 SEP)

ASPR 7-2003.80

The offeror represents that the firm submitting this offer () is, () is not, woman owned business. A woman-owned business is a business which is, at least 51 percent owned, controlled and operated by a woman or women. Controlled is defined as exercising the power to make policy decisions. Operated is defined as actively involved in the day-to-day management. For the purposes of this definition, businesses which are publicly owned, joint stock associations and business trusts are exempted. Exempted businesses may voluntarily represent that they are or are not, woman-owned if this information is available.

B-22 PERCENT FOREIGN CONTENT (1978 SEP)

ASPR 7-2003.81

Approximately _____ percent of the proposed contract price represents foreign content or effort.

NAME OF OFFEROR
OR CONTRACTOR _____

C-1 STANDARD FORM 33A:

a. Solicitation Instructions and conditions, Standard Form 33A, dated March 1969, is hereby incorporated in and made a part hereof by reference. The March 1969 edition of the Standard Form 33A is hereby altered by substituting the following ASPR clauses in lieu of the corresponding clauses on referenced form.

- (i) Late Proposals, Modifications of Proposals and Withdrawals of Proposals (ASPR 7-2002.4) (1977 DEC), for clauses 7 and 8 of SF33A. (Applicable to negotiated Actions)
- (ii) Late Bids, Modifications of Bids or Withdrawal of Bids (ASPR 7-2002.2) (1977 DEC), for clauses 7 and 8 of SF33A (Applicable to Formal Advertized Actions)
- (iii) Discounts (ASPR 7-103.14) (1968 JUN) in lieu of paragraph 9(b) of SF33A.
- (iv) Order of Precedence (ASPR 7-2003.41) (1973 APR) for clause 19 of SF33A.
- (v) Certification of Independent Price Determination, clause 18 of Standard Form 33A is hereby deleted (See Section B, Paragraph B-16 for the substitute clause).

b. The Above ASPR clauses set forth in paragraph C-1 a(i), (ii), (iii) and (iv) above, in addition to those set forth in this paragraph are incorporated herein by reference with the same force and effect as though set forth herein in full text.

Clause Title	ASPR Paragraph	Date
(i) Government Surplus	7-104.49	1965 JAN
(ii) Availability of Specifications, Standards and Descriptions	7-2003.8	1977 JUN
(iii) Unnecessarily Elaborate Contractor's Proposals/Quotations	7-2003.40	1969 OCT
(iv) New Material	7-104.48	1965 JAN

C-2 SPECIFICATION INFORMATION:

The supplies or services described in the schedule shall be furnished in strict accordance with the specifications, drawings and requirements herein recited or referred to, all of which are incorporated herein and/or made a part hereof by reference.

For the purpose of purchasing or sub-contracting as a result of this solicitation, both the offeror and the Government acknowledge that source notes on drawings, other than controlled source drawings, are for the convenience of a procuring activity. Such notes are not to be construed as restricting the source of procurement. Source information provided for the convenience of the procuring activity provides an advisory contractor part number that is not Government controlled and does not necessarily reflect the required part equivalent to the Army Part Number (APN). Bidders must deliver against the APN requirements rather than contractor part numbers.

Where no Army part numbers are listed in the item description contained in the schedule and the items to be furnished are described only by manufacturer's part number or numbers, and if offeror proposes to furnish a revised or replacement part which differs in any respect from the item or items bearing the part number or numbers set forth in the schedule, offeror shall describe such differences. Offeror certifies that the item or items proposed to be furnished are interchangeable in all respects, and for all purposes, with the item or items bearing the part numbers listed in the schedule.

In reviewing the drawings and specifications associated with this contract, each offeror is specifically cautioned that some of the drawings may be identified as "selected item drawings." The specific definition of a selected item drawing is contained in MIL-STD-100B, page 14, paragraph 201.4.5. It is noted that a selected item is a peculiar item in one or more characteristics and its use as specified in the technical data package is mandatory.

For selected items, i.e., those that require special screening and inspection for acceptance, it is recommended that this requirement be accomplished by the selected item manufacturer. When the bidder intends to perform the Selected Items Acceptance Testing in his own facilities, or in facilities other than those of the selected items manufacturer, he must so indicate below:

NAME OF OFFEROR OR CONTRACTOR _____

Solicitation Number DAAH01 79 - B - 0508 Page Number 7 Contract Number _____

C-3 AVAILABILITY OF SPECIFICATIONS AND STANDARDS NOT LISTED IN DODISS, DATA ITEM DESCRIPTIONS NOT LISTED IN DOD DIRECTIVE 5000.19-L, VOLUME II, AND PLANS, DRAWINGS, AND OTHER PERTINENT DOCUMENTS ASPR 7-2003.9

a. Specifications, standards, plans, drawings, descriptions and other pertinent documents cited in this solicitation may be obtained by submitting request to the U.S. Army Missile Materiel Readiness Command, Procurement and Production Directorate, DRSMI- ICBA, Redstone Arsenal, Alabama 35809.

b. Requests should give the number of the solicitation and the title and number of the specification, standard, plan, drawing or other pertinent document requested, exactly as cited in this solicitation.

C-4 THE FOLLOWING INFORMATION IS FURNISHED TO ENABLE THE OFFEROR TO INDICATE LARGE OR SMALL BUSINESS CLASSIFICATION:

a. For the purpose of this solicitation, any concern employing 500 or less employees is considered small business. Contract resulting from the solicitation shall be awarded in accordance with Title 10 U.S.C. 2304(a)(1).

b. Product Classification 3499

C-5 DETERMINATION OF RESPONSIBILITY:

a. Award of a contract to a potential supplier is not based on lowest evaluated price alone. Due consideration shall also be given to those standards for responsible prospective contractors as set forth in ASPR 1-900, including but not limited to, (a) adequate financial resources; (b) ability to comply with required or proposed delivery schedules; (c) satisfactory record of previous performance and; (d) satisfactory record of integrity.

b. Offeror agrees to furnish the Contracting Officer any information requested as to his technical, financial and production ability to perform any contract resulting from this solicitation.

c. A survey team may contact your facility for the purpose of determining your financial and technical ability to perform. Current certified financial statements and other data pertinent to this offer should be available at that time.

C-6 DUTY FREE ENTRY OF LISTED CANADIAN SUPPLIES:

In keeping with the policy to enhance economic cooperation with Canada in the interest of continental defense, duty-free entry should generally be accorded Canadian supplies that constitute, or that are directly or indirectly incorporated in, end items included in the Department of the Army Lists of Supplies (APP 6-103.5) maintained pursuant to ASPR 6-103.5(a). (This list includes supplies of a military character or which are involved in programs of mutual interest to the United States and Canada. Parts and equipment for listed supplies, even though not separately listed, are considered to be for listed supplies.) Duty-free entry should be accorded such supplies by the issuance of duty-free entry certificates in accordance with ASPR 6-605 and, in particular, as provided in the contract clause.

C-7 DISPOSITION OF DOCUMENTATION:

Documentation supplied with this solicitation may be retained until award of contract (resulting from this solicitation) is announced at which time

a. Unclassified material may be destroyed or retained, and

b. Classified material will be destroyed in accordance with Industrial Security Manual or retained after specific approval by the contracting officer.

C-8 RATED OR AUTHORIZED CONTROLLED MATERIAL ORDERS (1974 APR)

ASPR 7-2003.22

Contracts or purchase orders to be awarded as a result of this solicitation shall be assigned a DX-_____ rating; DDO- A2 rating; DMS allotment number _____ (Contracting Officer check appropriate box or boxes) in accordance with the provisions of DPS Regulation I and/or DMS Regulation I.

C-9 PREPARATION OF DD 250:

Material Inspection and Receiving Reports (DD Form 250) will be prepared and distributed in accordance with ASPR 7-104.62 and ASPR Appendix I. Copies for the purchasing office and inventory control manager will be forwarded to: U.S. Army Missile Material Readiness Command, Attn: DRSMI-ICBA/Trotter, Redstone Arsenal, Alabama 35809. If this contract contains the clause entitled "Correction of Deficiencies" the statement below must accompany each copy of the DD 250:

Supplies are covered by a warranty for a period of 120 calendar days after acceptance. If an item is found to be defective notify U.S. Army Missile Material Readiness Command, Redstone Arsenal, Alabama 35809, ATTN: DRSMI-Q. Forward an information copy of the notification to the cognizant DCAS.

C-10 TYPE OF CONTRACT:

A firm fixed price contract is contemplated as a result of this solicitation.

C-11 GOVERNMENT PRODUCTION AND RESEARCH PROPERTY

a. It is not the desire of the Government to purchase or have purchased for its account any facilities, special tooling and/or test equipment for use in performance of any contract awarded pursuant to this solicitation.

b. The bidder/offeror is expected to provide all facilities, special tooling, and special test equipment required in the performance of this proposed contract except Government-owned facilities, special tooling and special test equipment (hereinafter described as Government Production and Research Property - ASPR 13-101.9), presently in his possession or in the possession of a proposed subcontractor, which he plans to utilize and which he must identify as required below

NOTE: FAILURE TO RESPOND TO THE FOLLOWING APPLICABLE PORTIONS OF THIS SPECIAL PROVISION SHALL CONSTITUTE BASIS FOR REJECTION OR BID/OFFER AS NONRESPONSIVE. (Certification Format is at Section B-13)

c. This bid/offer precludes the use of Government production and research property in possession of contractors for which rent is not being paid, or for which rent-free use is not authorized.

d. If proposed use of Government production and research property is subject to existing rental agreement, bidder/offeror will submit with his bid/offer the contract or rental agreement number and name and address of administering contracting officer.

e. If Government production and research property will be used on rent-free basis the bid/offer must contain, as a minimum, information in response to the following for each line item in the bid/offer:

(1) A list or description of all Government production and research property which the bidder/offeror or his anticipated subcontractors proposed to use on a rent-free basis, including property already in possession of the bidder/offeror and his subcontractors under other contracts. Descriptions (to include age and/or acquisition cost of each item, as appropriate) shall be included for each category of property set forth in Section D.

(2) For Government production and research property already in possession of the bidder/offeror and his proposed subcontractors, identification of the facilities contract or other instrument under which the property is held, and the written permission of the contracting officer having cognizance of the property for use of that property without charge.

(3) The amount of use (in months) of Government production and research property, and, with respect to any such property which will be used concurrently in performance of two or more contracts, the amounts of the respective uses in sufficient detail to support the proration required for concurrent use.

(4) Maintenance of Government production and research property shall be performed by the bidder/offeror, and separate funding in support of this proposed procurement shall not be provided.

C-12 MINIMUM ACCEPTANCE PERIOD (1975 MAR)

For advertised Procurement, offerors allowing less than the number of calendar days specified in the "Offer" portion of SF 33 (page 1 of the solicitation) for acceptance by the Government will be rejected as nonresponsive.

C-13 BIDS SUBMITTED ON OTHER THAN FOB DESTINATION BASIS WILL BE REJECTED AS NONRESPONSIVE.

C-14 NOTICE OF TOTAL SMALL BUSINESS SET-ASIDE (1972 JUL)

(a) *Restriction.* Offers under this procurement are solicited from small business concerns only and this procurement is to be awarded only to one or more small business concerns. This action is based on a determination by the Contracting Officer, alone or in conjunction with a representative of the Small Business Administration that it is in the interest of maintaining or mobilizing the Nation's full productive capacity, in the interest of war or national defense programs, or in the interest of assuring that a fair proportion of Government procurement is placed with small business concerns. Offers received from firms which are not small business concerns shall be considered nonresponsive and shall be rejected.

(b) *Definition.* A "small business concern" is a concern, including its affiliates, which is independently owned and operated, is not dominant in the field of operation in which it is offering on Government contracts, and can further qualify under the criteria set forth in regulations of the Small Business Administration (Code of Federal Regulations, Title 13, Section 121.3-8). In addition to meeting these criteria, a manufacturer or a regular dealer submitting offers in his own name must agree to furnish in the performance of the contract end items manufactured or produced by small business concerns: *Provided*, That this additional requirement does not apply in connection with construction or service contracts.

C-15 PROGRESS PAYMENTS (1974 APR)

The need for progress payments conforming to regulations (Appendix E, Armed Services Procurement Regulation) will not be considered as a handicap or adverse factor in the award of contracts. Authorized progress payments will not be a factor for evaluation of bids. The appropriate "Progress Payment" clause attached hereto will be included in the contract awarded in the manner herein provided, however, the clause shall be inoperative during the time the contractor's accounting system and controls are determined by the Government to be inadequate for segregation and accumulation of contract costs. For Small Business concerns the clause designated "Progress Payments for Small Business Concerns" (7-104.35(b)) shall be used for such Contractors.

C-16 This solicitation is a Quantity Discount Solicitation. As such, offers are solicited for each quantity identified by CLINS set forth in Section E. Award will be made for the quantity determined most economical for the Government to procure pursuant to Clause D-7. Award will be for one CLIN only. Offers marked all or none will be considered non-responsive.

SECTION D - EVALUATION AND AWARDS FACTORS

D-1 DISCOUNTS: Offers will be evaluated in accordance with Paragraph 9 of SF33A (Incorporated herein by reference) The clause entitled "Discounts", (General Provisions, Section L-2, Clause number 14, ASPR 7-103.14, (1968 JUN) is substituted for subparagraph 9b of the SF33A.

D-2 IF GOVERNMENT PRODUCTION AND RESEARCH PROPERTY WILL BE USED IN PERFORMANCE OF A CONTRACT AS A RESULT OF THIS SOLICITATION, EACH BID/OFFER WILL BE EVALUATED IN ACCORDANCE WITH THE FORMULA IN PARAGRAPH a BELOW.

Total Cost of Item x Monthly Rental x Months of Use x Concurrent Use Factor

a. Number of Items to be Produced

- (1) Total Cost is the sum of acquisition cost, and all additional expenditures for improvements, and includes freight and installation.
- (2) Monthly Rental is computed as indicated in subparagraph below.
- (3) Months of Use is the number of months of use in performance of this proposed contract (from 1st delivery month through month of last delivery per delivery schedule).
- (4) Concurrent Use Factor is a fraction, the numerator of which is the amount of use (e.g., labor hours) of property for this proposed contract, or for each line item thereof, and whose denominator is the sum of any previously authorized use of such property by bidder/offeror for other projects during the period, and the use requested under this proposed contract.
- (5) Unit Evaluation Factor is the total evaluation factor divided by the number of items to be produced.

b. Categories and applicable monthly base rates are as follows:

- (1) For machining and production equipment of the type covered by the following classes:

Federal Supply Classification

Code Numbers	Description
3405, 3408, 3410, 3411 thru 3419	Machine Tools
3441 thru 3449	Secondary Metalforming Machinery

The Applicable Rates Are

*Age of Equipment	Monthly Rental Rate
0 to 2 years	3%
Over 2 to 3 years	2%
Over 3 to 6 years	1.5%
Over 6 to 10 years	1.0%
Over 10 years75%

*The age of each item of the above equipment shall be based on the year in which it was manufactured, with an annual birthday on 1 January of each year thereafter. On 1 January following the date of manufacture, the item shall be considered one year old, and on each succeeding January 1st it shall become one year older.

(2) The monthly rental rate for the use of electronic test equipment and automotive equipment will be two percent of the total cost.

(3) The monthly rental rate for the use of Government-owned plants or buildings will be based on 5/12 per cent of land acquisition cost and two-thirds per cent of acquisition cost of improvements (buildings, roads, utilities, etc.). The area required for use in the proposed contract performance shall be prorated from the whole facility.

(4) The monthly rental rate for all other Government production and research property not mentioned above will be one percent of the acquisition cost.

(5) The proposed use of each item of Government production and research property shall be supported by utilization of the above formula in the following format for each line item in the bid/offer for which bidder/offeror intends to use such property:

(a) I	Total Cost of machinery and production equipment	_____
II	Line I x Monthly Rental Rate	_____
III	Line II x Month of Use	_____
IV	Line III x Concurrent Use Factor	_____
V	Unit Evaluation Factor	_____

- (b) I Total cost of electronic test equipment and automotive equipment _____
- II Line I x 25 _____
- III Line II x Months of Use _____
- IV Line III x Concurrent Use Factor _____
- V Unit Evaluation Factor _____
- (c) I Acquisition cost of Government-owned Land _____
- II Line I x 0.42% _____
- III Line II x Months of Use _____
- IV Line III x Concurrent Use Factor _____
- V Unit Evaluation Factor _____
- (d) I Acquisition cost of Government-owned buildings and improvements _____
- II Line I x 0.67% _____
- III Line II x Months of Use _____
- IV Line III x Concurrent Use Factor _____
- V Unit Evaluation Factor _____
- (e) I Acquisition cost of other Government production and research property _____
- II Line I x 1% _____
- III Line II x Months of Use _____
- IV Line III x Concurrent Use Factor _____
- V Unit Evaluation Factor _____

(6) Bidders/offers are solely responsible for determining whether Government production and research property they intend to use will require rehabilitation, modernization, conversion, or any similar costs for which the bidder/offeree desires separate reimbursement. These costs must be identified separately in the bid/offer so they may be added to the bid/offer for evaluation purposes.

(7) The use of existing Government production and research property located in prospective subcontractor's plants will be subject to the general conditions and limitations as are imposed on bidder/offeree usage. The evaluation data submitted by the bidder/offeree will include both the bidder/offeree and subcontractor usage of such property. In the event any subcontractor desiring free usage of existing Government production and research property refuses to properly identify such Government equipment in his quote to any prospective bidder/offeree, the Government shall either:

- (a) Refuse to authorize the subcontractor's use of such property, or
- (b) Evaluate 100% of the acquisition cost of all Government production and research property in possession of the subcontractor against the bid/offer of the bidder/offeree proposing to use such subcontractor, or
- (c) Reject the bid/offer as nonresponsive to these terms and conditions.

D-3 PREFERENCE FOR LABOR SURPLUS AREA CONCERNS (See Section B-14 for evaluation criteria)

D-4 EVALUATION OF ALTERNATE/EARLIER ALTERNATE DELIVERY SCHEDULES (See Section II, paragraph II-1, c,d, and e)

D-5 FIRST ARTICLE APPROVAL. Costs of first article testing will will not be a factor in the evaluation of offers. The estimated cost of such testing is _____ (This figure is for evaluation purposes only and is not a representation as to the actual cost to be incurred by the successful contractor if additional samples are required after rejection of the first sample.)

QUALIFIED

Solicitation Number DAAH01 - 9 - B - 058 Number 12 Contract Number _____

D-6 Bidders are requested to submit a price for all CLINS. If any bidder fails to submit a price for one of the CLINS it shall be considered as a no-bid for that quantity and the bidder will not be eligible for an award of that quantity.

D-7 PRICE DISCOUNTS BASED ON QUANTITY.

In order to take advantage of quantity discounts the purchase quantity will be determined using the criterion of lowest annualized total cost to the Government. This total cost includes the cost to the Government of ordering and holding inventory as well as the cost of the items themselves and any other cost/price factor utilized for evaluation purposes as may be set forth elsewhere in this solicitation.

CONTINUATION SHEET

REF. NO. OF DOC. BEING CONT'D.

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NAME OF OFFEROR OR CONTRACTOR

ITEM NO.	SUPPLIES/SERVICES	QUANTITY	UNIT	UNIT PRICE	AMOUNT
PART II - THE SCHEDULE					
SECTION E - Supplies/Services & Prices					
0001	Production Quantity (a) NSN: 4140-00-939-6873 (b) NOUN: Shell Assembly (c) APN: 9096772 (d) PRON: D1923893	105	ea		
0002	Production Quantity (a) NSN: 4140-00-939-6873 (b) NOUN: Shell Assembly (c) APN: 9096772 (d) PRON: D1923893	145	ea		
0003	Production Quantity (a) NSN: 4140-00-939-6873 (b) NOUN: Shell Assembly (c) APN: 9096772 (d) PRON: D1923893	185	ea		
0004	Production Quantity (a) NSN: 4140-00-939-6873 (b) NOUN: Shell Assembly (c) APN: 9096772 (d) PRON: D1923893	225	ea		
0005	Production Quantity (a) NSN: 4140-00-939-6873 (b) NOUN: Shell Assembly (c) APN: 9096772 (d) PRON: D1923893	265	ea		
0006	Production Quantity (a) NSN: 4140-00-939-6873 (b) NOUN: Shell Assembly (c) APN: 9096772 (d) PRON: D1923893	305	ea		
0007	Production Quantity (a) NSN: 4140-00-939-6873 (b) NOUN: Shell Assembly (c) APN: 9096772 (d) PRON: D1923893	345	ea		
Award will be made on only one of the above 7 CLINS. Determination of which CLIN will be awarded will be made by the Government pursuant to Clause D-7. Any proposal marked all or none will be considered non-responsive.					

Solicitation Number ~~DAH01-9-B-000~~ Number 14 Contract Number _____

SECTION F-Description/Specifications

PROCUREMENT DOCUMENTATION

Drawing/Specification list dated Feb 16, 1979 is attached as page 25

SECTION G- Packaging and Marking

CLIN/SLIN	Unit Pack	Inter. Pack	Pkg Level	Pack Level	Pkg Data Sheet
-----------	-----------	-------------	-----------	------------	----------------

In accordance with MIL STD 1188A, dated 5 Jan 78.

Notes:

(1) ~~FIELD ARTICLE (IF REQUIRED)~~ Pack in accordance with MIL-STD 1188

(2) If this contract contains the "Correction of Deficiencies" Clause, Package(s) must be marked as follows: Item(s) DELETED under warranty for period of 20 days after acceptance _____

DATE

SECTION H- Delivery or Performance

H-1 DELIVERY SCHEDULE.

a. Attention is directed to paragraph 10(d) of the Solicitation Instructions and Conditions, which provide that a written award mailed or otherwise furnished to the successful bidder results in a binding contract. Any award hereunder, or a preliminary notice thereof, will be mailed or otherwise furnished to the bidder the day the award is dated. Therefore, in computing the time available for performance, the bidder should take into consideration the time required for the notice of award to arrive through the ordinary mails. However, a bid offering delivery based on date of receipt by the Contractor of the contract or notice of award (rather than the contract date) will be evaluated by adding five days for delivery of the award through the ordinary mails. If, as so computed, the delivery date offered is later than the delivery date required in the invitation, the bid will be considered nonresponsive and rejected.

b. Required Delivery Schedule:

Delivery is required on or before the following number of days after date of contract:

	<u>210 Days</u>	<u>240 Days</u>	<u>270 Days</u>	<u>300 Days</u>
CLIN 0001	105			
CLIN 0002	105	40		
CLIN 0003	105	80		
CLIN 0004	105	80	40	
CLIN 0005	105	80	80	
CLIN 0006	105	80	80	40
CLIN 0007	105	80	80	80

c. Bids offering delivery on or before the date specified above will be evaluated equally. Bids offering a later delivery date will be rejected as nonresponsive. Bidders offering an earlier delivery date will specify below and will be required to deliver on the date so specified.

In the absence of a definite statement by the bidder of the time required for delivery it is understood and agreed that bidder promises to comply with required delivery schedule.

NAME OF OFFEROR
OR CONTRACTOR- _____

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Solicitation Number _____ Page Number 16 Contract Number _____

H-2 FOB POINT SHALL BE AT DESTINATION. Items shall be delivered all transportation paid by the contractor, to the destination specified.

H-3. DESTINATION/CONSIGNMENT INSTRUCTIONS. All packages will be marked with the Contract Number and applicable MILSTRIP number and SHIPPING ADDRESS reflected below:

MILSTRIP NO.	IPD	PRON	SHIPPING ADDRESS
W31G3H 9044A953 W25G1U JA	12	D1923893	Transportation Officer New Cumberland Army Depot New Cumberland, PA 17070

<u>CLIN</u>	<u>QTY.</u>	<u>CLIN</u>	<u>QTY.</u>
0001	66 ea.	0004	106 ea.
0002	106 ea.	0005	146 ea.
0003	106 ea.	0006	146 ea.
		0007	146 ea.

W31G3H9044A954 W62G2T JA	12	D1923893	Transportation Officer Sharpe Army Depot Lathrop, CA 95330
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<u>CLIN</u>	<u>QTY.</u>	<u>CLIN</u>	<u>QTY.</u>
0001	27 ea.	0004	67 ea.
0002	27 ea.	0005	67 ea.
0003	67 ea.	0006	107 ea.
		0007	107 ea.

W31G3H9044A955 W45G19 JA	12	D1923893	Transportation Officer Red River Army Depot Texarkanna, TX 75501
--------------------------	----	----------	--

<u>CLIN</u>	<u>QTY.</u>	<u>CLIN</u>	<u>QTY.</u>
0001	12 ea.	0004	52 ea.
0002	12 ea.	0005	52 ea.
0003	12 ea.	0006	52 ea.
		0007	92 ea.

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Contract Number _____

SECTION I-Inspection and Acceptance

I-1. (FIRST ARTICLE IF REQUIRED) Preliminary inspection shall be at origin. Final inspection and acceptance shall be at destination after test, evaluation and approval. The first article submitted for testing under this contract shall meet such performance requirements and material, dimensional, heat treat, surface finish, and functional requirements as set forth in the drawings, supplementary quality assurance provisions, and specifications. The Government will perform such chemical, physical, functional, and environmental test as necessary to determine that the requirements of the applicable specifications and drawings have been met.

(ALL OTHER QUANTITIES). Items will be inspected and accepted at the contractor's plant.

I-2. ENVIRONMENTAL TEST:

1. Notwithstanding any other provisions of the contract, the following environmental test requirements shall apply:
 - a. The contractor shall perform or have performed the environmental test set forth in the acceptance test table(s) of the applicable drawing(s).
 - b. The contractor shall perform or have performed power burn-in (pre-conditioning), when specified, regardless of where the requirement appears in the contract, specification(s) or drawing(s).
2. The contractor shall not perform or have performed any other environmental tests set forth in applicable drawing(s) or specification(s), unless otherwise specifically identified below:

3. The contractor, however, is not precluded from conducting any additional environmental tests as it deems necessary, provided the item(s) or components thereof, which have been subjected to such tests, are not furnished to the Government in satisfaction of the requirements of this contract.

I-3. QUALITY VERIFICATION:

Completed Production Items may be required for Quality Verification Inspection. The Contractor shall, 30 days prior to the first scheduled delivery of production hardware, notify (in writing) the Procuring Contracting Officer and DRSMI-Q, USA Missile Material Readiness Command, Redstone Arsenal, Alabama, of the contract number, scheduled shipment and quantity to be shipped. If Quality Verification samples are required, a unilateral contract modification will be executed regarding shipping instructions and the quantity to be shipped.

SECTION J-Special Conditions

J-1. IMPORTANT NOTICE:

a. The Contractor will not accept any instructions issued by any person other than the Contracting Officer or the Contracting Officer's representative (COR) when one is appointed. If a COR is appointed, the appointment will be done by letter to the COR with the scope of the COR's authority set forth in the appointment letter. A copy of the appointment letter will be furnished to the Contractor.

b. No information, other than that which may be contained in an authorized amendment to the purchase instrument duly issued by the Contracting Officer which may be received from any person employed by the U.S. Government or otherwise, will be considered as grounds for deviation from any stipulation of this purchase instrument or reference drawings and/or specifications.

J-2. INVOICES: Contractors are encouraged to use copies of the DD 250 as an invoice, in lieu of a commercial form, but are not required to do so. Invoices shall be submitted in quadruplicate (one copy shall be marked "original"). Invoices shall contain the following information:

- a. Contract and order number (if any).
- b. Contract line item numbers reflected on the contractual document.
- c. Description of supplies or services, sizes, quantities, unit prices and extended totals. Bill of lading number and weight of shipment will be shown for shipments made on Government bills of lading.
- d. Related Material Inspection Receiving Report shipment number.

Payment for any first articles produced under this contract requires written approval. The invoice for this contract item should not be submitted until after the required written approval is received.

J-3. FIRST ARTICLE APPROVAL-GOVERNMENT TESTING (1969 SEP)

ASPR 7-104.55(b)

a. The first article is N/A unit(s) of Item _____ and shall, within _____ (_____) calendar days from the date of this contract, be delivered to the Government at Redstone Arsenal, Alabama, for first article approval tests. The documentation accompanying the first article shall contain this contract number and the item identification. The performance or other characteristics which the first article must meet, and the test to which it will be subjected, are contained or referenced in this contract.

b. The Contracting Officer shall, by written notice to the Contractor within _____ (_____) calendar days after receipt of the first article by the Government, approve, conditionally approve, or disapprove the first article. The notice of approval or conditional approval shall not relieve the Contractor from complying with the requirements of the specifications and all other terms and conditions of this contract. A notice of conditional approval shall state any further action required of the Contractor. A notice of disapproval shall cite reasons therefor.

c. If the first article is disapproved by the Government, the Contractor may be required, at the option of the Government, to submit an additional first article for first article approval test. After such notification by the Government to submit an additional first article, the Contractor shall at no additional cost to the Government make any necessary changes, modifications, or repairs to the first article, or select another first article for testing. Such additional first article shall be furnished to the Government under the terms and conditions and within the time specified in the notification. The Government shall take action on the first article within the time limit specified in (b) above. The costs of additional first article approval tests and all costs related to such test shall be borne by the Contractor. The Government reserves the right to require an equitable adjustment of the contract price for any extension of the delivery schedule necessitated by additional first article approval tests.

d. If the Contractor fails to deliver any first article for test within the time or time specified, or if the Contracting Officer disapproves any first article, the Contractor shall be deemed to have failed to make delivery within the meaning of the "Default" clause of this contract, and this contract shall be subject to termination for default ~~provided~~, that failure of the Government in such an event to terminate this contract for default shall not relieve the Contractor of his responsibility to meet the delivery schedule for production quantities.

J-4

SPECIAL NOTICE: SEMICONDUCTOR DEVICE TRACEABILITY

If semiconductor devices, in accordance with MIL-S-19500, are specified in the drawings, parts lists, specifications, or elsewhere in this contract, then MIL-S-19500 (latest revision in effect on the date of contract) is applicable in its entirety. The requirements of MIL-S-19500 shall be extended to all subcontractors, suppliers, distributors and manufacturers of the semiconductor devices delivered under this contract. Documentation traceability requirements required by MIL-S-19500 are:

"3.3.1 Traceability documentation. Procurement traceability of JAN marked devices shall be confirmed by documentation to the Government or to users with Government contracts or subcontracts regardless of whether the devices are procured directly from the manufacturer or from another source such as a distributor. When other sources are involved, their documentation shall be in addition to and include that provided by the manufacturer and previous distributors. This documentation shall include the following information:

a. Manufacturer's documentation:

1. Manufacturer's name and address.
2. Customer's or distributor's name and address.
3. Device type and product assurance level (i.e., JAN, JANTX, JANTXV, JANS.)
4. Lot date code (including assembly plant code) .
5. Inspection date or latest reinspection date.
6. Quantity of devices in shipment from manufacturer.
7. Signature and date of transaction.

b. Distributor documentation for each distributor:

1. Distributor's name and address.
2. Name and address of customer.
3. Quantity of devices in shipment.
4. Latest reinspection date, if applicable.
5. Certification that this shipment is a part of the shipment covered by the manufacturer's documentation.
6. Signature and date of transaction.

As used herein, the term distributor means any source other than the manufacturer."

NOTE: The traceability requirement will be enforced by the inspections detailed in paragraph 4.1 and its subparagraphs of MIL-S-19500.

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SECTION K - Contract Administration Data

K-1 PURCHASING OFFICE REPRESENTATIVE

Unless otherwise specified in this contract, all contact with the purchasing office shall be through the Administrative Contracting Officer to the address in Block 7 SF33(page 1), using the name and telephone number set forth at the conclusion of Block 9, SF33(page 1).

K-2 ACCOUNTING AND APPROPRIATION DATA:

AMGMS CODE; 070011DS

ACRN: AA ACCT CLASS: 21X4991 0630 63 2600 S01021923893 \$ _____

K-3 REMITTANCE ADDRESS (if different from address in block 17 of SF33 (page 1).

Name _____

Street Address _____

City, State, Zip Code _____

NAME OF OFFEROR
OR CONTRACTOR _____

PART III --- GENERAL PROVISIONS

SECTION L - General Provisions.

L-1 The provisions of the contract clauses set forth in the following paragraphs of the Armed Services Procurement Regulation (ASPR) are incorporated in this contract by reference with the same force and effect as though herein set forth in full text.

CLAUSE TITLE@	ASPR PARAGRAPH	DATE
1. DEFINITIONS	7-103.1	(1962 FEB)
2. CHANGES	7-103.2	(1958 JAN)
3. EXTRAS	7-103.3	(1949 JUL)
4. VARIATION IN QUANTITY	7-103.4(a)	(1949 JUL)
5. INSPECTION	7-103.5(a)	(1958 MAY)
6. TITLE AND RISK OF LOSS	7-103.6	(1968 JUN)
7. PAYMENTS	7-103.7	(1958 JAN)
8. ASSIGNMENT OF CLAIMS	7-103.8	(1962 FEB)
9. ADDITIONAL BOND SECURITY	7-103.9	(1949 JUL)
10. FEDERAL, STATE, AND LOCAL TAXES	7-103.10(a)	(1971 NOV)
11. DEFAULT	7-103.11	(1969 AUG)
12. DISPUTES	<i>See Paragraph L2</i>	
13. RENEGOTIATION	7-103.13(a)	(1959 OCT)
14. DISCOUNTS	7-103.14	(1968 JUN)
15. CONTRACT WORK HOURS AND SAFETY STANDARDS ACT - OVERTIME COMPENSATION	7-103.16(a)	(1971 NOV)
16. WALSH-HEALEY PUBLIC CONTRACTS ACT	7-103.17	(1958 JAN)
17. EQUAL OPPORTUNITY	7-103.18(a)	(1978 SEP)
18. OFFICIALS NOT TO BENEFIT	7-103.19	(1949 JUL)
19. COVENANT AGAINST CONTINGENT FEES	7-103.20	1958 JAN)
20. TERMINATION FOR CONVENIENCE OF THE GOVERNMENT	7-103.21(b)	1974 OCT)
21. AUTHORIZATION AND CONSENT	7-103.22	(1964 MAR)
22. NOTICE AND ASSISTANCE REGARDING PATENT AND COPYRIGHT INFRINGEMENT	7-103.23	(1965 JAN)
23. RESPONSIBILITY FOR INSPECTION	7-103.24	(1968 SEP)
24. PRICING OF ADJUSTMENTS	7-103.26	(1970 JUL)
25. CLEAN AIR AND WATER	7-103.29	(1975 OCT)
26. BUY AMERICAN ACT	7-104.3	(1964 MAY)
27. UTILIZATION OF SMALL BUSINESS CONCERNS	7-104.14(a)	(1958 JAN)
28. EXAMINATION OF RECORDS BY COMPTROLLER GENERAL	7-104.15	(1975 JUN)
29. GRATUITIES	7-104.16	(1952 MAR)
30. CONVICT LABOR	7-104.17	(1975 OCT)
31. PRIORITIES, ALLOCATIONS, AND ALLOTMENTS	7-104.18	(1975 OCT)
32. UTILIZATION OF LABOR SURPLUS AREA CONCERNS	7-104.20(a)	(1978 JUN)
33. SUBCONTRACTS	7-104.23(a)	(1977 APR)
34. DUTY-FREE ENTRY - CANADIAN SUPPLIES	7-104.32	(1977 APR)
35. UTILIZATION OF MINORITY BUSINESS ENTERPRISES	7-104.36(a)	(1971 NOV)
36. INTEREST	7-104.39	(1972 MAY)
37. LIMITATION OF LIABILITY	7-104.45(a)	(1974 APR)
38. MATERIAL INSPECTION AND RECEIVING REPORT	7-104.62	(1969 DEC)
39. F.O.B. DESTINATION	7-104.71	(1969 APR)
40. DIVERSION OF SHIPMENT UNDER F.O.B. DESTINATION CONTRACTS	7-104.75	(1971 NOV)
41. GOVERNMENT DELAY OF WORK	7-104.77(f)	(1968 SEP)
42. PAYMENT OF INTEREST ON CONTRACTORS' CLAIMS	7-104.82	(1976 JUL)
43. REPORT OF SHIPMENT (RESHIP)	7-105.4	(1968 JUN)
44. DATA REQUIREMENTS	7-104.9(a)	(1972 APR)
45. PREFERENCE FOR DOMESTIC SPECIALITY METALS (MAJOR PROGRAMS)	7-104.93(a)	(1974 APR)
46. F.O.B. DESTINATION - EVIDENCE OF SHIPMENT	7-104.76	(1968 JUN)
47. INSPECTION SYSTEM	7-104.33	(1967 AUG)
48. INSPECTION	7-103.5(d)	(1977 SEP)

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SECTION L - General Provisions (Cont)

- 49. REQUIRED SOURCES FOR MEETINGS AND INSTRUMENT BALL BEARINGS 7-104.36 (1971 JUL)
- 50. AFFIRMATIVE ACTION FOR DISABLED VETERANS AND VETERANS OF THE VIETNAM ERA 7-103.27 (1976 JUL)
- 51. AFFIRMATIVE ACTION FOR HANDICAPPED WORKERS 7-103.28 (1976 MAY)

1.2 The following clauses are furnished herewith in full text, attached to Section L.

Nr.	Clause Title	Reference	Date	No. of Pages
	PROGRESS PAYMENTS FOR SMALL BUSINESS CONCERNS	7-104.35(b)	(1978 JUL)	
	PROGRESS PAYMENTS FOR OTHER THAN SMALL BUSINESS CONCERNS . .	7-104.35(a)	(1978 JUL)	
	DISPUTES	7-103.12	(1979 FEB)	1
	ALTERATIONS IN CONTRACT	7-105.1(a)	(1949 JUL)	1

The following alterations have been made in the provisions of this contract.

NAME OF OFFEROR OR CONTRACTOR _____

Disputes (28 FEB 79)

DAR 7-103.12

(a) This contract is subject to the Contract Disputes Act of 1978 (41 U.S.C. 601, et. seq.). If a dispute arises relating to the contract, the contractor may submit a claim to the Contracting Officer who shall issue a written decision on the dispute in the manner specified in FAR 1-314 (FPR 1-1.318).

(b) "Claim" means

- (1) a written request submitted to the Contracting Officer;
- (2) for payment of money, adjustment of contract terms, or other relief;
- (3) which is in dispute or remains unresolved after a reasonable time for its review and disposition by the Government; and
- (4) for which a Contracting Officer's decision is demanded.

(c) In the case of disputed requests or amendments to such requests for payment exceeding \$50,000, or with any amendment causing the total request in dispute to exceed \$50,000, the Contractor shall certify, at the time of submission as a claim, as follows:

I certify that the claim is made in good faith, that the supporting data are accurate and complete to the best of my knowledge and belief; and that the amount requested accurately reflects the contract adjustment for which the contractor believes the Government is liable.

(Contractor's Name)

(Title)

(d) The Government shall pay the contractor interest

- (1) on the amount found due on claims submitted under this clause;
- (2) at the rates fixed by the Secretary of the Treasury, under the Renegotiation Act, Public Law 92-41;
- (3) from the date the Contracting Officer receives the claim, until the Government makes payment.

(e) The decision of the Contracting Officer shall be final and conclusive and not subject to review by any forum, tribunal, or Government agency unless an appeal or action is timely commenced within the times specified by the Contract Disputes Act of 1978.

(f) The Contractor shall proceed diligently with performance of this contract, pending final resolution of any request for relief, claim, appeal or action related to the contract, and comply with any decision of the Contracting Officer.

(END OF CLAUSE)

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SECTION IV - LIST OF DOCUMENTS, EXHIBITS, AND OTHER ATTACHMENTS

SECTION M - List of Documents, Exhibits, and Other attachments

DD Form 1707, dated 1 Feb 1976 (Information to Offerors) 2 Pages

Standard Form 33, dated Nov 1969 (Solicitation, Offer and Award) Pages 1 and 2, and continuation sheets numbered as pages 3 through 25.

Drawing/Specification list dated 2/16/79 is attached as page 25

Any resulting contract will contain the above documents except that Section A: Representations, Certifications, and other Statements of Offeror of Section B; Section C; and Section D: will be made a part of the contract by this reference only. Continuation sheets 3 through 12 will not be attached to the award document.

FEB 16 1979 (179047)

DRAWING/SPECIFICATION LIST

DAAH01 . . . - 3 - 0 . 8 8

TCP-DRAWING-NUMBER
9096772

PROC-REQ-ORD-NR
D1923893

4140009396873

25

DRAWING-OR-SPECIFICATION	REVISION	LTR-DATE	S	C	REV-AMD-MOD-SP	REMARKS
10109814	NO		N			
10180129	NC		N			
8168840	B		N			
9096772	E		N			
9096797	B		N			
9171450	NO		N			
8168844	SEE					

8168840

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<u>1</u>	DRCDRM
<u>1</u>	DRCDMR
<u>1</u>	DRCPS
<u>1</u>	DRCPS-P, ATTN: Ms. Lamb
<u>1</u>	DRCPS-S
<u>1</u>	DRCMM
<u>1</u>	DRCMM-R
<u>1</u>	DRCMM-S
<u>1</u>	DRCMM-RS
<u>1</u>	DRCMM-E
<u>1</u>	DRCCP
<u>1</u>	DRCPP
<u>1</u>	Dep Chf of Staff for Logistics, ATTN: DALO-SMS, Pentagon, Wash., DC 20310
<u>1</u>	Commandant, US Army Logistics Mgt Center, Ft. Lee, VA 23801
<u>1</u>	Office, Asst Sec'y of Defense, ATTN: MRA&L-SR, Pentagon, Wash., DC 20310
<u>2</u>	Defense Logistics Studies Info Exchange, DRXMC-D
<u>10</u>	Defense Documentation Center, Cameron Sta., Alexandria, VA 22314
<u>1</u>	Commander, USA Armament Materiel Readiness Cmd, Rock Island, IL 61201 ATTN: DRSAR-MM
<u>1</u>	ATTN: DRSAR-SA
<u>1</u>	Commander, USA Communications & Electronics Materiel Readiness Cmd, Ft. Monmouth, NJ 07703 ATTN: DRSEL-MM
<u>1</u>	ATTN: DRSEL-SA
<u>1</u>	Commander, USA Missile Command, Redstone Arsenal, AL 35809 ATTN: DRSMI-S
<u>1</u>	ATTN: DRSMI-D
<u>1</u>	Commander, USA Troop Support & Aviation Materiel Readiness Command, St. Louis, MO ATTN: DRSTS-SP
<u>1</u>	ATTN: DRSTS-SPSS <u>1</u> DRSTS-BA(1)
<u>1</u>	Commander, US Army Tank-Automotive Materiel Readiness Command, Warren, MI 48090 ATTN: DRSTA-F
<u>1</u>	ATTN: DRSTA-S
<u>1</u>	Commander, US Army Tank-Automotive Research & Development Command, ATTN: DRDTA-V, Warren, MI 48090
<u>1</u>	Commander, US Army Armament Research & Development Command, ATTN: DRDAR-SE, Dover, NJ 07801
<u>1</u>	Commander, US Army Aviation Research & Development Command, St. Louis, MO 63166

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ATTN: DRSEL-SA, Ft. Monmouth, NJ 07703

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1 Commander, US Army Mobility Equipment Research & Development Cmd,
ATTN: DRDME-O, Ft. Belvoir, VA 22060

1 Commander, US Army Natick Research & Development Command,
ATTN: DRXNM-O, Natick, MA 01760

1 Commander, US Army Logistics Center, Ft. Lee, VA 23801

1 Commander, US Army Logistics Evaluation Agency, New Cumberland
Army Depot, New Cumberland, PA 17070

1 Commander, US Army Depot Systems Command, Chambersburg, PA 17201

1 Commander, US Air Force Logistics Cmd, WPAFB, ATTN: AFLC/XRS,
Dayton, Ohio 45433

1 US Navy Fleet Materiel Support Office, Naval Support Depot,
Mechanicsburg, PA 17055

1 Mr. James Prichard, Navy SEA Systems Cmd, ATTN: PMS 3061, Dept
of US Navy, Wash., DC 20362

1 Naval Postgraduate School, ATTN: Dept of Opns Anal, Monterey,
CA 93940

1 Air Force Institute of Technology, ATTN: SLGQ, Head Quantitative
Studies Dept., Dayton, OH 43433

1 US Army Military Academy, West Point, NY 10996

1 Librarian, Logistics Mgt Inst., 4701 Sangamore Rd., Wash.,DC 20016

1 RAND Corp., ATTN: S. M. Drezner, 1700 Main St., Santa Monica,
CA 90406

1 US Army Materiel Systems Analysis Activity, ATTN: DRXSY-CL,
Aberdeen Proving Ground, MD 21005

1 Commander, US Army Logistics Center, ATTN: Concepts & Doctrine
Directorate, Ft. Lee, VA 23801

1 ALOG Magazine, ATTN: Tom Johnson, USALMC, Ft. Lee, VA 23801

1 Commander, USDRC Automated Logistics Mgt Systems Activity,
P.O. Box 1578, St. Louis, MO 63188

1 Director, DARCOM Logistics Systems Support Agency, Letterkenny
Army Depot, Chambersburg, PA 17201

1 Commander, Materiel Readiness Support Activity, Lexington, KY 40507

1 Director, Army Management Engineering Training Agency, Rock Island
Arsenal, Rock Island, IL 61202

1 Defense Logistics Agency, Cameron Sta, Alexandria, VA 22314

1 Dep Chf of Staff (I&L), HQ USMC-LMP-2, ATTN: MAJ Sonneborn, Jr.,
Wash., DC 20380

1 Commander, US Army Depot Systems Command, Letterkenny Army Depot,
ATTN: DRSDS-LL, Chambersburg, PA 17201

1 Chuck B. Foster, Communications Security Logistics Activity,
DRSEL-CCM-NMP, Ft. Huachuca, AZ

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23801

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1 Commander, US Army Communications Command, ATTN: Dr. Forry,
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1 Dr. John Voelker, EES Bldg. 11, Argonne National Laboratory,
9700 S. Cass Ave., Argonne, IL 60439
1 DARCOM Intern Training Center, Red River Army Depot, Texarkana,
Tx 75501
1 US Army Training & Doctrine Command, Ft. Monroe, VA 23651
1 US General Accounting Office, ATTN: Mr. J. Morris, Rm 5840,
441 G. St., N.W., Wash., DC 20548
1 Operations & Inventory Analysis Office, NAVSUP (Code 04A) Dept
of Navy, Wash., DC 20376
1 US Army Research Office, ATTN: Robert Launer, Math. Div.,
P.O. Box 12211, Research Triangle Park, NC 27709
1 US Army Materiel Systems Analysis Activity, ATTN: DRXSY-MP,
Aberdeen Proving Ground, MD 21005
1 Air Force Logistics Management Center, ATT: AFLMC/LGY,
Gunter Air Force Station, AL 36114
1 Engineer Studies Center, 6500 Brooks Lane, Wash., DC 20315
1 US Army Materiel Systems Analysis Activity, ATTN: Mr. Herbert
Cohen, DRXSY-MP, Aberdeen Proving Ground, MD 21105
1 Commandant, ALMC, ATTN: Jon T. Miller, DAS, DRXMC-A, Ft. Lee, VA
23801
1 Commander, US Army Missile Cmd, ATTN: Ray Dotson, DRSMI-DS,
Redstone Arsenal, AL 35809
1 Mr. Fred Bierman, DARCOM, DRCPP-SP-F, Alexandria, VA 22333

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