

**INFORMATION TO OFFERORS OR QUOTERS
SECTION A - COVER SHEET**

1. SOLICITATION NUMBER

2. (X one)

N00173-99-R-MS02

- | | |
|---|---------------------|
| | a. SEALED BID |
| X | b. NEGOTIATED (RFP) |
| | c. NEGOTIATED (RFQ) |

INSTRUCTIONS

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 \$25,000 which are not exempt from the provisions of the Equal Opportunity clause.

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

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

When submitting your reply, the envelope used 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.

3. ISSUING OFFICE (Complete mailing address, including ZIP Code)

CONTRACTING OFFICER
NAVAL RESEARCH LABORATORY
ATTN: CODE 3220J.MS
WASHINGTON DC 20375-5326

4. ITEMS TO BE PURCHASED (Brief description)

Radar Data Collection System

5. PROCUREMENT INFORMATION (X and complete as applicable)

- | | |
|---|--|
| X | a. THIS PROCUREMENT IS UNRESTRICTED |
| | b. THIS PROCUREMENT IS A _____ % SET-ASIDE FOR ONE OF THE FOLLOWING (X one). (See Section I of the Table of Contents in this solicitation for details of the set-aside.) |
| | (1) Small Business |
| | (2) Labor Surplus Area Concerns |
| | (3) Combined Small Business/Labor Area Concerns |

6. ADDITIONAL INFORMATION:

The Naval Research Laboratory Contracting Division issues solicitations and amendments to solicitations electronically via the Internet at the following website: <http://heron.nrl.navy.mil/contracts/home.htm>.

Any amendments to this solicitation will be posted at that website. Amendments will not be distributed by any other means. It is the responsibility of potential offerors to periodically review the website for amendments to this solicitation.

7. POINT OF CONTACT FOR INFORMATION

a. NAME (Last, First, Middle Initial)

Sandy, Mary M

b. ADDRESS (Include Zip Code)

Naval Research Laboratory, Code 3220J.MS

c. TELEPHONE NUMBER (Include Area Code and Extension) (NO COLLECT CALLS) 202-767-3710

4555 Overlook Ave., SW.
Washington, DC 20375-5326

8. REASONS FOR NO RESPONSE (X all that apply)			
<input type="checkbox"/>	a. CANNOT COMPLY WITH SPECIFICATIONS		<input type="checkbox"/>
<input type="checkbox"/>	c. UNABLE TO IDENTIFY THE ITEM(S)		<input type="checkbox"/>
e. OTHER (Specify)			
9. MAILING LIST INFORMATION (X one)			
<input type="checkbox"/>	YES	<input type="checkbox"/>	NO
WE DESIRE TO BE RETAINED ON THE MAILING LIST FOR FUTURE PROCUREMENT OF THE TYPE OF TIME(S) INVOLVED.			
10. RESPONDING FIRM			
a. COMPANY NAME		b. ADDRESS (Include Zip Code)	
c. ACTION OFFICER			
(1) Typed or Printed Name (Last, First, Middle Initial)		(2) Title	(3) Signature
			(4) Date Signed (YYMMDD)

DD FORM 1707 REVERSE, MAR 90

FOLD

FOLD

FOLD

FOLD

FROM

AFFIX
STAMP
HERE

SOLICITATION NUMBER	
N00173-99-R-MS02	
DATE (YYMMDD)	LOCAL TIME
990513	4:00PM

TO Naval Research Laboratory
Contracting Officer
Code 3220J.MS
4555 Overlook , Ave., SW
Washington, DC 20375-5326

SOLICITATION/CONTRACT/ORDER FOR COMMERCIAL ITEMS
OFFEROR TO COMPLETE BLOCKS 12, 17, 23, 24, & 30

1. REQUISITION NUMBER
53-4056-99

PAGE 1 OF
8

2. CONTRACT NO. 3. AWARD/EFFECTIVE DATE 4. ORDER NUMBER 5. SOLICITATION NUMBER
N00173-99-R-MS02 6. SOLICITATION ISSUE DATE
14 APR 1999

7. FOR SOLICITATION INFORMATION CALL:  a. NAME
Ms. Mary M. Sandy b. TELEPHONE NUMBER (No collect calls)
202-767-3710 8. OFFER DUE DATE/ LOCAL TIME
Blk. 20

9. ISSUED BY
CONTRACTING OFFICER
NAVAL RESEARCH LABORATORY
ATTN: CODE
WASHINGTON DC 20375-5326

10. THIS ACQUISITION IS
 UNRESTRICTED
 SET ASIDE: % FOR
 SMALL BUSINESS
 SMALL DISAV. BUSINESS
 8(A)
SIC: 5049
SIZE STANDARD: 100

11. DELIVERY FOR FOB DESTINATION UNLESS BLOCK IS MARKED
 SEE SCHEDULE
13a. THIS CONTRACT IS A RATED ORDER UNDER DPAS (15 CFR 700)
13b. RATING
DO-C9
14. METHOD OF SOLICITATION
 RFQ IFB RFP

15. DELIVER TO
Naval Research Laboratory, Bldg 49
4555 Overlook Ave. SW, Washington, DC 20375-5000

16. ADMINISTERED BY
TBD

17a. CONTRACTOR/OFFEROR
17b. CHECK IF REMITTANCE IS DIFFERENT AND PUT SUCH ADDRESS IN OFFER

18a. PAYMENT WILL BE MADE BY
TBD

18b. SUBMIT INVOICES TO ADDRESS SHOWN IN BLOCK 18a UNLESS BLOCK BELOW IS CHECKED SEE ADDENDUM

19. ITEM NO.	20. SCHEDULE OF SUPPLIES/SERVICES	21. QUANTITY	22. UNIT	23. UNIT PRICE	24. AMOUNT
	Offer Due: 4:00 P.M. - 13 MAY 1999 See Continuation of Blocks 19-24 <i>(Attach Additional Sheets as Necessary)</i>				

25. ACCOUNTING AND APPROPRIATION DATA 26. TOTAL AWARD AMOUNT (For Govt. Use Only)

27a. SOLICITATION INCORPORATES BY REFERENCE FAR 52.212-1, FAR 52.212-4. FAR 52.212-3 AND 52.212-5 ARE ATTACHED. ARE ARE NOT ATTACHED
 27b. CONTRACT/PURCHASE ORDER INCORPORATES BY REFERENCE FAR 52.212-4. FAR 52.212-5 IS ATTACHED. ADDENDA ARE ARE NOT ATTACHED

28. CONTRACTOR IS REQUIRED TO SIGN THIS DOCUMENT AND RETURN _____ TO ISSUING OFFICE. CONTRACTOR AGREES TO FURNISH AND DELIVER ALL ITEMS SET FORTH OR OTHERWISE IDENTIFIED ABOVE AND ON ANY ADDITIONAL SHEETS SUBJECT TO THE TERMS AND CONDITIONS SPECIFIED HEREIN.
 29. AWARD OF CONTRACT: REFERENCE _____ OFFER
 DATED _____ YOUR OFFER ON SOLICITATION (BLOCK 5), INCLUDING ANY ADDITIONS OR CHANGES WHICH ARE SET FORTH

30a. SIGNATURE OF OFFEROR/CONTRACTOR 31a. UNITED STATES OF AMERICA (SIGNATURE OF CONTRACTING OFFICER)

30b. NAME AND TITLE OF SIGNER 30c. DATE SIGNED 31b. NAME OF CONTRACTING OFFICER 31c. DATE SIGNED

32a. QUANTITY IN COLUMN 21 HAS BEEN
 RECEIVED INSPECTED ACCEPTED, AND CONFORMS TO THE CONTRACT, EXCEPT AS NOTED

32b. SIGNATURE OF AUTHORIZED GOVT. REPRESENTATIVE 32c. DATE

33. SHIP NUMBER 34. VOUCHER NUMBER 35. AMOUNT VERIFIED CORRECT FOR
PARTIAL FINAL

36. PAYMENT
 COMPLETE PARTIAL FINAL 37. CHECK NUMBER

38. S/R ACCOUNT NUMBER 39. S/R VOUCHER NUMBER 40. PAID BY

41a. I CERTIFY THIS ACCOUNT IS CORRECT AND PROPER FOR PAYMENT
41b. SIGNATURE AND TITLE OF CERTIFYING OFFICER 41c. DATE

42a. RECEIVED BY (Print)
42b. RECEIVED AT (Location)
42c. DATE REC'D (YY/MM/DD) 42b. TOTAL CONTAINERS

1. CONTINUATION OF THE SF 1449 - SOLICITATION/CONTRACT/ORDER FOR COMMERCIAL ITEMS

A. Blocks 19 - 24 are completed as follows:

Item No.	Schedule of Supplies/Services	Quantity	Unit	Unit Price	Amount
0001	The Contractor shall provide a radar data collection system in accordance with attachment 1, Specifications.	1	Ea	\$	\$
0002	Data in accordance with Attachment 2.	* NSP	* NSP	* NSP	

* Not Separately Priced.

B. Block 25 Accounting and Appropriation Data will be inserted at time of award.

2. ADDENDA TO FAR 52.212-4 CONTRACT TERMS AND CONDITIONS--COMMERCIAL ITEMS (APR 1998)

A. Desired and Required Time of Delivery

The required delivery is as follows:

ITEM NO.	QUANTITY	WITHIN DAYS AFTER DATE OF CONTRACT AWARD
0001	1	*30 September 1999
0002	1	30

* The delivery dates or specific periods above are based on the assumption that the Government will make award on or before July 1, 1999.

B. AUTHORIZED GOVERNMENT REPRESENTATIVE

*,Code *,Telephone number *, is hereby designated the Authorized Government Representative for inspection and acceptance purposes.

*(To be filled in at time of award)

C. YEAR 2000 COMPLIANT INFORMATION TECHNOLOGY

This requirement applies to information technology (IT) that processes date-related information. All such IT delivered under this contract shall be Year 2000 compliant as defined at FAR 39.002.

3. FAR 52.212-5 CONTRACT TERMS AND CONDITIONS REQUIRED TO IMPLEMENT STATUTES OR EXECUTIVE ORDERS--COMMERCIAL ITEMS (MAR 1999)

(a) The Contractor agrees to comply with the following FAR clauses, which are incorporated in this contract by reference, to implement provisions of law or executive orders applicable to acquisitions of commercial items:

- (1) 52.222-3, Convict Labor (E.O.11755); and
- (2) 52.233-3, Protest after Award (31 U.S.C 3553).

(b) The Contractor agrees to comply with the FAR clauses in this paragraph (b) which the contracting officer has indicated as being incorporated in this contract by reference to implement provisions of law or executive orders applicable to acquisitions of commercial items or components:

(Contracting Officer shall check as appropriate.)

- (1) 52.203-6, Restrictions on Subcontractor Sales to the Government, with Alternate I (41 U.S.C.253g and 10 U.S.C.2402).
- (2) 52.219-3, Notice of HUBZone Small Business Set-Aside (Jan 1999)
- (3) 52.219-4, Notice of Price Evaluation Preference for HUBZone Small Business Concerns (Jan 1999) *(if the offeror elects to waive the preference, it shall so indicate in its offer)*
- (4) (i) 52.219-5, Very Small Business Set-Aside (Pub. L. 103-403, section 304, Small Business Reauthorization and Amendments Act of 1994)
- (ii) Alternate I to 52.219-5
- (iii) Alternate II to 52.219-5
- (5) 52.219-8, Utilization of Small Business Concerns (15 U.S.C.637 (d)(2) and (3)).
- (6) 52.219-9, Small Business Subcontracting Plan (15 U.S.C.637 (d)(4)).
- (7) 52.219-14, Limitations on Subcontracting (15 U.S.C.637(a)(14)).

- (8) (i) 52.219-23, Notice of Price Evaluation Adjustment for Small Disadvantaged Business Concerns (Pub. L. 103-355, section 7102, and 10 U.S.C. 2323) (if the offeror elects to waive the adjustment, it shall so indicate in its offer)
- (ii) Alternate I of 52.219-23.
- (9) 52.219-25, Small Disadvantaged Business Participation Program - Disadvantaged Status and Reporting (Pub L. 103-355, section 7102, and 10 U.S.C. 2323).
- (10) 52.219-26, Small Disadvantaged Business Participation Program - Incentive Subcontracting (Pub. L. 103-355, section 7102, and 10 U.S.C. 2323).
- (11) 52.222-21, Prohibition of Segregated Facilities (Feb 1999)
- (12) 52.222-26, Equal Opportunity (E.O.11246).
- (13) 52.222-35, Affirmative Action for Disabled Veterans and Veterans of the Vietnam Era (38 U.S.C.4212).
- (14) 52.222-36, Affirmative Action for Workers with Disabilities (29 U.S.C.793).
- (15) 52.222-37, Employment Reports on Disabled Veterans and Veterans of the Vietnam Era (38 U.S.C.4212).
- (16) 52.225-3, Buy American Act -- Supplies (41 U.S.C.10).
- (17) 52.225-9, Buy American Act -- Trade Agreements Act -- Balance of Payments Program (41 U.S.C.10, 19 U.S.C.2501-2582).
- (18) [Reserved]
- (19) 52.225-18, European Union Sanction for End Products (E.O.12849).
- (20) 52.225-19, European Union Sanction for Services (E.O.12849).
- (21) (i) 52.225-21, Buy American Act -- North American Free Trade Agreement Implementation Act -- Balance of Payments Program (41 U.S.C 10, Pub.L.103-187).
- (ii) Alternate I of 52.225-21.
- (22) 52.239-1, Privacy or Security Safeguards (5 U.S.C.552a).
- (23) 52.247-64, Preference for Privately Owned U.S.-Flag Commercial Vessels (46 U.S.C.1241).

(c) The Contractor agrees to comply with the FAR clauses in this paragraph (c), applicable to commercial services, which the Contracting Officer has indicated as being incorporated in this contract by reference to implement provisions of law or executive orders applicable to acquisitions of commercial items or components:

(Contracting Officer check as appropriate.)

- (1) 52.222-41, Service Contract Act of 1965, As Amended (41 U.S.C.351, *et seq.*).
- (2) 52.222-42, Statement of Equivalent Rates for Federal Hires (29 U.S.C.206 and 41 U.S.C.351, *et seq.*).
- (3) 52.222-43, Fair Labor Standards Act and Service Contract Act -- Price Adjustment (Multiple Year and Option Contracts) (29 U.S.C.206 and 41 U.S.C.351, *et seq.*).
- (4) 52.222-44, Fair Labor Standards Act and Service Contract Act - Price Adjustment (29 U.S.C.206 and 41 U.S.C.351, *et seq.*).
- (5) 52.222-47, SCA Minimum Wages and Fringe Benefits Applicable to Successor Contract Pursuant to Predecessor Contractor Collective Bargaining Agreement (CBA) (41 U.S.C.351, *et seq.*).

(d) *Comptroller General Examination of Record.* The Contractor agrees to comply with the provisions of this paragraph (d) if this contract was awarded using other than sealed bid, is in excess of the simplified acquisition threshold, and does not contain the clause at 52.215-2, Audit and Records -- Negotiation.

(1) The Comptroller General of the United States, or an authorized representative of the Comptroller General, shall have access to and right to examine any of the Contractor's directly pertinent records involving transactions related to this contract.

(2) The Contractor shall make available at its offices at all reasonable times the records, materials, and other evidence for examination, audit, or reproduction, until 3 years after final payment under this contract or for any shorter period specified in FAR Subpart 4.7, Contractor Records Retention, of the other clauses of this contract. If this contract is completely or partially terminated, the records relating to the work terminated shall be made available for 3 years after any resulting final termination settlement. Records relating to appeals under the disputes clause or to litigation or the settlement of claims arising under or relating to this contract shall be made available until such appeals, litigation, or claims are finally resolved.

(3) As used in this clause, records include books, documents, accounting procedures and practices, and other data, regardless of type and regardless of form. This does not require the Contractor to create or maintain any record that the Contractor does not maintain in the ordinary course of business or pursuant to a provision of law.

(e) Notwithstanding the requirements of the clauses in paragraphs (a), (b), (c) or (d) of this clause, the Contractor is not required to include any FAR clause, other than those listed below (and as may be required by an addenda to this paragraph to establish the reasonableness of prices under Part 15), in a subcontract for commercial items or commercial components --

- (1) 52.222-26, Equal Opportunity (E.O.11246);
- (2) 52.222-35, Affirmative Action for Special Disabled and Vietnam Era Veterans (38 U.S.C.2012(a));
- (3) 52.222-36, Affirmative Action for Workers with Disabilities (29 U.S.C.793); and
- (4) 52.247-64, Preference for Privately-Owned U.S.- Flag Commercial Vessels (46 U.S.C.1241) (flow down not required for subcontracts awarded beginning May 1, 1996).

4. 252.212-7001 -- CONTRACT TERMS AND CONDITIONS REQUIRED TO IMPLEMENT STATUTES OR EXECUTIVE ORDERS APPLICABLE TO DEFENSE ACQUISITIONS OF COMMERCIAL ITEMS. (JAN 1999)

(a) The Contractor agrees to comply with the Defense Federal Acquisition Regulation Supplement (DFARS) clause 252.247-7023, Transportation of Supplies by Sea, which is included in this contract by reference to implement 10 U.S.C.2631.

(b) The Contractor agrees to comply with any clause that is checked on the following list of DFARS clauses which, if checked, is included in this contract by reference to implement provisions of law or Executive Orders applicable to acquisitions of commercial items or components.

- | | | |
|-------------------------------------|--------------|---|
| <input type="checkbox"/> | 252.205-7000 | Provision of Information to Cooperative Agreement Holders (10 U.S.C.2416). |
| <input type="checkbox"/> | 252.206-7000 | Domestic Source Restriction (10 U.S.C.2304). |
| <input type="checkbox"/> | 252.219-7003 | Small Business and Small Disadvantaged Business Subcontracting Plan (DOD Contracts) (15 U.S.C.637). |
| <input checked="" type="checkbox"/> | 252.225-7001 | Buy American Act and Balance of Payment Program (41 U.S.C.10 a-10d, E.O. 10582). |
| <input type="checkbox"/> | 252.225-7007 | Buy American Act -Trade Agreements - Balance of Payments Program
<input type="checkbox"/> Alternate I) (41 U.S.C. 10a-10d, 19 U.S.C.2501-2518, and 19 U.S.C. 3301 note). |
| <input checked="" type="checkbox"/> | 252.225-7012 | Preference for Certain Domestic Commodities. |
| <input type="checkbox"/> | 252.225-7014 | Preference for Domestic Specialty Metals (10 U.S.C.2241 note). |

- 252.225-7015 Preference for Domestic Hand or Measuring Tools (10 U.S.C.2241 note).
- 252.225-7021 Trade Agreements (Alternate I) (19 U.S.C. 2501-2518 and 19 U.S.C. 3301 note).
- 252.225-7027 Restriction on Contingent Fees for Foreign Military Sales (22 U.S.C.2779).
- 252.225-7028 Exclusionary Policies and Practices of Foreign Governments (22 U.S.C.2755).
- 252.225-7029 Restriction on Acquisition of Air Circuit Breakers (10 U.S.C.2534(a)(3)).
- 252.225-7036 Buy American Act -- North American Free Trade Agreement Implementation Act.-- Balance of Payment Program (Alternate I) (41 U.S.C. 10a-10d and 19 U.S.C. 3301 note).
- 252.227-7015 Technical Data -- Commercial Items (10 U.S.C.2320).
- 252.227-7037 Validation of Restrictive Markings on Technical Data (10 U.S.C.2321).
- 252.243-7002 Certification of Requests for Equitable Adjustment (10 U.S.C. 2410).
- 252.247-7024 Notification of Transportation of Supplies by Sea (10 U.S.C.2631).

(c) In addition to the clauses listed in paragraph (e) of the Contract Terms and Conditions Required to Implement Statutes or Executive Orders-Commercial Items clause of this contract, the Contractor shall include the terms of the following clause, if applicable, in subcontracts for commercial items or commercial components, awarded at any tier under this contract:

- 252.225-7014 Preference for Domestic Specialty Metals, Alternate I (10 U.S.C.2241 note).

DFARS:

- 252.204-7004 Required Central Contractor Registration (MAR 1998)
- 252.232-7009 Payment By Electronic Funds Transfer (CCR) (JUN 1998)

5. ATTACHMENTS:

- Attachment 1 - Specifications - 3 Pages
- Attachment 2 – Salient Features – 3 Pages
- Exhibit A - Contract Data Requirements List, DD 1423 – 1 Page

6. ADDENDUM TO FAR 52.212-1 INSTRUCTIONS TO OFFERORS- COMMERCIAL ITEMS

The Government intends to award a contract resulting from this solicitation to that responsible offeror proposing the lowest price for the Supplies or Services that has been determined to comply with the requirements of the solicitation.

7. OFFEROR REPRESENTATIONS AND CERTIFICATIONS

Offeror must complete and submit with its proposal, FAR 52.212-3 (JAN 1999) *Offeror Representations and Certifications--Commercial Items* and DFARS 252.212-7000 *Offeror Representations and Certifications--Commercial Items.*, which are available electronically in full text at : <HTTP://HERON.NRL.NAVY.MIL/CONTRACTS/REPS&CERTS.HTM>

Specifications Attachment (1)

I. Introduction

The contractor shall provide a system that will be used to capture, store, archive, and analyze wide band radar signals. The system shall consist of three separate hardware subsystems comprised of commercial off the shelf (COTS) products in a 6U VME format, and EASY I/O software products that provide data flow and file system functionality. Subsystems one and three must be modular and have a form factor capable of being checked as standard luggage on commercial air carriers.

The contractor shall provide a Performance Verification Test Procedure used to verify system performance of the Radar Data Collection System operation. The contractor shall provide technical consulting during installation and verification of the system performed by the COR. The contractor shall provide a system meeting or exceeding the following features as described below.

II. Subsystem one must have the following features:

- a) Synchronized dual analog to digital converters (ADC's) with sampling rates ranging from 65 MHz to below 20 MHz. As the sampling rate scales the sample resolution and Spurious Free Dynamic Range (SFDR) must also scale. At 20 MHz and below the system must require 14 bits of resolution with better than 80 dB SFDR, while 12 bits and 70 dB SFDR are allowable at sampling rates higher than 20 MHz.
- b) Specialized slower speed data acquisition functions must include 16 channels, of 16-bit sigma delta ADC at rates to 100Khz, 64 parallel digital inputs, and 8 channels of Synchro-to-Digital Resolver.
- c) A 72 Gbyte RAID-3 disk drive or equivalent with a two port Fiber Channel (FC) interface for data storage. The salient features of the disk drive are provided in Attachment 2, Number 1.
- d) Data acquisition must be at a peak rate of 260 Mbytes/sec with a guaranteed sustained rate of 50 Mbytes/sec. Capable of collecting a continuous 128 Mbytes of data at the 260 Mbyte/sec peak rate.
- e) Future expansion up to 512 Mbytes must be possible.
- f) A synchro-to-digital resolver board with 8 single speed input channels, a 16 bit resolution, a 4 arc minute, all Input/Output on front panel and capable of using both a 60 and 400 MHz voltage reference.
- g) A high resolution (1024 x 768 pixels or higher) active matrix flat panel monitor with 15" diagonal viewable display or larger, keyboard, and mouse.

- h) The following software products must be completely integrated, installed, and tested in subsystem one.

Easy I/O Data Flow Application Software V2.0.

Easy I/O RAID-3 File System Driver.

III. Subsystem two must have the following features:

- a) All peripherals included in this system must include two 72 Gbyte RAID-3 systems or equivalent with 2 port Fiber Channel interfaces, SCSI hard drives, and two DLT drives.
- b) Two sets of matching hardware, each of which includes the components required to interface to a RAID-3 via Fiber Channel and a Local Area Network(LAN). Each system must allow data flow from a RAID-3 to a local SCSI disk and/or SCSI Digital Linear Tape (DLT) drive for archiving of data, and must provide direct access to the RAID-3 or equivalent from other computers on the same LAN.
- c) A single interface card must be provided for moving data via RACEway™ bus or equivalent to the Fiber Channel. The controller must be a Myriad Logic FC-1930 Fiber Channel Controller or equivalent. The salient features of the bus and controller are provided in Attachment 2, Numbers 2 and 3.
- d) The following software products must be completely integrated, installed, and tested in subsystem two.

Easy I/O RAID-3 Data Retrieval and Archiving Server Application.

Easy I/O File Recognition Client Application.

IV. Subsystem three must have the following features:

- a)The same data retrieval hardware and functionality as subsystem two which must provide access to collected data on the RAID-3 and allow data to be archived to a local disk, DLT drive, or LAN.
- b)Integral parts of the system are the local hard drive and DLT drive.
- c) Interface must be provided to subsystem one allowing data flow from the Fiber Channel interface directly to PENTEK Model 4291 board or equivalent with a set of four

TMS320C6701 floating-point processors or equivalent. The data transfer must be conducted without data ever touching the VME bus. The salient features of the board and processors are provided in Attachment 2, Numbers 4 and 5.

- d) Provide two channels of 65 MHz, 12 bit ADC data directly to the DSP processors (feature c. above) without touching the VME bus.
- e) Provide 4 GFLOPS (Billion Floating Point Operations per Second) of processing power in the DSP section.
- f) The four TMS320C6701 or equivalent processors must be connected via Bi-directional FIFOS (First In First Out) that isolates each processor from its neighbor while also allowing zero wait state transfers between them.
- g) The following software products must be completely integrated, installed, and tested in subsystem three.

Easy I/O Data Flow Application Software V2.1

Easy I/O Data Retrieval and Archiving Server Application.

Easy I/O File Recognition Client Application.

Salient Features Attachment (2)

1. RAID (Redundant Array of Inexpensive Disks) 3: Parallel Transfer with Parity

RAID-3 is based on the odd parity principle. The parity bit is stored with its corresponding data bits so that it can be used for either error detection or error correction. In RAID-3, a variable number of data disks (usually 4 to 8) store blocked data streams and a single parity disk records the generated parity for the data blocks. A data file which is to be recorded is broken up into blocks and recorded on the data disks, with its corresponding parity block recorded on the parity disk. Because all disks together transfer each data file, the data transfer rate is multiplied by the number of data disks, but the transaction rate is that of a single disk.

Characteristics of RAID-3

- Very high Read data transfer rate
- Very high Write data transfer rate
- Disk failure has a low impact on throughput
- Low ratio of ECC (Parity) disks to data disks means high efficiency
- Hardware Implementation (Very difficult and resource intensive to do as a software RAID)

2. RACEway™ is a VITA (VMEbus International Trade Assoc.) 5-1994 version 1.5 Standard.

3. Myriad Logic FC-1930

The Myriad Logic FC-1930 is an intelligent 100 Mbyte/second ANSI-standard Fiber Channel (FC) controller for VME64 and RACEway systems. Designed to interconnect high-throughput, real-time systems, RAIDs, and general-purpose computers the FC-1930 is capable of sustaining data transfer rates up to 90 Mbytes/second. Compatibility with the widest range of other FC equipment is provided through use of the HP Tachyon FC controller and Gigabit Link Modules (GLMs). FC Class 1 and 2 operation is supported in arbitrated loop, point-to-point, or switched systems.

Features:

Sustained transfer rates:

- 90 Mbytes/second - RACEway / FC
- 45 Mbytes/second - VME64 / FC
- Software support for SCSI3 RAID and system-to-system operation
- Arbitrated loop and point-to-point connections
- Multi-mode or single-mode fiber options

Burst transfer rates:

- 160 Mbytes/second - RACEway
- 1.0625 Gbit/second - Fiber Channel
- FC Class 1 and 2 compliant
- On-board 68040 control processor providing high-level applications program interface
- Single 6u x 160 mm form factor

4. PENTEK Model 4291 Board

The 4291 is a 6U VME board with four TMS320C6701 Processors on board. The board has the following features.

- 16 MB SDRAM, 512 kB zero-wait state burst SRAM, 2x1Kx32 bi-directional FIFO for interprocessor communication, and 256 KB dual Port SRAM per processor.
- 2x1Kx32 bi-directional FIFO for mezzanine I/O. two full duplex serial ports for mezzanine I/O and Read/Write memory mapped access to mezzanine per processor.
- Data transfer rates of: 330 MB/sec of SDRAM, 660 MB/sec Sync Burst SRAM, and 330 MB/sec for BI-FIFOs.
- Application specific front panel I/O via VIM mezzanine bus per processor.
- Global Bus resources accessible by all four processors consists of:

- Four 256 kB dual Port SRAMs
- 8 Kbfast non-volatile SRAM
- 8 MB flash memory for boot code and user applications
- 2 MB global SRAM for Sharing common data

All processors must have direct communication paths to the processors on either side of them via Bi-FIFOs that eliminate the need for using global memory or the VME bus to communicate between processors.

5. TMS320C6701 Processor

TMS320C6701 uses a Very Long Instruction Word (VLIW) architecture to achieve high performance through increased instruction level parallelism. The architecture consists of multiple execution units running in parallel that performs multiple instructions during a single clock cycle.

Features include:

- Floating Point Processor running at 167 MHz clock rate.
- 1 GFLOP of processing power
- two multipliers
- six ALUs
- 32 bit registers
- 1 Mbit on chip memory

CONTRACT DATA REQUIREMENTS LIST

(1 Data Item)

Form Approved
OMB No. 0704-0188

Public reporting burden for this collection of information is estimated to average 110 hours per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Department of Defense, Washington Headquarters Services, Directorate for Information Operations and Reports, 1215 Jefferson Davis Highway, Suite 1204, Arlington, VA 22202-4302, and to the Office of Management and Budget, Paperwork Reduction Project (0704-0188), Washington, DC 20503. Please DO NOT RETURN your form to either of these addresses. Send completed form to the Government Issuing Contracting Officer for the Contract/PR No. listed in Block E.

A. CONTRACT LINE ITEM NO. 0002		B. EXHIBIT A		C. CATEGORY: TDP _____ TM - _____ OTHER _____				
D. SYSTEM / ITEM Radar Data Collection System		E. CONTRACT / PR NO. N00173-99-R-MS02		F. CONTRACTOR				
1. DATA ITEM NO. A001	2. TITLE OF DATA ITEM System Performance Verification Procedure			3. SUBTITLE				
4. AUTHORITY (Data Acquisition Document No.)		5. CONTRACT REFERENCE SOW I		6. REQUIRING OFFICE NRL Code 5348				
7. DD 250 REQ N	9. DIST STATEMENT REQUIRED	10. FREQUENCY OTIME	12. DATE OF FIRST SUBMISSION 30 DAC		14. DISTRIBUTION			
8. APP CODE N		11. AS OF DATE	13. DATE OF SUBSEQUENT SUBMISSION					
16. REMARKS The contractor shall develop a system performance verification procedure which can be used to verify system performance.				a. ADDRESSEE				
				b. COPIES				
				Code 5348		Draft	Final	
						Reg	Repro	
						1		
				15. TOTAL →				1

17. PRICE GROUP
18. ESTIMATED TOTAL PRICE

G. PREPARED BY Mary M. Sandy	H. DATE 5-April-99	I. APPROVED BY	J. DATE
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