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STANDARD FORM 1449 (REV. 3/2005) Prescribed by GS

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SECTION B - CONTINUATION BLOCK

B.1 CONSIDERATION AND OBLIGATION--FIRM FIXED PRICE (JUN 1988)

The firm fixed price of this contract for the basic year of this contract is \$138,802.00.

Statement of Work

C.1 BACKGROUND

The Babcock and Wilcox (B&W) nuclear power plant simulator was manufactured by the Singer-Link Corporation (now GSE Systems) circa 1980. It was originally delivered with three Encore (now Compro) 32/55 computer systems.

Following acquisition, NRC engineers replaced two of the three 32/55 computers with a single Compro 32/9780 computer system. The 32/9780 is a dual-processor 32-bit superminicomputer with a proprietary instruction set and a proprietary operating.

NRC engineers then replaced the 32/9780 with a pair of Compro RSX computers, linked by Compro's proprietary Reflective Memory System. The functions of the remaining 32/55, simulation of the plant process computer, were shifted to a Sun workstation and a Hewlett-Packard 742i system that provides X-window displays on six graphic CRTs.

The great majority of the RSX software is written in Compro Assembly Language – a language that is specific to the instruction set of the Compro RSX computer. In terms of lines of code, a relatively small segment of the software was written in Compro FORTRAN-77. However, this segment is critically important to simulator operability, and makes extensive use of language extensions provided by Compro, making it specific to the Compro processors.

The operating system used for the simulator is Compro's proprietary MPX-32, Revision 3.6.2U3. Simulation software makes extensive use of the proprietary features of MPX-32.

Because of the inherently computer-specific nature of Assembly Language software, replacing the RSX computer systems with generic PC or other generic hardware is not feasible. Doing so would require that the simulation software be completely re-written, essentially from scratch, in a higher level language.

The only feasible option for replacing the RSX computers is to replace them with emulated RSX computers, wherein the emulated systems replicate the functionality of the RSX systems on standard, non-proprietary computer system hardware, supplemented with compatible, proprietary hardware that performs reflective memory functions and simulator control benchboard input/output (I/O) functions.

C.2 OBJECTIVE

This procurement seeks to replace the RSX computer systems and associated interface hardware with systems capable of emulating the existing RSX installation.

C.3 STATEMENT OF WORK

The contractor shall provide and install replacement computer systems for the existing Compro RSX computer systems associated with the B&W nuclear power plant simulator. The replacement system shall be capable of executing the Compro MPX-32 operating system and the simulation software. The replacement system shall be capable of communicating with the existing simulator I/O system.

C.3.1 The existing RSX computer systems are configured as follows:

System BWX0:

One RSX CPU;

Two 4MB SRAM memory cards;

One MultiChannel Processor (MCP), providing SCSI bus, console, RS-232, interrupt, and timing functions;

One Ethernet Controller;

One High Speed Data (HSD) controller, providing communication with the simulator I/O system;

One SCSI disk drive;

One OIC tape drive;

One 8mm Exabyte tape drive;

Reflective Memory ports and termination;

One DAT tape drive.

System BWX1:

One RSX CPU;

One 4MB SRAM memory card

One Ethernet Controller;

One SCSI disk drive;

One QIC tape drive;

One 8mm Exabyte tape drive;

Reflective Memory ports and termination;

One DAT tape drive.

The two computer systems are housed in the same cabinet. They are interconnected via Reflective Memory hardware and one cross-connected interrupt. System BWX1 boots from BWX0 via Reflective Memory.

Both systems run the MPX-32 3.6.2U3 operating system.

C.3.2 Contractor shall provide computer systems capable of replicating the functionality of the existing systems, as delineated in C.3.1. The systems shall be capable of running the MPX-32 3.6.2U3 operating system within an emulated environment, and shall be capable of executing unmodified simulator code within an emulated environment.

Systems provided under this contract shall be capable of replicating the Reflective Memory functions provided by the existing hardware; specifically, data shall be simultaneously available to all systems without the need for active software data transfers.

Contractor shall provide hardware to interface the contractor-provided computer system with the existing simulator I/O system. As delineated in C.3.1, the RSX computer systems presently in use interface with the existing simulator I/O system via a single HSD controller.

Contractor shall provide disk drives with a minimum capacity of 120 GB for each CPU provided.

Contractor shall provide one SCSI tape drive for each CPU provided.

Contractor shall provide hardware capable of generating and receiving CPU interrupts, similar to the functionality provided by the Compro Multi-Channel Processor (MCP).

Contractor shall provide hardware capable of generating timer functions similar to those provided by the Compro MCP.

Contractor shall provide one LCD monitor, keyboard, and mouse to serve as an operator console.

Hardware provided under this contract shall, to the extent possible, utilize industry standard processors, memory, disk, and tape devices.

Hardware provided under this contract shall, to the extent possible, be housed within a single cabinet.

C.3.3 Contractor shall provide software that enables the replacement computer system to emulate the Compro RSX computer system (the emulated environment). The emulated environment shall be capable of running the MPX-32 operating system and existing, unmodified simulator code.

Contractor shall provide the Linux operating system software for the provided hardware.

Contractor shall provide software that enables Reflective Memory functionality between the replacement computer systems.

C.3.4 Contractor shall integrate the hardware and emulation software at the factory.

Using Compro VOLMGR save tapes provided by NRC, contractor shall load the present MPX-32 operating system and simulation software on the provided hardware at the factory.

- Contractor shall generate an MPX-32 operating system capable of executing the simulation software at the factory, matching the present operating system to the maximum extent possible, at the factory.
- C.3.5 Contractor shall provide up to 40 hours of assistance in generating base-line performance data of the present Compro RSX computer system and comparing that data to the performance of the provided hardware and software.
- C.3.6 Contractor shall install the provided hardware and software at NRC's Technical Training Center in Chattanooga, Tennessee. Contractor shall provide up to 40 hours of installation services.
- C.3.7 Contractor shall provide up to 40 hours of post-installation on-site consultation to assist in the transition from the existing computer system to the replacement computer system.
- C.3.8 Contractor shall provide one year of total system support, to include on-site repair or replacement of failed components, any updates to software provided under this contract that may be developed by the Contractor, and replacement of contractor-provided hardware components that become obsolete during the performance period of this contract.
- C.3.9 Contractor shall provide, as separate options, and additional four years of total system support as delineated in C.3.8.
- C.3.10 Contractor shall provide a complete copy of all documentation for the hardware and software delivered under this contract. The documentation shall be delivered on either CD-ROM in PDF format, or hard copy, as supplied by the original manufacturer.

See attached document BW_SOW.

SECTION C - CONTRACT CLAUSES

C.1 NOTICE LISTING CONTRACT CLAUSES INCORPORATED BY REFERENCE

The following contract clauses pertinent to this section are hereby incorporated by reference (by Citation Number, Title, and Date) in accordance with the clause at FAR "52.252-2 CLAUSES INCORPORATED BY REFERENCE" in Section I of this contract. See FAR 52.252-2 for an internet address (if specified) for electronic access to the full text of a clause.

NUMBER

TITLE

DATE

FEDERAL ACQUISITION REGULATION (48 CFR Chapter 1)

52.204-7

CENTRAL CONTRACTOR REGISTRATION

JUL 2006

C.2 52.252-2 CLAUSES INCORPORATED BY REFERENCE (FEB 1998)

This contract incorporates one or more clauses by reference, with the same force and effect as if they were given in full text. Upon request, the Contracting Officer will make their full text available. Also, the full text of a clause may be accessed electronically at this/these address(es):

http://www.arnet.gov/far

C.3 52.212-5 CONTRACT TERMS AND CONDITIONS REQUIRED TO IMPLEMENT STATUTES OR EXECUTIVE ORDERS--COMMERCIAL ITEMS (AUG 2006)

- (a) The Contractor shall comply with the following Federal Acquisition Regulation (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)52.233-3, Protest after Award (AUG 1996) (31 U.S.C. 3553).
 - (2)52.233-4, Applicable Law for Breach of Contract Claim (OCT 2004) (Pub. L. 108-77, 108-78)
- (b) The Contractor shall comply with the FAR clauses in this paragraph (b) that 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: [Contracting Officer check as appropriate.]
- [] (1) 52.203-6, Restrictions on Subcontractor Sales to the Government (JUL 1995), with Alternate I (OCT 1995)(41 U.S.C. 253g and 10 U.S.C. 2402).

- ∏ (2) 52.219-3, Notice of Total HUBZone Set-Aside (JAN 1999) (15 U.S.C. 657a).
- [] (3) 52.219-4, Notice of Price Evaluation Preference for HUBZone Small Business Concerns (JUL 2005) (if the offeror elects to waive the preference, it shall so indicate in its offer) (15 U.S.C. 657a).
 - [] (4) [Reserved]
 - [] (5)(i) 52.219-6, Notice of Total Small Business Set-Aside (JUNE 2003) (15 U.S.C. 644).
 - [] (ii) Alternate I (OCT 1995) of 52.219-6.
 - [] (iii) Alternate II (MAR 2004) of 52.219-6.
 - [] (6)(i) 52.219-7, Notice of Partial Small Business Set-Aside (JUNE 2003) (15 U.S.C. 644).
 - [] (ii) Alternate I (OCT 1995) of 52.219-7.
 - [] (iii) Alternate II (MAR 2004) of 52.219-7.
 - [] (7) 52.219-8, Utilization of Small Business Concerns (MAY 2004) (15 U.S.C. 637 (d)(2) and (3)).
 - [] (8)(i) 52.219-9, Small Business Subcontracting Plan (JUL 2005) (15 U.S.C. 637(d)(4)).
 - [] (ii) Alternate I (OCT 2001) of 52.219-9.
 - [] (iii) Alternate II (OCT 2001) of 52.219-9.
 - [] (9) 52.219-14, Limitations on Subcontracting (DEC 1996) (15 U.S.C. 637(a)(14)).
- [] (10)(i) 52.219-23, Notice of Price Evaluation Adjustment for Small Disadvantaged Business Concerns (SEP 2005) (10 U.S.C. 2323) (if the offeror elects to waive the adjustment, it shall so indicate in its offer).
 - [] (ii) Alternate I (JUNE 2003) of 52.219-23.
 - [] (iii) Alternate II (OCT 1998) of 52.219-23.
- [X] (11) 52.219-25, Small Disadvantaged Business Participation Program--Disadvantaged Status and Reporting (OCT 1999) (Pub. L. 103-355, section 7102, and 10 U.S.C. 2323).
- [X] (12) 52.219-26, Small Disadvantaged Business Participation Program--Incentive Subcontracting (OCT 2000) (Pub. L. 103-355, section 7102, and 10 U.S.C. 2323).
 - [] (13) 52.219-27, Notice of Total Service-Disabled Veteran-Owned Small Business Set-Aside (May 2004)
 - [X] (14) 52.222-3, Convict Labor (JUNE 2003) (E.O. 11755).
 - [] (15) 52.222-19, Child Labor--Cooperation with Authorities and Remedies (JAN 2006) (E.O. 13126).
 - [X] (16) 52.222-21, Prohibition of Segregated Facilities (FEB 1999).
 - [X] (17) 52.222-26, Equal Opportunity (APR 2002) (E.O. 11246).
- [X] (18) 52.222-35, Equal Opportunity for Special Disabled Veterans, Veterans of the Vietnam Era, and Other Eligible Veterans (DEC 2001) (38 U.S.C. 4212).

- [X] (19) 52.222-36, Affirmative Action for Workers with Disabilities (JUN 1998) (29 U.S.C. 793).
- [X] (20) 52.222-37, Employment Reports on Special Disabled Veterans, Veterans of the Vietnam Era, and Other Eligible Veterans (DEC 2001) (38 U.S.C. 4212).
- [] (21)52.222-39, Notification of Employee Rights Concerning Payment of Union Dues or Fees (DEC 2004) (E.O. 13201).
- [] (22)(i) 52.223-9, Estimate of Percentage of Recovered Material Content for EPA-Designated Products (AUG 2000) (42 U.S.C. 6962(c)(3)(A)(ii)).
 - [] (ii) Alternate I (AUG 2000) of 52.223-9 (42 U.S.C. 6962(i)(2)(C)).
 - [X] (23) 52.225-1, Buy American Act--Supplies (JUNE 2003) (41 U.S.C. 10a-10d).
- [] (24)(i) 52.225-3, Buy American Act--Free Trade Agreements-- Israeli Trade Act (JUN 2006) (41 U.S.C. 10a-10d, 19 U.S.C. 3301 note, 19 U.S.C. 2112 note, Pub. L. 108-77, 108-78, 108-286, and 109-53).
 - [] (ii) Alternate I (JAN 2006) of 52.225-3.
 - [] (iii) Alternate II (JAN 2006) of 52.225-3.
 - [] (25) 52.225-5, Trade Agreements (JUN 2006) (19 U.S.C. 2501, et seq., 19 U.S.C. 3301 note).
- [X] (26) 52.225-13, Restrictions on Certain Foreign Purchases (FEB 2006) (E.O.s, proclamations, and statutes administered by the Office of Foreign Assets Control of the Department of the Treasury).
 - [] (27) 52.226-4, Notice of Disaster or Emergency Area Set-Aside (42 U.S.C. 5150).
 - [] (28) 52.226-5, Restrictions on Subcontracting Outside Disaster or Emergency Area (42 U.S.C. 5150).
- [] (29) 52.232-29, Terms for Financing of Purchases of Commercial Items (FEB 2002) (41 U.S.C. 255(f), 10 U.S.C. 2307(f)).
- [] (30) 52.232-30, Installment Payments for Commercial Items (OCT 1995) (41 U.S.C. 255(f), 10 U.S.C. 2307(f)).
- [X] (31) 52.232-33, Payment by Electronic Funds Transfer--Central Contractor Registration (OCT 2003) (31 U.S.C. 3332).
- [] (32) 52.232-34, Payment by Electronic Funds Transfer--Other than Central Contractor Registration (MAY 1999) (31 U.S.C. 3332).
 - [] (33) 52.232-36, Payment by Third Party (MAY 1999) (31 U.S.C. 3332).
 - [] (34) 52.239-1, Privacy or Security Safeguards (AUG 1996) (5 U.S.C. 552a).
- [] (35)(i) 52.247-64, Preference for Privately Owned U.S.-Flag Commercial Vessels (FEB 2006) (46 U.S.C. Appx 1241(b) and 10 U.S.C. 2631).
 - [] (ii) Alternate I (APR 2003) of 52.247-64.

- (c) The Contractor shall comply with the FAR clauses in this paragraph (c), applicable to commercial services, that 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: [Contracting Officer check as appropriate.]
 - [] (1) 52.222-41, Service Contract Act of 1965, as Amended (JUL 2005) (41 U.S.C. 351, et seq.).
- [] (2) 52.222-42, Statement of Equivalent Rates for Federal Hires (MAY 1989) (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) (MAY 1989) (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 (February 2002) (29 U.S.C. 206 and 41 U.S.C. 351, et seq.).
- (d) Comptroller General Examination of Record. The Contractor shall 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)(1) Notwithstanding the requirements of the clauses in paragraphs (a), (b), (c), and (d) of this clause, the Contractor is not required to flow down any FAR clause, other than those in paragraphs (i) through (vi) of this paragraph in a subcontract for commercial items. Unless otherwise indicated below, the extent of the flow down shall be as required by the clause--
- (i) 52.219-8, Utilization of Small Business Concerns (May 2004) (15 U.S.C. 637(d)(2) and (3)), in all subcontracts that offer further subcontracting opportunities. If the subcontract (except subcontracts to small business concerns) exceeds \$500,000 (\$1,000,000 for construction of any public facility), the subcontractor must include 52.219-8 in lower tier subcontracts that offer subcontracting opportunities.
 - (ii) 52.222-26, Equal Opportunity (April 2002) (E.O. 11246).
- (iii) 52.222-35, Equal Opportunity for Special Disabled Veterans, Veterans of the Vietnam Era, and Other Eligible Veterans (December 2001) (38 U.S.C. 4212).
 - (iv) 52.222-36, Affirmative Action for Workers with Disabilities (June 1998) (29 U.S.C. 793).

- (v) 52.222-39, Notification of Employee Rights Concerning Payment of Union Dues or Fees (DEC 2004) (E.O. 13201).
- (vi)52.222-41, Service Contract Act of 1965, as Amended (JUL 2005), flow down required for all subcontracts subject to the Service Contract Act of 1965 (41 U.S.C. 351, et seq.).
- (vii) 52.247-64, Preference for Privately Owned U.S.-Flag Commercial Vessels (FEB 2006) (46 U.S.C. Appx 1241(b) and 10 U.S.C. 2631). Flow down required in accordance with paragraph (d) of FAR clause 52.247-64.
- (2) While not required, the contractor may include in its subcontracts for commercial items a minimal number of additional clauses necessary to satisfy its contractual obligations.

C.4 DURATION OF CONTRACT PERIOD (MAR 1987) ALTERNATE 2 (MAR 1987)

This contract shall commence on 09/29/2006 and will expire on 09/28/2007. The term of this contract may be extended at the option of the Government for an additional 4 one-year options.

C.5 52.217-8 OPTION TO EXTEND SERVICES (NOV 1999)

The Government may require continued performance of any services within the limits and at the rates specified in the contract. These rates may be adjusted only as a result of revisions to prevailing labor rates provided by the Secretary of Labor. The option provision may be exercised more than once, but the total extension of performance hereunder shall not exceed 6 months. The Contracting Officer may exercise the option by written notice to the Contractor within 30 days.

C.6 52.217-9 OPTION TO EXTEND THE TERM OF THE CONTRACT (MAR 2000)

- (a) The Government may extend the term of this contract by written notice to the Contractor within 30 days; provided that the Government gives the Contractor a preliminary written notice of its intent to extend at least 60 days days before the contract expires. The preliminary notice does not commit the Government to an extension.
- (b) If the Government exercises this option, the extended contract shall be considered to include this option clause.
- (c) The total duration of this contract, including the exercise of any options under this clause, shall not exceed five years.

C.7 SEAT BELTS

Contractors, subcontractors, and grantees, are encouraged to adopt and enforce on-the-job seat belt policies and programs for their employees when operating company-owned, rented, or personally owned vehicles. SECTION D - CONTRACT DOCUMENTS, EXHIBITS, OR ATTACHMENTS

Compro Computer Services Inc. price proposal (breakdown)

Fixed Price Billing Instructions